

SECTION-

**IN THE SUPREME COURT OF INDIA
CIVIL APPELLAE JURISDICTION
(UNDER ARTICLE 32 OF THE CONSTITUTION OF INDIA)
WRIT PETITION No. (880) of 2020**

IN THE MATTERS OF:-

DR. JOE JOSEPH & ORS.

Petitioner(s)

VERSUS

STATE OF TAMIL NADU & ORS.

Respondent(s)

FILING INDEX

PARTICULARS COPIES

- 1. STATUS REPORT DATED 25.01.2022 FILED ON BEHALF OF RESPONDENT NOS. 3 AND 4 IN COMPLIANCE WITH THE ORDER DATED 16.03.2021**

FILED ON: 25.01.2022

**ARVIND KUMAR SHARMA
AOR FOR RESPONDENT NOS. 3 AND 4
CENTRAL AGENCY SECTION
SUPREME COURT OF INDIA
NEW DELHI- 110001**

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**IN THE SUPREME COURT OF INDIA
CIVIL ORIGINAL WRIT JURISDICTION
(UNDER ARTICLE 32 OF THE CONSTITUTION OF INDIA)
WRIT PETITION (CIVIL) No. 880 OF 2020**

IN THE MATTER OF:

Dr. JOE JOSEPH & ORS.

...PETITIONERS

VERSUS

STATE OF TAMIL NADU & ORS.

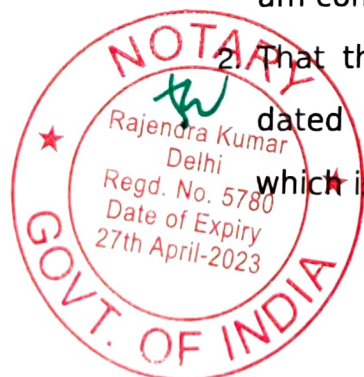
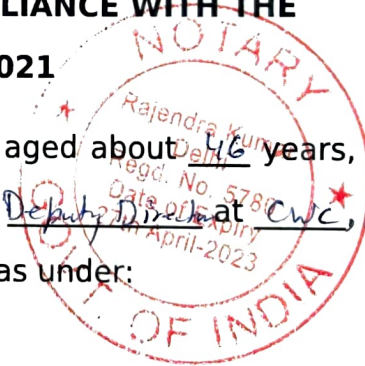
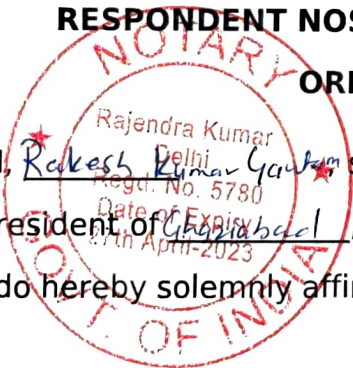
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RESPONDENTS

**STATUS REPORT DATED 25.01.2022 FILED ON BEHALF OF
RESPONDENT NOS. 3 AND 4 IN COMPLIANCE WITH THE
ORDER DATED 16.03.2021**

I, Rakesh Kumar Gaur son of U. Sh. Gajraj, aged about 46 years, resident of Gurgaon, currently working as Deputy Director at CWC, New Delhi do hereby solemnly affirm and state on oath as under:

1. That, I am appointed as Deputy Director in CWC, and in my personal capacity, I am conversant with the facts of the case based on knowledge derived from official records and as such I am competent and authorized to file the present Status report.
2. That the deponent herein had, in compliance with the order dated 16.03.2021, filed a Status Report dated 14.10.2021, which is part of the record. However, subsequent developments



have taken place since the filing of the earlier status report, which are essential to be brought to the notice of this Hon'ble Court. The present status report should be read alongwith the earlier status report dated 14.10.2021.

3. That the deponent herein is accordingly, filing a revised status report to bring the following additional factual developments on record:

a. That the State of Tamil Nadu has made repeated requests to the supervisory committee to allow them to carry out repair work of the approach road and cutting of trees through the Forest area located in the State of Kerala for carrying out the balance strengthening measures of the Baby Dam. The said request was made in pursuance of the directions passed by this Hon'ble Court vide its judgment dated 27.02.2006 in WP(C) 386 of 2001, wherein the State was directed to undertake the balance strengthening measures as suggested by the Expert Committee in its report of 2001. The court directed that "**We permit State of Tamil Nadu to carry out further strengthening measures as suggested by CWC and hope that State of Kerala would cooperate in the matter. The State of Kerala and its officers are restrained from causing any obstruction**". A copy of the judgement dated 27.02.2006 is attached herewith as **ANNEXURE-P1**.

b. That in this regard, it is relevant to mention that the Empowered Committee, in its report of the year 2012, concluded under the heading of Structural Safety that



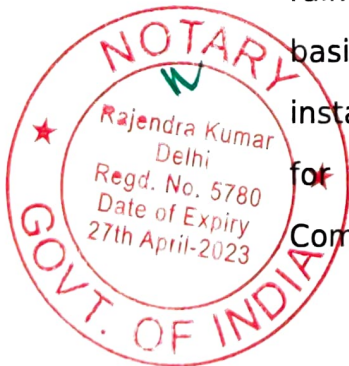
“Requisite maintenance and repair measures should be carried out in a time-bound manner; Remaining strengthening measures for the entire dam should be carried out”. The same was also considered by this Hon’ble Court in its judgement passed in Original Suit No. 3 of 2006 dated 07.05.2014.

- c. That at present the access to the dam site is only through the reservoir by boat. The only land route available for carrying out the strengthening works of the Baby Dam and Earth Dam is to commute and to convey materials and machinery to the dam site through the Vallakadavu Mullaperiyar Dam Ghat road which is 5 km long. As the road connectivity is essential for any Disaster Management Plan, this issue has been also discussed in the meetings of the Sub-Committee, under National Executive Committee (NEC) of National Disaster Management Authority (NDMA), constituted under the chairmanship of Secretary MoWR, RD&GR in terms of the directions passed by the Hon’ble Supreme Court in its Judgment dated 11.01.2018 in Writ Petition (Civil) No.878 of 2017.
- d. That the State of Tamil Nadu has raised the issue of forest clearance in the Supervisory Committee meetings: 9th dated 7.7.2016, 10th dated 14.11.2017, 11th dated 4.8.2018, 12th dated 4.6.2019, 13th 28.1.2020 and 14th dated 19.2.2021; so as to enable them to carry out the strengthening measures of the baby dam. The Supervisory Committee in its various meetings has deliberated on this



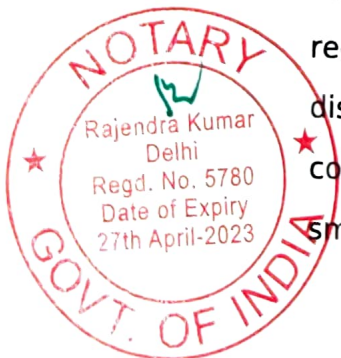
issue and requested the State of Kerala to provide the necessary clearances from their forest department. However the State of Kerala has not acted on the said requests. A copy of the minutes of the meetings of the Supervisory Committee ie 9th, 10th, 11th, 12th, 13th and 14th meeting; are attached herewith as **ANNEXURE-P2**.

- e. That in the 7th meeting of the Supervisory Committee held on 22.06.2015, the State of Tamil Nadu expressed their concern that they were not able to collect the rainfall data from Mullaikodi rainfall station as Kerala Forest department did not permit the officials from the State to access the same. However, State of Kerala offered to install a rain gauge station set up by the State of Kerala and to share the data with centre and the State of Tamil Nadu by telemetry system. That the minutes of the 7th meeting of the Supervisory Committee are attached herewith as **ANNEXURE-P3**.
- f. That in the recent meeting of the Supervisory Committee held on 8.12.2021, the State of Kerala expressed their displeasure on the erratic spillway shutter operation at Mullaperiyar reservoir and the release downstream by State of Tamil Nadu. Tamil Nadu submitted that as the rainfall data was made available to them by Kerala on daily basis and not on an hourly basis as envisaged from installing telemetry system, they don't have sufficient time for making decisions in advance. The Supervisory Committee at its level has requested Kerala to expedite



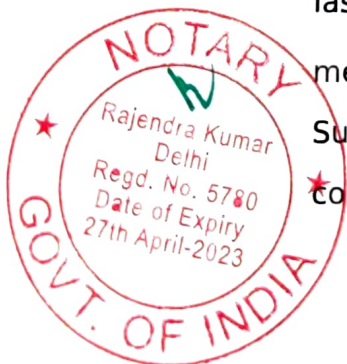
the installation of requisite numbers of such telemetry stations so as to facilitate the State of Tamil Nadu to provide timely inflow forecast which is used to release water from Mullaperiyar Dam by opening gates. However, Kerala has not yet acted on its commitment to install the telemetry stations. A copy of the minutes of the meeting of the Supervisory Committee dated 8.12.2021 is attached herewith as **ANNEXURE-P4**.

- g. That, furthermore, in the recent meeting of the Supervisory Committee, the State of Kerala brought to the attention of the Committee that on account of the order passed to release 12,654 cusecs (dt 06.12.2021; 9PM) from the Mulla Periyar Dam, the people located downstream of the dam had to face flood like situation. In this regard, it is submitted that the designed spillway capacity of the Mullaperiyar Dam is 1.65 lakh cusecs. As per the data submitted by Kerala, water discharge of 12,654 cusec is about 17% of the 100 yr flood value, 5-6% of PMF value and 8% of spillway carrying capacity. Accordingly, the State of Kerala was advised to mark the warning level and danger level accordingly in the downstream area of the Mullaperiyar dam. The channel carrying capacity in the downstream area needs to be examined and cleared, if required, by State of Kerala with respect to the design discharge of the spillway and to minimise the distress conditions faced down stream of the Dam due to such small releases while maintaining the water level in the



reservoir to max level of 142 ft.

- h. That the aspects pertaining to safety of Mullaperiyar Dam were carried out during the years 2010 to 2012 by the Empowered Committee (E C) constituted under the directions of the Hon'ble Supreme Court in the year 2010. At that time the issue of safety of existing dam was looked into and thoroughly investigated by the Empowered Committee. The Empowered Committee based upon Investigations, Tests and Studies (ITS) carried out by the apex National organizations namely, CWC New Delhi, CSMRS, New Delhi and CWPRS, Pune and other specialist organizations of Govt. of India (IMD & GSI) and specialist expert agencies arrived at the conclusion that the Mulla Periyar dam is found to be safe in all respects, viz., Hydrologically, Structurally and seismically, after conducting 40 Tests/ Investigations/ Studies. That relevant extract of the report submitted by the Empowered Committee is attached herewith as **ANNEXURE P-5**.
- i. That it is pertinent to add that in addition to the study conducted by the Empowered Committee, the Supervisory Committee also visited the Mulla Periyar Dam during the annual meetings held at Project site. Till date 14 No's of meeting of Supervisory Committee have been held, the last one being held on 19.02.2021. In the Minutes of meeting of 9th, 10th, 11th, 12th, 13th & 14th meetings of Supervisory Committee, it has been recorded that overall condition of the dam and its appurtenant structure, based



upon visual inspection is found to be satisfactory. Copy of Minutes of meeting is attached herewith as **Annexure P-2**. However, a fresh review of the safety of the Mulla Periyar Dam is now due and is required to be undertaken.

VERIFICATION:

I hereby verify that the contents of my above affidavit are true and correct to my knowledge, belief and information derived from the records of the case. No part of it is false and nothing relevant has been concealed therein.

Verified at _____ on this 27 JAN 2022 day of _____ 2022

NEW DELHI



DEPONENT

[Signature]
 राकेश कुमार गौतम
 Rakesh Kumar Gautam
 सचिव निदेशक / Deputy Director
 केन्द्रीय जल आयोग / C.W.C.
 भारत सरकार / Govt. of India
 नई दिल्ली / New Delhi

DEPONENT

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 केन्द्रीय जल आयोग / C.W.C.
 भारत सरकार / Govt. of India
 नई दिल्ली / New Delhi

ATTESTED *[Signature]*
 RAJENDRA KUMAR
 NOTARY, DELHI-R-5780
 GOVERNMENT OF INDIA
 SUPREME COURT OF INDIA
 COMPOUND, NEW DELHI
 Register Pg./Sl. No. 407
 Mobile No.: 9899446209

27 JAN 2022

27 JAN 2022
 CERTIFIED THAT THE CONTENTS EXPLAINED TO THE DEPONENT EXECUTANT WHO IS SEEMED PERFECT TO UNDERSTAND & AFFIRMED DEPOSED BEFORE ME AT DELHI ON..... IDENTIFIED BY
 IDENTIFY THE EXECUTANT/DEPONENT WHO HAS SIGNED IN MY PRESENCE *[Signature]*

IDENTIFY THE EXECUTANT / DEPONENT WHO WAS SIGNED IN THE PRESENCE OF

CASE NO.:
Writ Petition (civil) 386 of 2001

PETITIONER:
Mullaperiyar Environmental Protection Forum

RESPONDENT:
Union of India & Ors

DATE OF JUDGMENT: 27/02/2006

BENCH:
Y.K. Sabharwal, C.K.Thakker & P.K. Balasubramanyan

JUDGMENT:
J U D G M E N T
[With TC (C) Nos.56-59 and 96-99 of 2002]

Y.K. Sabharwal, CJI.

Mullaperiyar reservoir is surrounded by high hills on all sides with forest and is a sheltered reservoir. The orientation of the dam is such that the direction of wind in the south west monsoon would be away from the dam. It is said that for past 100 years, Tamil Nadu Government Officers have been approaching the reservoir during the flood season only from Thekkady side in a boat and have not noticed any significant wave action. The main question to be determined in these matters is about the safety of the dam if the water level is raised beyond its present level of 136 ft. To determine the question, we may first narrate factual background.

An agreement dated 29th October, 1886 was entered into between the Maharaja of Travancore and the Secretary of State for India in Council whereunder about 8000 acres of land was leased for execution and preservation of irrigation works called 'Periyar Project'. In pursuance of the said agreement, a water reservoir was constructed across Periyar river during 1887-1895. It is known as Mullaperiyar Dam consisting of main dam, baby dam and other ancillary works.

The salient features of the dam as mentioned in the agreement are as follows :

"Type of Dam	Masonry Dam
Length of the main dam	1200 ft. (365.76 mt.)
Top of the dam	155 ft. (47.24 mt.)
Top of solid parapet	158 ft. (48.16 mt.)
Maximum height of dam (from deepest foundation)	176 ft. (53.64 mt.)
FRL (Full Reservoir Level)	152 ft. (46.33 mt.)
MWL (Design)	155 ft. (47.24 mt.)
Crest level of spillway	136 ft. (41.45 mt.)
Maximum water level reached During floods (till date)	154.80 ft. (47.18mt) on 03.01.43
Spillway capacity	10 vents of 36' x 16' (10.97 m. x 4.88 m.)
Storage Capacity (gross)	443.23 m.cu.m (15.662 TMC.ft)
Live capacity	299.13 m.cu.m. (10.563 TMC)
Irrigation benefit in Tamil Nadu	68558 ha. (169408.68 acres)

Length of Baby dam

240 ft.(73.15 mt.)"

In the past, reservoir was filled up to full level of 152 ft. as per the agreement. The agreement was modified in the year 1970. The State of Tamil Nadu was allowed to generate electricity from the project and it surrendered fishing rights in the leasehold land in favour of State of Kerala. It also agreed to pay annually a sum specified in the agreement to the State of Kerala. The Government of Kerala was also granted right of fishing over and upon the waters, tanks and ponds in the land and agreed that the principal deed and all the conditions shall remain intact without affecting in any way the irrigation and power right of the Government of Tamil Nadu.

According to the petitioner, there was leakage in the gallery of the dam which affected its security and, therefore, the water level was stopped at 136 feet. In view of such situation, the Central Water Commission (CWC) inspected the dam, held meetings with representatives of both the States of Kerala and Tamil Nadu for considering ways and means to strengthen the Mullaperiyar Dam. At the meeting, certain decisions were taken for the purpose of ensuring security and safety of reservoir and by taking several necessary measures. Three types of measures were envisaged, namely, (i) emergency measures, (ii) middle term measures, and (iii) long term measures. The progress of implementation of measures was also reviewed in the meetings held in 1980, 1983, 1996 and 1997. In this light, it is claimed that water level cannot be raised from its present level of 136 feet.

In view of apprehension expressed in the light of leakage, in the year 1979 the water level was allowed upto 136 ft. instead of 152 ft. After thorough study and considering all aspects, the CWC felt that certain steps were required to be taken immediately and both the States of Tamil Nadu and Kerala ought to cooperate. On taking those steps, water would be allowed to be filled upto 142 feet. Some other steps were also suggested for allowing the water to be filled in at the full level of 152 feet. The State of Kerala expressed reservations against the report submitted by CWC and according to a dissent note, appended by the representative of the State of Kerala, the water level could not be allowed to be raised beyond 136 feet.

For the present, the only question is whether water level can be allowed to be increased to 142 feet or not.

The State of Kerala has filed an affidavit justifying its stand of not allowing raising of water level from 136 feet. According to it, the life of the dam was said to be 50 years from the date of construction. Since it had completed more than 100 years, it had served the useful life. It was, therefore, dangerous to allow raising of water level beyond 136 feet. It was also stated that if something happens to the dam, serious consequences could ensue and three adjoining districts could be completely wiped out and destroyed. It was also the stand of the State that the dam was constructed at a time when the design and construction techniques were in infancy. There was no testing laboratory to get accurate and detailed tests of construction materials. The stress and other elements were observed in the dam right from the initial filling and remained there in spite of remedial measures taken out. Moreover, there were frequent tremors occurring in that area and in case of an earthquake, it could result in serious calamities and total destruction of life and

property. It was also alleged that the technical officials of CWC had submitted the report without effective participation of the technicians from Kerala and view points of Kerala had not been considered at all. According to the State, CWC also could not be considered as the highest technical body in the country for giving technical advice and the decision taken by CWC without consultation of State of Kerala, was not binding on the State.

On the other hand, the State of Tamil Nadu said that the apprehension voiced by the State of Kerala was totally ill-founded, baseless and incorrect and based on mere figment of imagination. CWC was the highest technical authority with the required expertise on the subject. It had inspected the dam in detail and found various allegations as incorrect and baseless. It also stated that an expert committee was constituted in pursuance of an order passed by this Court and a report was submitted in the year 2001. As per the report, water level deserves to be allowed to be raised upto 142 feet as an interim measure on taking certain steps and after execution of the strengthening measure in respect of Baby Dam, earthen bund and on completion of remaining portion, the water level could be allowed to be restored at FRL i.e. 152 feet. Unfortunately, however, the State of Kerala did not cooperate and did not allow increase of water level even upto 142 feet. It was stated that the committee consisting of experts considered the question and thereafter various recommendations were made and actions were suggested. It was, therefore, not open to the State of Kerala to refuse to cooperate and not to accept the suggestions and the recommendations of CWC. According to the State of Tamil Nadu, its prayer for raising water level upto 142 feet at the initial stage and 152 feet at the final stage deserves to be accepted. A Committee was constituted with terms of reference as under :

"(a) To study the safety of Mulla Periyar Dam located on Periyar river in Kerala with respect to the strengthening of dam carried out by the Govt. of Tamil Nadu in accordance with the strengthening measures suggested by CWC and to report/advise the Hon'ble Minister of Water Resources on the safety of the dam.

(b). To advise the Hon'ble Minister of Water Resources regarding raising of water level in Mulla Periyar reservoir beyond 136 ft. (41.45 m) as a result of strengthening of the dam and its safety as at (a) above.

The Committee will visit the dam to have first hand information and to assess the safety aspects of the dam. It will hold discussions with Secretary, Irrigation of the Kerala Govt. as well as Secretary, PWD, Govt. of Tamil Nadu with respect to safety of the dam and other related issues."

According to the State of Tamil Nadu, the Committee after inspecting the dam and after holding discussions with the officials of the two States, submitted its interim report wherein recommendations were made as under:

"1. The Tamil Nadu PWD Department should immediately test the masonry of the Baby dam to find out the permissible tensile strength that can be adopted for the lime surkhy mortar used in the construction of Baby dam. Central Soil and Materials Research Station (CSMRS), Government of India, New Delhi, should carry out these tests. CSMRS are specialist in carrying out geophysical and core tests and have a good reputation. These tests should be carried out in the presence of the representatives of Tamil Nadu PWD, Irrigation Department, Government of Kerala and CWC. The results of these tests should be made available to the Committee by end of November, 2000. The Government of Kerala should permit Tamil Nadu PWD & CSMRS to carry out these tests without any hindrance.

2. Core samples of Baby dam shall also be extracted and tested by CSMRS, New Delhi, at the upstream and downstream faces of the dam. These results may be used to develop correlation between the actual tests and the results obtained by geophysical testing.

3. The strengthening measures pertaining to the Baby dam and the earthen bund as already suggested by the CWC and formulated by the Government of Tamil Nadu should be carried out at the earliest. Government of Kerala is requested to allow the execution of strengthening measures of the Baby dam and earthen bund immediately.

4. Raising of water level beyond 136 ft. (41.45 m) will be decided after obtaining the tensile and compressive strength of the masonry of the Baby dam."

The final report of the committee shows that certain more steps were required to be taken before raising of reservoir level upto FLR i.e. 152 feet and those recommendations are :

"1. The strengthening measures pertaining to Baby dam and the earthen bund, as already suggested by CWC and formulated by the

Government of Tamil Nadu, should be carried out at the earliest.

2. Government of Kerala should allow the execution of strengthening measures of Baby dam, earthen bund and the remaining portion of about 20 m of parapet wall on the main Mulla Periyar Dam upto EL 160 ft. (48.77 m) immediately.

3. CWC will finalise the instrumentation for installation at the main dam. In addition, instruments will be installed during strengthening of Baby dam, including the earthen bund, so that monitoring of the health of Mulla Periyar dam, Baby dam and earthen bund can be done on a continuous basis.

4. The water level in the Mulla Periyar reservoir be raised to a level where the tensile stress in the Baby dam does not exceed 2.85 t/m² (as suggested by Shri Parameswaran Nair, Kerala representative) especially in condition E (full reservoir level with earthquake) as per BIS Code IS 6512-1984 with $a_h = 0.12g$ and analysis as per clause Nos. 3.4.2.3 and 7.3.1 of BIS Code 1893-1984.

5. The Committee Members discussed the issue of raising of water level above EL 136.00 ft. (41.45 m) after studying the analysis of safety of Baby dam. Prof. A. Mohanakrishnan, Member of Tamil Nadu Government, opined in the light of para 4 that the water level should be raised upto at least EL 143.00 ft. (43.59 m) as the tensile stresses are within the permissible limits. Shri M.K. Parameswaran Nair, Member of Kerala Government did not agree to raise the water level above EL 136.00 ft. (41.45 m). However, the Committee after detailed deliberations, has opined that the water level in the Mulla Periyar reservoir be raised to EL 142.00 ft. (43.28 m) which will not endanger the safety of the Main dam, including spillway, Baby dam and earthen bund. The abstracts of the calculations for stress analysis are enclosed as Annex. XIX.

6. This raising of reservoir level upto a level where the tensile stress does not exceed 2.85 t/m² during the earthquake condition is an interim

measure and further raising of water level to the FRL EL 152.00 ft. (46.33 m) [original design FRL of the Mulla Periyar Reservoir] be studied after the strengthening measures on Baby dam are carried out and completed."

The State of Kerala continued to resist raising of water level. The objections raised by the representative of State of Kerala were considered by the Expert Committee and taking into account the matter in its entirety and keeping in view the safety of dam, certain suggestions were made. It required the State of Tamil Nadu to take those steps. The Expert Committee stated that it was equally obligatory on the part of State of Kerala to act in accordance with the suggestions and recommendations made by the CWC and that the State of Kerala cannot refuse to cooperate on the ground that raising of water level would cause serious problem in spite of the report of the Expert Committee and recommendations and decision by CWC.

In the writ petition filed by Mullaperiyar Environmental Protection Forum, various prayers have been made. They have, inter alia, prayed that agreements of 1886 and 1970 be declared as null and void and consequential relief be granted and also that Section 108 of the States Re-organisation Act, 1956, be declared ultra vires and unconstitutional as it encroaches upon legislative domain of the State Legislature under Entry 17 of List II of the Seventh Schedule of the Constitution of India. The petitioner has also raised objection about the legality of the agreement between the Maharaja of Travancore and the Governor General. It is claimed that the agreement was entered into in 'unholy' haste and virtually it was thrust upon and the Maharaja was forced to accept it. It was also submitted that under Section 108 of the States Re-organization Act, any agreement or arrangement entered into by Central Government and one or more existing States relating to the right to receive and utilize water can continue to remain in force subject to certain adaptations and modifications as may be agreed upon between the successor States. Since there was no such agreement after November 1, 1957, the agreement would not continue to remain in force. It also pleaded that the agreements are not covered by Entry 56 of List I of Seventh Schedule of the Constitution of India and hence Parliament has no power to make any law in respect thereof.

On the other hand, the State of Tamil Nadu seeks directions for raising of water level to 142 ft. and later, after strengthening, to its full level of 152 ft. On Section 108 of the States Reorganisation Act, the stand taken by the State of Tamil Nadu is that this Section, in pith and substance, deals with "continuance of agreements and arrangements relating to certain irrigation, power or multipurpose projects" and it figures in the Act under which the present State of Kerala was formed.

According to the State of Tamil Nadu, the Act was not an enactment made in exercise of Parliament's legislative power under Entry 56 of List I, but was an enactment covered by Articles 3 & 4 of the Constitution of India which provides for formation of new States and making of supplemental, incidental and consequential provisions. The pre-existing contractual obligation was

reasserted and reaffirmed by the State of Kerala after its formation by signing fresh agreements in 1970. It is also urged that the Lists in Schedule Seven have no applicability as the point in issue is governed by Articles 3 & 4 of the Constitution of India.

Another contention urged for the petitioner is that in the light of later development of law, the agreement of 1886 stands frustrated. It was submitted that the lease land was declared as reserve forest in the year 1899 by the erstwhile State of Travancore under the Travancore Forest Act. The notification remained in force under sub-section (3) of Section 85 of the Kerala Forest Act, 1961. In 1934, Periyar Wildlife Sanctuary had been declared as a 'sanctuary' covering the grassy area, marshy areas, swamps of Mullaperiyar Dam which was expanded to 777 sq. kms. under the Wild Life Protection Act, 1972. Taking into account its importance as a well known habitat of tigers which is a highly endangered species, the sanctuary has been declared as "Periyar Tiger Reserve" in 1978 under the special management programme known as 'Project Tiger'. It was said to be the oldest sanctuary in the State of Kerala which played a very important role in bio-diversity conservation in Western Ghats. International Union for Conservation of Nature and Natural Resources (IUCN) has declared it as a bio-diversity hot spot. According to the petitioner, the forest land immediately above the present maximum water level at 136 feet has special significance from bio-diversity point of view as it comprises different types of habitats like grassy areas, marshy areas, swamps and areas covered with trees. These are the prime habitats used by most of the wild animals especially larger herbivores, carnivores and amphibians. The birds like darter and cormorants nest on the tree stumps which stand out distributed in the reservoir. Raising of water level would submerge these stumps and upset the nesting and reproduction of birds. The submergence of the forest above 136 ft. would adversely affect the bio-diversity therein and in the neighbouring forests both in terms of flora and fauna. Further, it is urged that raising of water level would also seriously affect the ecology and economy of the State of Kerala. Having regard to these developments, the State of Tamil Nadu is not entitled to increase the water level.

According to the State of Tamil Nadu, Periyar Project was completed in the year 1895. The Declaration of area as Reserved Forest was made in 1899. Moreover, the declaration has not adversely affected the interest of the petitioner or the State of Kerala. According to the State of Tamil Nadu, the provisions of Kerala Forest Act, 1961 and the Wild Life Protection Act, 1972 have no applicability to the case in hand. It is also urged that raising of water level in any case would not adversely affect the natural environment. Further, according to the State of Tamil Nadu, the submergence of land due to raising of water level from 136 feet to the designated FRL 152 feet would cover only 11.2 sq. kms. The percentage of area that gets submerged is only 1.44% of the total area which is very meager. It was also asserted that the raising of water level will not affect Wildlife habitat, on the contrary it would improve the Wildlife habitat. The restoration of water level will in no way affect the flora and fauna as alleged nor affect the nesting and reproduction of birds. Higher water level will facilitate better environment for flora and fauna to flourish better.

It will lead to development of new flora and fauna and will also act as resting place for migratory birds and number of rare species of birds. The increase of water level in the reservoir will also increase tourist attraction and generate more funds for the State of Kerala and also result in increase of aquatic life and since the fishery rights are with the State of Kerala, it will enable the said State to generate more funds.

In the aforesaid background, the questions that arise for determination are these:

1. Whether Section 108 of the States Reorganisation Act, 1956 is unconstitutional?
2. Whether the jurisdiction of this Court is barred in view of Article 262 read with Section 11 of the Inter-State Water Disputes Act, 1956?
3. Whether Article 363 of the Constitution bars the jurisdiction of this Court?
4. Whether disputes are liable to be referred to Arbitration?
5. Whether the raising of water level of the reservoir from 136 ft. to 142 ft. would result in jeopardising the safety of the people and also degradation of environment?

1. RE : Validity of Section 108 of the States Reorganisation Act, 1956 (For short 'the Act').

The contention urged is that the subject matter of water is covered by Entry 17 of the State List under the Seventh Schedule of the Constitution and, therefore, Section 108 which, inter alia, provides that any agreement or arrangement entered into between the Central Government and one or more existing States or between two or more existing States relating to distribution of benefits, such as the right to receive and utilise water or electric power, to be derived as a result of the execution of such project, which was subsisting immediately before the appointed day shall continue in force, would be outside the legislative competence of the Parliament for the same does not fall in List I of Seventh Schedule, it falls in List-II. The Act was enacted to provide for the reorganisation of the States of India and for matters connected therewith as stipulated by Article 3 of the Constitution. The said Article, inter alia, provides that the Parliament may by law form a new State by separation of territory from any State or by uniting two or more States or parts of States or by uniting any territory to a part of any State. Article 4, inter alia, provides that any law referred to in Article 2 or 3 shall contain such provisions for the amendment of the First Schedule and the Fourth Schedule of the Constitution as may be necessary to give effect to the provisions of the law and may also contain such supplemental, incidental and consequential provisions as Parliament may deem necessary. The creation of new States by altering territories and boundaries of existing States is within the exclusive domain of Parliament. The law making power under Articles 3 and 4 is paramount and is not subjected to nor fettered by Article 246 and Lists II and III of the Seventh Schedule. The Constitution confers supreme and exclusive power on Parliament under Articles 3 and 4 so that while creating new States by reorganisation, the Parliament may enact provisions for dividing land, water and other resources; distribute the assets and liabilities

of predecessor States amongst the new States; make provisions for contracts and other legal rights and obligations. The constitutional validity of law made under Articles 3 and 4 cannot be questioned on ground of lack of legislative competence with reference to the lists of Seventh Schedule. The new State owes its very existence to the law made by the Parliament. It would be incongruous to say that the provision in an Act which gives birth to a State is ultra vires a legislative entry which the State may operate after it has come into existence. The power of the State to enact laws in List II of Seventh Schedule are subject to Parliamentary legislation under Articles 3 and 4. The State cannot claim to have legislative powers over such waters which are the subject of Inter-State agreement which is continued by a Parliamentary enactment, namely, the States Organisation Act, enacted under Articles 3 and 4 of the Constitution of India. The effect of Section 108 is that the agreement between the predecessor States relating to irrigation and power generation etc. would continue. There is a statutory recognition of the contractual rights and liabilities of the new States which cannot be affected unilaterally by any of the party States either by legislation or executive action. The power of Parliament to make law under Articles 3 and 4 is plenary and traverse over all legislative subjects as are necessary for effectuating a proper reorganisation of the States. We are unable to accept the contention as to invalidity of Section 108 of the Act.

2. RE : Whether the jurisdiction of this Court is barred in view of Article 262 read with Section 11 of the Inter-State Water Disputes Act, 1956?

Article 262 provides that Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of, or in, any inter-State river or river valley. The jurisdiction of the Courts in respect of any dispute or complaint referred to in Article 262(1), can be barred by Parliament by making law. The Inter-State Water Disputes Act, 1956 was enacted by Parliament in exercise of power under Article 262 of the Constitution. Section 11 of the said Act excludes the jurisdiction of Supreme Court in respect of a water dispute referred to the Tribunal. Section 2(c) of this Act defines 'water dispute'. It, inter alia, means a dispute as to the use, distribution or control of the waters of, or as to the interpretation or implementation of agreement of such waters.

In the present case, however, the dispute is not the one contemplated by Section 2(c) of the Act. Dispute between Tamil Nadu and Kerala is not a 'water dispute'. The right of Tamil Nadu to divert water from Peryar reservoir to Tamil Nadu for integrated purpose of irrigation or to use the water to generate power or for other uses is not in dispute. The dispute is also not about the lease granted to Tamil Nadu in the year 1886 or about supplementary agreements of 1970. It is also not in dispute that the dam always had and still stands at the height of 155 ft. and its design of full water level is 152 ft. There was also no dispute as to the water level till the year 1979. In 1979, the water level was brought down to 136 ft. to facilitate State of Tamil Nadu to carryout certain strengthening measures suggested by

Central Water Commission (CWC). The main issue now is about the safety of the dam on increase of the water level to 142 ft. For determining this issue, neither Article 262 of the Constitution of India nor the provisions of the Inter-State Water Dispute Act, 1956 have any applicability. There is no substance in the contention that Article 262 read with Section 11 of the Inter-State Water Disputes Act bars the jurisdiction of the court in regard to nature of disputes between the two States.

3. RE : Whether Article 363 of the Constitution bars the jurisdiction of this Court?

The jurisdiction of the courts in respect of dispute arising out of any provision of a treaty, agreement, covenant, engagement, sanad or other similar instrument entered into or executed before the commencement of the Constitution is barred in respect of matters and in the manner provided in Article 363 of the Constitution of India. The main reason for ouster of jurisdiction of courts as provided in Article 363 was to make certain class of agreements non-justiciable and to prevent the Indian Rulers from resiling from such agreements because that would have affected the integrity of India. The agreement of the present nature would not come within the purview of Article 363. This Article has no applicability to ordinary agreements such as lease agreements, agreements for use of land and water, construction works. These are wholly non-political in nature. The present dispute is not in respect of a right accruing or a liability or obligation arising under any provision of the Constitution {see Madhav Rao Scindia v. Union of India [(1971) 3 SCR 9]}

The contention also runs counter to Section 108 of the States Reorganisation Act, which expressly continues the agreement. There is, thus, no merit in this objection as well.

4. RE : Whether disputes are liable to be referred to Arbitration?

It is contended that the lease deed dated 29th October, 1886 provides that whenever any dispute or question arises between the Lessor and the Lessee touching upon the rights, duties or liabilities of either party, it shall be referred to two arbitrators and then to an umpire if they differ. This clause was amended in supplementary agreement dated 29th May, 1970. Relying on the arbitration agreement, the contention urged on behalf of State of Kerala is that the parties should be directed to resort to alternate remedy of arbitration and discretionary relief in these petitions may not be granted to State of Tamil Nadu. There is no substance in this contention as well. The present dispute is not about the rights, duties and obligations or interpretation of any part of the agreement. As already noted, the controversy herein is whether the water level in the reservoir can presently be increased to 142 ft. having regard to the safety of the dam. The full water level was 152 ft. It was reduced to 136 ft. in 1979. The aspect of increase of water level is dependant upon the safety of the dam after strengthening steps have been taken. This aspect has been examined by experts.

5. Re : Whether the raising of water level of the reservoir from 136 ft. to 142 ft. would result in jeopardising the safety of the people and also

degradation of environment?

Opposing the increase of water level, the contention urged is that it would result in a larger area coming in submergence which is not permissible without complying with the mandatory provisions of the Forest (Conservation) Act, 1980 and the Wild Life (Protection) Act, 1972.

Reliance has been placed on Section 26A of the Wild Life (Protection) Act which stipulates that the boundaries of a sanctuary shall not be altered except on a recommendation of the National Board constituted under Section 5-A of the Act. The total area of the sanctuary is about 777 square kilometers. The leased area of about 8,000 acres is a part of the total area. By raising the water level, the boundaries of the sanctuaries do not get altered. The total area of the sanctuary remains 777 square kilometers. Further, Section 2(17) of the Act, which defines land includes canals, creeks and other water channels, reservoirs, rivers, streams and lakes, whether artificial or natural, marshes and wetlands and also includes boulders and rocks. It cannot be said that forest or wildlife would be affected by carrying out strengthening works and increase of the water level. On the facts and circumstances of the case, the strengthening work of existing dam in the forest cannot be described as a non-forestry activity so as to attract Section 2 of the Forest (Conservation) Act, 1980, requiring prior approval of Union of India.

As already noticed, it was only in 1979 that the water level was brought down to 136 ft from 152 ft. The increase of water level will not affect the flora and fauna. In fact, the reports placed on record show that there will be improvement in the environment. It is on record that the fauna, particularly, elephant herds and the tigers will be happier when the water level slowly rises to touch the forest line. In nature, all birds and animals love water spread and exhibit their exuberant pleasure with heavy rains filling the reservoir resulting in lot of greenery and ecological environment around. The Expert Committee has reported that it will be beneficial for the Wildlife in the surrounding area as it will increase the carrying capacity for wildlife like elephants, ungulates and in turn tigers. The apprehension regarding adverse impact on environment and ecology have been found by the experts to be unfounded. We are also unable to accept the contention that the impact on environments has not been examined. Report dated 28th January, 2003 states that there is no adverse impact on the environment. Similarly, the report dated 21st April, 2003 is also to the similar effect. It, inter alia, states that :

"The most productive habitats in terms of forage availability to ungulates and elephants are these vayals. This habitat is of even greater significance to wildlife since the green flush of protein rich grasses appears at a time when nutritive quality of forest forage is lowest. This is so since water is likely to be released from the Dam during the dry months for irrigation. Thus, this nutrient rich biomass is critical for maintaining condition of herbivores and their populations during the pinch period.

If the lowest water level even after increasing the water capacity of the dam is maintained at the current level, then the increased high water table will make more area available as Vayals, effectively adding some more area to the existing Vayals, thereby increasing the carrying capacity of the reserve for ungulates, elephants and in turn of tigers.

In this view, we find no substance in the contention that there will be adverse effect on environment.

Regarding the issue as to the safety of the dam on water level being raised to 142 ft. from the present level of 136 ft, the various reports have examined the safety angle in depth including the viewpoint of earthquake resistance. The apprehensions have been found to be baseless. In fact, the reports suggest an obstructionist attitude on the part of State of Kerala. The Expert Committee was comprised of independent officers. Seismic forces as per the provisions were taken into account and structural designs made accordingly while carrying out strengthening measures. The final report of the Committee, set up by Ministry of Water Resources, Government of India to study the water safety aspect of the dam and raising the water level has examined the matter in detail. The Chairman of the Committee was a Member (D&R) of Central Water Commission, two Chief Engineers of Central Water Commission, Director, dam safety, Government of Madhya Pradesh and retired Engineer-in-Chief, UP besides two representatives of Governments of Tamil Nadu and Kerala, were members of the Committee. All appended their signatures except the representative of the Kerala Government. The summary of results of stability analysis of Mullaperiyar Baby Dam contains note which shows that the permissible tensile strength was masonry as per the specifications mentioned therein based on test conducted by CSMRS, Delhi on the time and agreed by all Committee members including the Kerala representative in the meeting of the Committee held on 9-10th February, 2001. It also shows the various strengthening measures suggested by CWC having been completed by Tamil Nadu PWD on the dam including providing of RCC backing to the dam. The report also suggests that the parapet wall of the baby dam and main dam have been raised to 160 ft. (48.77 mt.) except for a 20 mt. stretch on the main dam due to denial of permission by the Government of Kerala. Some other works as stated therein were not allowed to be carried on by the State of Kerala. The report of CWC after inspection of main dam, the galleries, baby dam, earthen bund and spillway, concludes that the dam is safe and no excessive seepage is seen and that Mullaperiyar dam has been recently strengthened. There are no visible cracks that have occurred in the body of the dam and seepage measurements indicate no cracks in the upstream side of the dam. Our attention has also been drawn to various documents and drawings including cross-sections of the Periyar dam to demonstrate the strengthening measures. Further, it is pertinent to note that the dam immediately in line after Mullaperiyar dam is Idukki dam. It is the case of State of Kerala that despite the 'copious rain', the Idukki reservoir is not filled to its capacity, while the capacity of reservoir

is 70.500 TMC, it was filled only to the extent of 57.365 TMC. This also shows that assuming the worst happens, more than 11 TMC water would be taken by Idukki dam. The Deputy Director, Dam Safety, Monitoring Directorate, Central Water Commission, Ministry of Water Resources in affidavit of April 2004 has, inter alia, sated that during the recent earthquake mentioned by Kerala Government in its affidavit, no damage to the dam was reported by CWC officers who inspected the dam. The experts having reported about the safety of the dam and the Kerala Government having adopted an obstructionist approach, cannot now be permitted to take shelter under the plea that these are disputed questions of fact. There is no report to suggest that the safety of the dam would be jeopardized if the water level is raised for the present to 142 ft. The report is to the contrary.

Regarding raising the water level to 152 ft., the stage has still not reached. At present, that is not the prayer of the State of Tamil Nadu. In this regard, at this stage, the only prayer of the State of Tamil Nadu is that State of Kerala be directed not to obstruct it in carrying out strengthening measures, as suggested by CWC. We see no reason for the State of Kerala to cause any obstruction.

Under the aforesaid circumstances, we permit State of Tamil Nadu to carry out further strengthening measures as suggested by CWC and hope that State of Kerala would cooperate in the matter. The State of Kerala and its officers are restrained from causing any obstruction. After the strengthening work is complete to the satisfaction of the CWC, independent experts would examine the safety angle before the water level is permitted to be raised to 152 ft.

The writ petition and the connected matters are disposed of by permitting the water level of the Mullaperiyar dam being raised to 142 ft. and by permitting the further strengthening of the dam as aforesaid.

SUPERVISORY COMMITTEE ON MULLAPERIYAR DAM
MINUTES OF THE NINTH MEETING HELD ON 7TH JULY, 2016

The Ninth meeting of the Supervisory Committee on Mullaperiyar Dam was held on 7th July, 2016. The meeting was attended by all three members of the Committee, members of its Sub-Committee, and other officials of CWC, Tamil Nadu, and Kerala (list of participants given as Annexure-I).

2.0 The Committee visited the dam and appurtenant structures, and reviewed the preparations related to flood handling. The Committee was also briefed about two recent inspections (on 27th May & 1st July, 2016) carried out by the Sub-Committee, and about its overseeing of the smooth functioning of each and every spillway gate. The overall conditions at dam site were found to be satisfactory.

3.0 Agenda points for the Ninth Meeting were agreed by consensus during boat journey for the site visit, and subsequently the Meeting of the Committee was held in the office of Supervisory Committee at Kumli. *Minutes of the 8th Meeting, as circulated, were confirmed by the Committee.* The points taken up for discussion and the decisions thereupon are summarized as under:

3.1 Dam Instrumentation and Dam Performance Monitoring: The issue was carried forward from previous meetings, and after brief discussion the following was decided by consensus:

(a) *Revival or replacement of the non-functional embedded stress/ strain meters, thermometers, load cells etc may not be fruitful, and hence discussion on the same is terminated. The embedded instruments that are yet functional and reliable, if any, shall be catalogued by Tamil Nadu, and their list shall be placed before the Committee in its next meeting.*

(b) *Permanent survey points may be installed at the dam top, berms and downstream face for periodic geodetic survey – preferably coinciding with minimum and maximum reservoir levels each year. Existing survey points, if any, shall be retained, and the past survey data extracted and correlated with new data at such points. Needful actions shall be taken by Tamil Nadu, and status reported in the next Committee meeting.*

(c) *Installation of Seismic instrumentation for Mullaperiyar Dam shall be taken up by Tamil Nadu along with similar activity planned for their DRIP dams so as to benefit from collaboration envisaged with NGRI. As per the collaboration of DRIP agreed with three expert agencies (namely, IIT-Roorkee, CWPRS, & NGRI), the entrusted agency will facilitate finalization of instruments' specification, gather long-term data, and provide analysis of data for specific earthquake events. The installation activity is expected to be completed by Tamil Nadu in six months.*

(d) *The length of dam shall be marked in suitable sections for better understanding of dam body/ foundation seepage. In both the galleries sufficient V-notches shall be provided to measure section-wise seepage data. A toe drain with a V-notch at its terminal point shall also be constructed downstream of the earth dam for measurement of seepage, if any. Needful actions shall be taken by Tamil Nadu, and status reported in the next Committee meeting.*

(e) *The condition of pore pressure release holes in foundation gallery shall be inspected by the Sub-Committee and holes requiring reaming identified. Reaming of such foundation holes along with reaming of clogged formed drains, if any, shall be carried out by Tamil Nadu, and status reported in the next Committee meeting.*

(f) *Replacement of faulty pore pressure gauges along with installation of new ones shall be carried out so as to ensure gathering of adequate pore pressure data from foundation gallery. Existing pressure gauge points shall be continued – if needed, with new instruments – and their past data retained in the log book. Needful actions shall be taken by Tamil Nadu, and status reported in the next Committee meeting.*

- 3.2 Restoration of Electric Supply to Dam Site: The issue was carried forward from previous meetings. The status of activities by KSEB and follow-up actions with MOEF was informed by the Kerala officials; and the following was decided by consensus:
- (a) *Restoration of electric supply is crucial for safe operation of dam; Committee Member (Kerala) shall take up the matter at appropriate levels for expeditious action.*
- (b) *Representative of KSEB shall be present in the next meeting to apprise the Committee on the status of activity.*
- 3.3 Road Connectivity to Dam Site: The issue of poor condition of the only road connectivity to dam site was raised by Tamil Nadu with request for leveling of the numerous potholes. After brief discussion the following was decided by consensus:
- (a) *Kerala shall get the desired repair works done through its Forest Department, and the cost entailed in repair works shall be borne by Tamil Nadu.*
- (b) *During next meeting of the Committee, it may undertake inspection of the dam connecting road; representative of Forest Department shall be present.*
- 3.4 Inflow Forecasting System: Briefing the status on the issue carried forward from previous meetings, the officials of Kerala informed about their decision to establish an inflow forewarning system in the catchment of Mullaperiyar Dam

with data sharing facility at dam site. The proposed system entailing a network of telemetry/ GPRS based automatic rain gauges at suitable forest locations is expected to be commissioned within six months time. *The information was noted by the Committee.*

3.5 Reservoir Operation Plan/ Gate Operation Schedule: The issue was carried forward from previous meetings, and after brief discussion the following was decided by consensus:

(a) *Tamil Nadu shall prepare the (Draft) Reservoir Operation Plan as per standard procedure applicable for dams of similar storages. The Draft Plan shall be submitted to the Committee within two months time. The Draft Plan will be shared with Kerala for comments; and if required CWC will also be consulted for their expert opinion. The Reservoir Operation Plan will be approved by the Committee before coming into effect. In case of delay in approval, interim decisions will be taken by the Committee for ensuring safe operation of dam during current flood season.*

(b) *Reservoir Operation Plan to be approved by the Committee shall be an 'Exclusive Plan' for the operation of Mullaperiyar dam and not an 'Integrated Plan' for the operation of both Mullaperiyar and Vaigai dams. However, since the water of Mullaperiyar reservoir is diverted for use in Vaigai basin through the storage created at Vaigai dam, the reservoir level of Vaigai dam shall be factored in the Operation Plan of Mullaperiyar dam for ensuring minimal wastage/ spillage of water over Mullaperiyar dam.*

3.6 Downstream Channel Flow Studies for Extreme Dam Releases: Informing the Committee on recent works being done by CWC for assisting States in preparation of 'Emergency Action Plans' for DRIP dams, the Chairman suggested possibility of CWC taking up the 'Downstream Channel Flow Studies for Extreme Releases from Mullaperiyar Dam'. It was pointed out that for the time being a Level-1 study can be performed using the freely available low resolution DEM data, and later on Level-2 or Level-3 studies can also be undertaken with the availability of further refined data. The suggestion was welcomed by Kerala. *After brief discussion, it was decided by consensus to take up the proposed study through Central Project Management Unit (in CWC) of DRIP.*

3.7 Permission for Felling of Trees: The status on the issue carried forward from previous meeting was reviewed and it was agreed that both Kerala and Tamil Nadu will make further efforts for expediting the required clearances. *The issue of felling of some more trees from the 'heel' and 'toe' portions of earthen dam also came up for discussion; and it was decided that Tamil Nadu shall identify the number of such trees and seek permission for their felling separately.*

- 3.8 Facilitation of Visit to Dam Site for Kerala Officials: The issue of hindrances faced by Kerala officials in undertaking the dam site visit was raised by Kerala officials. After a brief discussion, the following was decided by consensus:
- (a) *Supervisory Committee will issue Identity/ Pass Cards for the select officials of Kerala, as agreed earlier, for ensuring their unhindered visit to dam site. Chairman of the Sub-Committee is authorized for issuing such Cards.*
 - (b) *The visiting officials shall carry and display the Cards issued by Supervisory Committee, and also sign the register maintained at dam site marking the date and time of their visit.*
- 3.9 Dam Strengthening Works: The issue was raised by Kerala with a request for sharing of details of future dam strengthening measures to be undertaken by Tamil Nadu. After brief discussion it was decided by consensus that details of dam strengthening works proposed to be undertaken shall be submitted by Tamil Nadu to the Committee.
- 4.0 The meeting concluded with a decision to hold next meeting in September, 2016.

Annex-1

SL No.	Name & Designation
1.	Dr BRK Pillai, Chief Engineer, DSO, CWC and Chairman, Supervisory Committee
2.	Shri V.J. Kurian, Addl. Chief Secy., Kerala and Member (Kerala), Supervisory Committee
3.	Shri S.K. Prabhakar, Principal Secy., PWD, T.N. and Member (T.N.), Supervisory Committee
4.	Shri Sameer Kumar Jha, Director, Dam Safety Monitoring Dte., CWC
5.	Shri R. Subramanian, Chairman, CTC, Tamil Nadu
6.	Shri V K Mahanudevan, Chief Engineer, Irrigation Dept., Kerala
7.	Shri V. Balasubraman, Chief Engineer, WRD, PWD, TN
8.	Shri James Wilson, Member, Mullaperiyar Special cell, Kerala
9.	Shri U.H. Girrish, EE, SWRD, CWC & Chairman, Sub Committee
10.	Shri R. Mathavan, EE, PWD, WRD, T.N. & member, Sub Committee
11.	Shri George Daniel, EE, MID, Idukki, Kerala & Member, Sub- Committee
12.	Shri J Sam Erwin, AEE, PWD, T.N. and Member, Sub Committee
13.	Shri N.S. Praseed, AE, Kerala & Member, Sub Committee
14.	Other invited officials from T.N. and Kerala



सत्यमेव जयते

भारतसरकार

Government of India

केन्द्रीयजलआयोग

Central Water Commission

बांधसुरक्षाप्रबोधननिदेशालय

Dam Safety Monitoring Directorate

आठवाँ तल, सेवाभवन, रामाकृष्णापुरम्, नईदिल्ली

8th Floor (N), Sewa Bhawan, R.K. Puram, New Delhi-110066

Telefax No. 29583703; Email: dsmdte-cwc@nic.in



No. 2/18/SC/DSM/2016/1328-1334

Dated: 05th December, 2017

To,

1. Ms Tinku Biswal,
Secretary to Government,
Water Resources Department
State Government of Kerala
Thiruvananthapuram-695001
(Kerala)

2. Thiru S.K. Prabhakar,
Principal Secretary to Government,
State Government of Tamil Nadu,
Public Works Department,
Chennai-600009
(Tamil Nadu)

Subject: Minutes of the 10th meeting of the Supervisory Committee held on 14th
November, 2017

Sir/Madam,

Please find enclosed a copy of the minutes of 10th meeting of the Supervisory Committee on Mulla Periyar Dam held on 14th November, 2017 at Kumily (Kerala). This is for your kind information and necessary action please.

Yours faithfully,

Encl: As above

e/c

(Gulshan Raj)

Chief Engineer (DSO), CWC

& Chairman ex-Officio of Supervisory Committee
Mulla Periyar Dam

Copy for kind information to:

1. The Joint Secretary (RD&PP.), Ministry of Water Resources, River Development & Ganga Rejuvenation, Shram Shakti Bhawan, New Delhi.
2. PPS to Chairman, CWC, New Delhi.
3. Shri V. Rajesh, Executive Engineer, South Western Rivers Division, Central Water Commission, "Jaladhara", D.No.27/1927-A, Kochu Kadavanthara (PO), Kochi-682020 (Kerala), Mobile No.09496437435 as Chairman of the Sub-committee.

4. Shri George Daniel, Executive Engineer, M.I. Division Idukki, Kattappana, Mobile No. 09447745112, Kerala, E-mail: georgedaniel1962@gmail.com
5. Shri James Wilson, Assistant Executive Engineer, ISW Advisory Committee, Government of Kerala, Mobile No.09446101554, E-mail: jamewils@gmail.com

o/c

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Wxmsj
04/12

Chief Engineer (DSO), CWC
& Chairman ex-Officio of Supervisory Committee
Mulla Periyar Dam

SUPERVISORY COMMITTEE ON MULLAPERIYAR DAM
INSPECTION REPORT AND MINUTES OF THE TENTH MEETING
HELD ON 14TH NOV., 2017

The tenth meeting of the Supervisory Committee on Mullaperiyar Dam was held at 4.00 pm on 14th Nov., 2017 in the office of the Supervisory Committee at Kumily, Kerala preceded by thorough inspection of the main dam and its appurtenant structures by the committee.

During the dam inspection the overall conditions at the dam site were found to be satisfactory as the Project officials did not report any change in existing condition of the dam and its appurtenant structures, since the last meeting, to the Committee members. The reservoir level was reported as 122.90 ft. against the permitted level of 142 ft. The successful operation of one of the Radial gates under dry condition was also witnessed by the Committee members as water level was below the crest. Apart from the main dam the Committee members also visited Baby Dam, Earthen embankment and the dam gallery to see and inspect the overall condition of Mullaperiyar Dam complex.

2.0 At the outset, the Chairman extended a warm welcome to other two members of the Supervisory Committee and the officers of the Central Water Commission, Govt. of India, officers of state of Kerala and Tamil Nadu. List of participants in the meeting is enclosed at **Annexure-I**. The committee was briefed about the recent inspection (25th inspection) carried out by the sub-committee on Mullaperiyar on 11/10/2017.

3.0 In absence of any specific agenda for the meeting, it was agreed by the committee to discuss the progress made on the issues as discussed during the last meeting (9th) of the Supervisory Committee held on 7th July, 2016 at Kumily and also any specific issue that may be raised by the Members and agreed by the Chairman of the Committee. Members of both the states had some objections on the Minutes of the 9th meeting, as circulated, but Chairman suggested that the Minutes will be considered as confirmed by the Committee with the objections raised by the states of Kerala and Tamil Nadu appended with it and hence making a part of the Minutes, to which all the members agreed. Hence, Minutes of the 9th meeting along with the objections communicated by Kerala and Tamil Nadu vide their letter nos. 16360/ISWC1/14/WRD, Dated: 06/09/2016 (**Annexure-II**) and 15845/ISW.1/2014-30, Dated: 09/08/2016 (**Annexure-III**) respectively as appended with it, were confirmed by the Committee. Further, the points taken up for the discussion and the decisions thereupon are summarized as under:

3.1 Preparation of Agenda for the Meeting: The Committee accepted the suggestion of the Chairman that, henceforth, the agenda points should be prepared and circulated to all the members of the committee well before the meeting. The discussions

the Supervisory Committee meetings will be strictly as per the agenda items as circulated. The agenda points for the meeting shall be prepared by both the states well in advance before the meeting.

3.2 Frequency of Inspection by Supervisory Sub-Committee: All the members of the committee were of the view and hence agreed that the Supervisory Sub-Committee on Mullaperiyar should meet more frequently, may be once in a month, either at Kumily or may be in the office of the chairman of the Sub-committee in Kochi. Further whenever there is meeting of the Sub-committee at Kumily it should, preferably, be preceded by visit to the dam site for its inspection. However, the meeting of the subcommittee just before the visit of Supervisory Committee should invariably be preceded by inspection visit to the dam.

3.3 Instrumentation of the dam and monitoring its performance:

- a) Chairman of the Committee enquired from the representatives of the Tamil Nadu about the cataloguing of the instruments that are yet functional and reliable, as decided in the 9th meeting of the Supervisory Committee. It was informed by the officials of Tamil Nadu that its preparation is under progress. It was decided by the Committee that Tamil Nadu will prepare and submit the catalogue within 3 months to which representative of Tamil Nadu agreed. Representative of Kerala wanted to know the standard instrumentation practices in dams for which Chairman asked them to approach Central Water Commission officially, to which they agreed.
- b) Representatives of Tamil Nadu agreed for expediting the process of seismic instrumentation of the dam specially installing two strong motion accelerographs. The specification for the same shall be in line with latest BIS. The progress of the same will be discussed in the next meeting of the Supervisory Committee.
- c) Regarding status of establishment of permanent survey points on dam top, berms and downstream face for periodic geodetic survey, it was informed by the representatives of Tamil Nadu that 14 points have already been established on the main dam to measure dam deflection and the deflection values are observed periodically. Committee directed Tamil Nadu to expedite the process and complete the task within next 3 months.
- d) Representatives of Tamil Nadu informed that the work of marking the length of the dam in suitable sections and reaming of the pore pressure release holes, wherever required, has been completed.
- e) Tamil Nadu will inform the committee in due course about the possibility of joint observation of the instrumentation data. In any case, decision of the Tamil Nadu, on the same, is to be informed to the Committee before the next meeting of the Committee.

3.4 Restoration of Electric supply to the dam site: Chairman of the committee was informed that the electrical power requirement for operation of the Dam gates / stop logs is met only through the diesel generator installed. The chairman felt very apprehensive about the operation of Dam Radial gates and their stop logs in case of emergency, more particularly during Monsoon period in absence of regular power supply to the dam for the operation of gates. The situation may further aggravate in view of bad condition of approach road to the dam. It will also affect the operation and performance of instruments being/ to be installed which may further jeopardise the safety monitoring of the dam. The official from Kerala explained about the steps being taken by them for laying the underground cable for regular power supply. It was brought to the notice of Committee various constraints being faced by them while dealing with the state Forest and Environment department to get the necessary permissions and clearances. Representatives of Tamil Nadu informed the Committee that Govt. of Tamil Nadu has already paid Rs. 1.65 Crore to the State of Kerala for restoration of the electricity to the dam. The representatives of the Kerala informed the Committee that now as the Govt. of Tamil Nadu has gone to the court; the matter has become sub-judice. Representatives of the Kerala were asked to approach the concerned authorities of State forest and environment department and get the issue solved at the earliest. However, the chairman emphasized on the need of regular power supply for the operation of gates and other instruments under all circumstances.

3.5 Road connectivity to the dam site: The access to the Dam site for the Committee was made available through boat from Kumily through the reservoir. The issue of poor road connectivity to the dam site was again raised by the Tamil Nadu. Representatives of Kerala apprised the Committee that the Forest department does not allow construction of Pucca road and they even have objection in levelling and filling of the numerous potholes in the existing Kutcha road. Chairman was of the view that proper road connectivity and hence faster access to the dam site through a Pucca road is very essential and it should be given top priority by the Kerala Govt. They should take necessary measures to ensure it. The Committee agreed unanimously to take at least one side journey to the dam site via road only.

3.6 Inflow forecasting system: Representatives from Kerala informed that the installation of inflow forecast system in the catchment of the Mullaperiyar dam is in process. It was agreed by the committee that it should be satellite based Telemetry system to avoid any network connectivity related issue. Representatives of Kerala agreed for taking necessary licenses at the earliest so that the system could be installed and made functional. The data from such system may be occasionally got vetted by the IMD also. Kerala will prepare a time frame and the progress of installation of such system will be discussed in the next meeting of the Supervisory Committee and Kerala will present a status note on the same in the meeting.

3.7 **Gate Operation Schedule/ Reservoir operation Plan:** On preparation of gate operation schedule, Tamil Nadu officials informed that they are waiting for inflow forecast system to get installed by Kerala and on the basis of the data from such system they will prepare the Gate Operation Schedule. However, it was decided by the committee that Tamil Nadu should prepare the gate operation schedule on the basis of anticipated flows for different scenarios taking into account the historical data. Officials from Tamil Nadu agreed to prepare the same. It was agreed that Tamil Nadu will prepare and present the Reservoir Operation Plan also in the next Supervisory Committee meeting.

3.8 **Downstream Channel Flow Studies for Extreme Dam Releases:** Chairman informed the committee that he will take up this issue with concerned unit in CWC as agreed in the 9th meeting of the Supervisory Committee.

3.9 **Permission for Felling of the Trees:** Officials from Kerala apprised the Committee that as now the Tamil Nadu has gone to the court the matter has become subjudice and the decision of the Honourable court is awaited.

4.0 **Facilitation of Visit to Dam Site for Kerala Officials:** The committee was informed by officials from both the states that matter stands resolved and now they have no issue in this regard.

4.1 **Dam Strengthening Works:** It was decided that Tamil Nadu will submit the balance strengthening works still to be taken up by them along with the works carried out till date. The same will be submitted to the Supervisory Committee in its next meeting.

4.2 The meeting concluded with a decision to hold next meeting in April, 2018.

Annexure-I**List of participants of the 10th Supervisory Committee meeting held on 14.11.2017 at Kumily, on Mullaperiyar Dam****Members Present**

1. Shri. Gulshan Raj, Chief Engineer, DSO, CWC - Chairperson
2. Ms. Tinku Biswal, Secretary to State Govt. of Kerala, Water Resources Department, Kerala
3. Shri. S.K. Prabakar, Principal Secretary to Govt., PWD, Govt. of Tamil Nadu

Other Special Invitees

1. Samir Kumar Shukla, Director, DSM Dte, CWC
2. Shri. R. Subramanian, Chairman, Cauvery Technical Cell and Inter-State Waters Wing, Govt of Tamil Nadu.
3. Shri. Joshy.K.A, Chief Engineer (ISW), Kerala
4. Shri R.Selvaraj, Chief Engineer, PWD,WRD, Madurai Region
5. Shri. Thiru. M. Selvaraju, Member Cauvery Technical Cell, Tamilnadu
6. Shri. V.Rajesh, EE, CWC, South Western Rivers Division, Kochi
7. Shri. K.George Daniel, EE, MI Division, Idukki, Kerala
8. Shri. James Wilson, AEE, ISW Advisory Committee, Govt of Kerala

By speed post.



GOVERNMENT OF KERALA



No. 16360/ISWC1/14/WRD

Water Resources (ISWC) Department
Thiruvananthapuram, Dated:06.09.2016

From

The Additional Chief Secretary

To

Dr. B. R. K. Pillai,
Chief Engineer (DSO) & Chairman,
Supervisory Committee on Mullaperiyar,
8th Floor (N), Sewa Bhavan, RK Puram,
New Delhi - 110 066.

Sir,

Sub:- Water Resources Department - Minutes of the 9th meeting
of the Supervisory Committee held on 07.07.2016 - Reg.Ref:- Letter No 2/18/SC/DSM/2016/1053-62 dated 22.07.2016
from the Director (DSM), Central Water Commission.

I am directed to invite attention to the reference cited and to request you to modify the minutes of the 9th meeting of Supervisory Committee meeting held on 07.07.2016 incorporating the following modifications.

Paragraph (as in the minutes of the 9 th meeting of SC)	Modification Suggested by State of Kerala
Para3.1(c) Installation of Seismic instrumentation for Mullaperiyar Dam shall be taken up by Tamil Nadu along with similar activity planned for their DRIP dams so as to benefit from collaboration envisaged with NGRI. As per the collaboration of DRIP agreed with three expert agencies (namely, IIT-Roorkee, CWPRS & NGRI), the entrusted agency will facilitate finalization of instruments' specification,	The following sentence shall be added in the beginning of the paragraph. Kerala side demanded that two strong motion accelerographs - one in gallery and other in the top of the dam - shall be installed immediately as decided in the last meeting.

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No. 1333

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gather long-term data, and provide analysis of data for specific earthquake events. The installation activity is expected to be completed by Tamil Nadu in six months.

Para 3.3 The issue of poor condition of the only road connectivity to dam site was raised by Tamil Nadu with request for leveling of the numerous potholes. After brief discussion the following was decided by consensus.

a) ~~Kerala shall get the desired~~ repair works done through its Forest Department, and the cost entailed in repair works shall be borne by Tamil Nadu.

b) During next meeting of the Committee, it may undertake inspection of the dam connecting road; representative of Forest Department shall be present.

The following sentence shall be added after the first sentence.

Kerala side responded that at present, Tamil Nadu is transporting the materials required for the maintenance work through this road. Tamil Nadu's demand for making this road as a pucca road was rejected by the Hon'ble Supreme Court recently. Kerala side is of the strong opinion that this road is in motorable condition and as such serving the purpose.

The Para3.3(a) shall be modified as follows

Para 3.3 (a) - Kerala side informed that the road from Vallakadavu to Mullaperiyar dam site is passing through the Periyar Wild Life Sanctuary, which is governed by stringent regulations of Forest (Conservation) Act and Wild Life (protection Act). If the suggested repair works is not against the above regulations and does not need statutory permissions from the MoEFCC and Supreme Court, Kerala side informed that the desired works can be done through the Forest Department at the cost of Tamil Ndau Government.

Para 3.5 The issue was carried forward from previous meetings, and after brief discussion the following was decided by consensus:

a) Tamil Nadu shall prepare the (Draft) Reservoir Operation Plan as per standard procedure applicable for dams of similar storages. The Draft Plan shall

Para 3.5(b) shall be modified removing the words "an Exclusive plan" and "However" from first and second sentences.

Add an additional point (c) at the end of point (a) & (b) in Para 3.5
(c) Kerala side demanded that the reservoir operation schedule must have

<p>be submitted to the committee within two months time. The Draft Plan will be shared with Kerala for comments; and if required CWC will also be consulted for their expert opinion. The Reservoir Operation Plan will be approved by the Committee before coming into effect. In case of delay in approval, interim decisions will be taken by the Committee for ensuring safe operation of dam during current flood season.</p>	<p>provisions to negotiate moderate floods happening in the reservoir considering the historical hydrology data – such that the releases from the spillway shall not create sudden flooding in the downstream areas.</p>
<p>b) Reservoir Operation Plan to be approved by the Committee shall be an 'Exclusive Plan' for the operation of Mullaperiyar dam and not an 'Integrated Plan' for the operation of both Mullaperiyar and Vaigai dams. However, since the water of Mullaperiyar reservoir is diverted for use in Vaigai basin through the storage created at Vaigai dam, the reservoir level of Vaigai dam shall be factored in the Operation Plan of Mullaperiyar Dam for ensuring minimal wastage/spillage of water over Mullaperiyar dam.</p>	
<p>Para 3.6 Informing the Committee on recent works being done by CWC for assisting States in preparation of 'Emergency Action Plans' for DRIP dams, the Chairman suggested possibility of CWC taking up the 'Downstream channel Flow Studies for Extreme releases for Mullaperiyar Dam'. It was pointed out that for the time being a Level-1 study can be performed using the freely available low resolution DEM data, and later on Level-2 or Level-3 studies can also be undertaken with the availability of further refined data. The suggestion was welcomed by Kerala. After brief discussion, it was decided by consensus to take up the proposed study through Central Project management Union (in CWC) of DRIP.</p>	<p>Last sentence in the paragraph may be removed.</p>

Para 3.8 The issue of hindrances faced by Kerala officials in undertaking the dam site visit was raised by Kerala officials. After a brief discussion, the following was decided by consensus:

a) Supervisory Committee will issue Identity/Pass Cards for the select officials of Kerala, as agreed earlier, for ensuring their unhindered visit to dam site. Chairman of the Sub-Committee is authorised for issuing such Cards.

b) The visiting officials shall carry and display the Cards issued by Supervisory Committee, and also sign the register maintained at dam site marking the date and time of their visit.

Para 3.8 shall be slightly modified as

The Chairman directed TamilNadu to install CCTV Cameras in the dam premises. The issue of hindrances faced by Kerala officials in undertaking the dam site visit was raised by Kerala officials. After a brief discussion, the following was decided by consensus;

a) Supervisory Committee will issue Identity Cards for the select officials of Kerala as suggested by the Kerala Member, for ensuring their unhindered visit to dam site.

b) The visiting officials shall carry and display the Cards issued by Supervisory Committee, and also sign the register maintained at dam site marking the date and time of their visit.

I request that the above suggestions may be incorporated and the minutes may be modified accordingly.

Yours faithfully,



B. SURENDRAN PILLAI,

Joint Secretary,

For Additional Chief Secretary to Government.



Annexure - III

Most Immediate
By e-mail/By FaxPublic Works Department
Secretariat, Chennai - 9.Letter No. 15845/ISW.1/2014-30 Dated: 9.8.2016

From

Thiru S.K. Prabakaran, I.A.S.,
Principal Secretary to Government.

To

✓ Dr. B.R.K. Pillai,
Chief Engineer (DSO) and
Chairman, Supervisory Committee on Mullai Periyar Dam,
Government of India,
Central Water Commission, Dam Safety
Monitoring Directorate,
8th Floor (N), Sewa Bhavan,
R.K.Puram, New Delhi - 110 066.

Sir,

Dr. S.M. An / Sec. निदे. / Dte
डा.सं.ओ. No. 1116
दिनांक/Dt. 18/8/16Sub: Mullai Periyar Dam - Minutes of the 9th meeting of the
Supervisory Committee held on 7.7.2016 - Comments /
Modifications to the minutes.

Ref: Your Ref.No.2/18/SC/DSM/2016/1053-62, Dt:22.7.2016.

I am directed to refer to the minutes of the 9th meeting of the Supervisory Committee on Mullai Periyar Dam held on 7.7.2016 at Kumily and to send the comments as well as for modification to the minutes of that meeting as shown in the Annexure to this letter for immediate action.

Yours faithfully,


for Principal Secretary to Government20
10/8/16

May kindly see.

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CE (DSO)

M
11/8

AD

Dr. S.M. An / Sec. निदे. / Dte
डा.सं.ओ. No. 1116
दिनांक/Dt. 18/8/16

		this regard, and share the data with Tamil Nadu, on real time basis.
3.	<p>3.5 Reservoir Operation Plan/ Gate Operation Schedule:</p> <p>The issue was carried forward from previous meetings, and after brief discussion the following was decided by consensus:</p>	<p>The decision was not by consensus. Hence, the minutes (under item 3.5) may be deleted.</p> <p>It is informed that the operational Rules for Mullai Periyar Dam has already been given by the Government of Tamil Nadu to the Supervisory Committee and discussed earlier and during the 7th meeting of the Supervisory Committee held on 22.6.2015 under item No.5 titled</p>
	<p>(a) <i>Tamil Nadu shall prepare the (Draft) Reservoir Operation Plan as per standard procedure applicable for dams of similar storages. The Draft Plan shall be submitted to the Committee within two months time. The Draft Plan will be shared with Kerala for comments; and if required CWC will also be consulted for their expert opinion. The Reservoir Operation Plan will be approved by the Committee before coming into effect. In case of delay in approval, interim decisions will be taken by the Committee for ensuring safe operation of dam during current flood season.</i></p> <p>(b) <i>Reservoir Operation Plan to be approved by the Committee shall be an 'Exclusive Plan' for the operation of Mullaperiyar dam and not an 'Integrated Plan' for the operation of both Mullaperiyar and Vaigai dams. However, since the water of Mullaperiyar</i></p>	<p>"Integrated Operation of Vaigai and Mullaperiyar and Spillway Operation Rules:" it has been discussed and concluded as follows:-</p> <p>It was already decided during the previous meeting that they fall under the State's domain and Tamil Nadu has also assured that there will not be sudden release of water and adequate warnings would be issued as per the approved rules of regulations of Periyar Reservoir, vide, Government Order approved in 1939 for keeping the FRL at 152 ft. and added that the same rules for keeping the FRL of +142 ft. would be followed. It was also emphasized that this issue was already discussed in the last meeting and minuted and hence it should not be allowed to be raised again.</p> <p style="text-align: center;">xxx xxx</p> <p>Further as stated supra, the Integrated Operation of these two Reservoirs (Mullai Periyar Dam and Vaigai) and operation of the spillway gates falls entirely under the domain of the State of Tamil Nadu. However, it will follow the guidelines of the CWC in such issues. It was also recorded in the minutes of the previous meeting that the approval of the operation rules is not mandatory by the CWC. Chairman, emphasized that it is purely a matter of technical advise exhorting Tamil Nadu to prepare a comprehensive schedule for operation of spillway gates and for integrated operation of the reservoirs.</p> <p>It is informed that CWC has requested the Government of Tamil Nadu to modify the operation Rules as per the inflow forecast, which may take some time, as the rainfall forecast is not available</p>

-1-

ANNEXURE TO GOVERNMENT LETTER NO.15845/ISW.1/2014- 30 Dated:9.8.2016

Sl.No.	Minutes of the meeting	Tamil Nadu's comments
1.	<p>3.3 Road Connectivity to Dam Site:</p> <p>The issue of poor condition of the only road connectivity to dam site was raised by Tamil Nadu with request for leveling of the numerous potholes. After brief discussion the following was decided by consensus:</p> <p>(a) Kerala shall get the desired repair works done through its Forest Department, and the cost entailed in repair works shall be borne by Tamil Nadu.</p> <p>(b) During next meeting of the Committee, it may undertake inspection of the dam connecting road; representative of Forest Department shall be present.</p>	<p>Since the Supervisory Committee has proposed to inspect the Vallakadavu – Mullai Periyar Dam road during its next visit, the minutes of the meeting may be deferred for the present.</p>
2.	<p>3.4. Inflow Forecasting System:</p> <p>Briefing the status on the issue carried forward from previous meetings, the officials of Kerala informed about their decision to establish an inflow forewarning system in the catchment of Mullaperiyar Dam with data sharing facility at dam site. The proposed system entailing a network of telemetry/GPRS based automatic rain gauges at suitable forest locations is expected to be commissioned within six months time. The information was noted by the Committee.</p>	<p>The Central Water Commission in its letter No.2/16/Mulla Periyar/DSM/2016/925 dated 15.6.2016 has stated that inflow Forecast of Mullai Periyar Dam based on District wise rainfall Forecast will not work. Mullai Periyar catchment specific Quantitative Precipitation Forecast observed at short interval (hourly or below) need to be used for the inflow Forecast to the Mullai Periyar Reservoir. For this purpose, 2 – 3 Telemetry based SRRG Stations need to be installed at suitable locations in the catchment area which is a Reserved Forest and Periyar Tiger area in Kerala. In case the Project authorities are not in a position to install the requisite rain gauge stations, Central Agencies like IMD / CWC may be requested to provide technical guidance.</p> <p>The Chairman, Supervisory Committee may instruct the Government of Kerala to associate IMD/CWC for providing technical guidance in</p>

- 3 -

	<p>use in Vaigai basin through the storage created at Vaigai dam, the reservoir level of Vaigai dam shall be factored in the Operation Plan of Mullaperiyar dam for ensuring minimal wastage/ spillage of water over Mullaperiyar dam.</p>	<p>for Mullaj Periyar Dam. (Please refer to comments of Government of Tamil Nadu under item 3.4). Till such time, the operation of the spillway gates are to be relied on the rate of inflow. This is brought to the notice of the Committee / CWC for their information.</p>
4.	<p>3.6 Downstream Channel Flow Studies for Extreme Dam Releases:</p> <p>Informing the Committee on recent works being done by CWC for assisting States in preparation of 'Emergency Action Plans' for DRIP dams, the Chairman suggested possibility of CWC taking up the 'Downstream Channel Flow Studies for Extreme Releases from Mullaperiyar Dam'. It was pointed out that for the time being a Level-1 study can be performed using the freely available low resolution DEM data, and later on Level-2 or Level-3 studies can also be undertaken with the availability of further refined data. The suggestion was welcomed by Kerala. After brief discussion, it was decided by consensus to take up the proposed study through Central Project Management Unit (in CWC) of DRIP.</p>	<p>The Government of Tamil Nadu requests that a copy of the study report may be furnished and also requests to inform the progress of the studies conducted in this matter periodically.</p>
5.	<p>3.8 Facilitation of Visit to Dam Site for Kerala Officials:</p> <p>The issue of hindrances faced by Kerala officials in undertaking the dam site visit was raised by Kerala officials. After a brief discussion, the following was decided by consensus:</p>	<p>There was no consensus in the meeting. Hence, the minutes may be deleted.</p>

	<p>(a) Supervisory Committee will issue Identity/ Pass Cards for the select officials of Kerala, as agreed earlier, for ensuring their unhindered visit to dam site. Chairman of the Sub-Committee is authorized for issuing such Cards.</p>	
	<p>(b) The visiting officials shall carry and display the Cards issued by Supervisory Committee, and also sign the register maintained at dam site marking the date and time of their visit.</p>	
6.	<p>3.9 Dam Strengthening Works:</p> <p>The issue was raised by Kerala with a request for sharing of details of future dam strengthening measures to be undertaken by Tamil Nadu. After brief discussion it was decided by consensus that details of dam strengthening works proposed to be undertaken shall be submitted by Tamil Nadu to the Committee.</p>	<p>There was no consensus in the meeting.</p>

S.K. PRABAKAR
PRINCIPAL SECRETARY TO GOVERNMENT

/ True Copy /

S. Prabhakar 10/10/16
SECTION OFFICER



भारतसरकार

Government of India

केन्द्रीयजलआयोग

Central Water Commission

बांधसुरक्षाप्रबोधननिदेशालय

Dam Safety Monitoring Directorate

आठवाँ तल, सेवाभवन, रामाकृष्णापुरम, नईदिल्ली

8th Floor (N), Sewa Bhawan, R.K. Puram, New Delhi-110066

Telefax No. 29583703; Email: dsmdte-cwc@nic.in

No. 2/18/SC/DSM/2016/ 697-703

Dated: 20th August, 2018

To

1. Ms Tinku Biswal,
Secretary to Government,
Water Resources Department
State Government of Kerala
Thiruvananthapuram-695001
(Kerala)

2. Thiru S.K. Prabhakar,
Principal Secretary to Government,
State Government of Tamil Nadu,
Public Works Department,
Chennai-600009
(Tamil Nadu)

Subject: Minutes of the 11th meeting of the Supervisory Committee held on 4th
August, 2018

Sir/Madam,

Please find enclosed a copy of the minutes of 11th meeting of the Supervisory Committee on Mulla Periyar Dam held on 4th August, 201 at Kumily (Kerala). This is for your kind information and necessary action please.

Yours faithfully,

Encl: As above

(Gulshan Raj)

Chief Engineer (DSO), CWC
& Chairman ex-Officio of Supervisory Committee
Mulla Periyar Dam

Copy for kind information to:

1. The Joint Secretary (RD&PP.), Ministry of Water Resources, River Development & Ganga Rejuvenation, Shram Shakti Bhawan, New Delhi.
2. PPS to Chairman, CWC, New Delhi.
3. Shri V. Rajesh, Executive Engineer, South Western Rivers Division, Central Water commission, "Jaladhara", D.No.27/1927-A, Kochu Kadavanthara (PO), Kochi-682020 (Kerala), Mobile No.09496437435 as Chairman of the Sub-committee.

Minutes of 11th meeting of Supervisory Committee on Mullaperiyar Dam held on 4th August, 2018

The 11th meeting of the Supervisory Committee on Mullaperiyar Dam was held at 1500 Hrs on 4th Aug, 2018 in the office of the Supervisory Committee at Kumily, Kerala preceded by inspection of the dam comprising of main dam, earthen embankment and baby dam and its appurtenant structures like galleries, hydro-mechanical works etc by the committee members and others. The overall condition of dam and its appurtenant structures is found satisfactory by the committee members.

At the outset, the Chairman extended a warm welcome to the members of the Supervisory Committee and others officers of the Central Water Commission, Govt. of India, officers of state of Kerala and Tamil Nadu. The Chairman expressed concerns with the committee members and project officials from both the states about stalemate situation on the issues concerning the safety of the dam. He expressed that these issues are continuously being discussed in the previous meetings of the committee. He further requested the members to take up the matter with concerned officials in their respective states to accomplish and conclude these issues. This would enhance the safety of the dams and people living in the downstream as per mandate of the committee. List of participants in the meeting is enclosed at **Annexure-I**.

Subsequently, agenda issues as being carried from previous meetings were taken up one by one for the discussion and the decisions thereupon are summarized as under. Minutes of the 10th meeting circulated vide letter No. 2/18/SC/DSM/2016/1328 – 1334 dated: 4th December, 2017 to the members and were confirmed by the Committee.

11.1 Frequency of Inspection by Supervisory Sub-Committee:

The Chairman of the Sub-Committee apprised the members of Supervisory Committee about the working of Sub-Committee which included holding of Sub-Committee's meetings, joint inspection of the dam along with officials of both the states and monitoring of reservoir level, water quality samples, seepage discharge and instrumentation etc. The Chairman and members of Supervisory Committee took the note of the appraisal by the chairman of Sub-Committee.

11.2 Instrumentation of the dam and monitoring its performance:

As decided in 10th Meeting of the Committee, member from Tamil Nadu apprised the committee that cataloguing of dam instruments has been completed by dam officials. The proposal of Rs 1.0 Crore for purchasing new instruments including accelerograph and seismic instruments is in the process of approval in the State Govt. The project officials agreed to share the catalogue of instruments.

On the issue of joint observation of instrumentation data, both the members of the committee requested Chairman to analyse reading of the instruments as taken during inspection by Sub- Committee members. The chairman proposed that the instruments reading may be forwarded to Instrumentation Dte of CWC for analysis purpose.

11.3. Restoration of Electric supply to the dam site:

Since, the dam has no regular electricity supply to operate the dam gates, a diesel generator exists instead for the purpose. Tamil Nadu has already made the payment for laying of electrical cable for electric power supply to KSEB in 2015. However, the electricity supply could not be provided. In this regard Tamil Nadu went to court and the matter is sub-judice. Chairman again requested members to get the issue solved amicably at the earliest. The member from Kerala assured the committee that she will again request the Kerala Forest Dept. for necessary clearance for laying the electric cables through the forest area. Chairman suggested to install an additional DG set at dam site to operate the dam gates till the regular electricity supply is provided..

11.4 Road connectivity to the dam site:

Before the meeting of the committee, Chairman requested Tamil Nadu to provide necessary transportation arrangement to reach the Dam by available Kutcha road, which was arranged. It has been noticed that the dam can be approached by existing road but vehicle carrying construction material load can not reach the dam site through it.

After seeing the condition of available forest road, the Chairman was of the view that road connectivity needs to be improved. Accordingly, Kerala member was advised to approach again their forest deptt to facilitate Tamil Nadu necessary road construction clearance. In this regard member from Kerala informed that the road can be repaired and permission can be granted for carrying out dam repairs in emergent condition. Chairman was of the view that to meet any emergent condition adequate stock of construction material i.e. cement & steel can be stocked at dam site by boats. Project officials from Tamil Nadu agreed with it but cited difficulty in transporting heavier equipment like concrete mixer etc by boat.

11.5 Inflow forecasting system:

Member from Kerala informed that the tender for installation of inflow forecast system in the catchment of the Mullaperiyar dam is in process and inflow forecasting system will be operational by February 2019. Representative from Tamil Nadu informed the committee that the inflow forecasting in catchment area of dam will be discussed with Chairman in coming weeks.

W. S. Srinivas

11.6 Gate Operation Schedule/ Reservoir operation Plan:

On preparation of gate operation schedule, Tamil Nadu officials informed that they have prepared draft gate operation schedule and reservoir operation plan on the basis of anticipated flows for different scenarios taking into account the historical data as decided in last meeting. The Chairman requested them to share draft with DSO, CWC for vetting.

11.7 Downstream Channel Flow Studies for Extreme Dam Releases:

All the requisite information available in DSO, CWC in regard to downstream channel flow studies and inundation maps of the MPD has been shared with state of Kerala and Tamil Nadu.

11.8 Permission for Felling of the Trees:

Since, the matter is subjudice and Chairman advised member from Kerala to approach again Forest deptt. for necessary permission for cutting the trees on earthen embankment dam. He again said if any help is required from CWC side, a meeting can be arranged in New Delhi between officials of MoEF and Climate Change, Govt of India.

11.9 Dam Strengthening Works:

Tamil Nadu Informed that the baby dam strengthening proposal was put up to Kerala authority way back in 2012 for approval. On the request of Member from Kerala, Tamil Nadu was requested to re submit the same again.

The meeting ended with thanks to all concerned present in the meeting.

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Minutes of 12th meeting of Supervisory Committee on Mullaperiyar Dam held on 4th June, 2019

The 12th meeting of the Supervisory Committee on Mullaperiyar Dam was held at 1500 Hrs on 4th Jun, 2019 in the office of the Supervisory Committee at Kumily, Kerala preceded by inspection of the dam comprising of main dam, earthen embankment and baby dam and its appurtenant structures like galleries, hydro-mechanical works etc by the committee members and others. The overall condition of dam and its appurtenant structures is found satisfactory by the committee members.

At the outset, the Chairman extended a warm welcome to the members of the Supervisory Committee and others officers of the Central Water Commission, Govt. of India, officers of state of Kerala and Tamil Nadu. The Chairman expressed concerns with the committee members and project officials from both the states about stalemate situation on the issues concerning the safety of the dam. He expressed that these issues are continuously being discussed in the previous meetings of the committee. The Chairman further added the need of a member secretary in the composition of the Supervisory Committee on Mulla Periyar Dam for coordinating the various activities of the committee. List of participants in the meeting is enclosed at **Annexure-I**.

Subsequently, agenda issues as being carried from previous meetings were taken up one by one for the discussion and the decisions thereupon are summarized as under. Minutes of the 11th meeting circulated vide letter No.2/18/SC/DSM/2016/697-703 dated 20 Aug 2018 to the members and were confirmed by the Committee.

12.1 Frequency of Inspection by Supervisory Sub-Committee:

The Chairman of the Sub-Committee apprised the members of Supervisory Committee about the Sub-Committee's meetings, joint inspection of the dam along with officials of both the states and monitoring of reservoir level, water quality samples, seepage discharge and instrumentation etc. The Chairman and members of Supervisory Committee took the note of the appraisal by the chairman of Sub-Committee. It was requested by Govt of Kerala that as the subcommittee has been collecting the seepage data for about last five years now, it shall share it with Govt of Kerala for further analysis of the seepage data. Govt of Tamil Nadu agreed to share the seepage data since 2014 onwards with Kerala for making a comparative analysis of seepage over the years. Also it was expressed by the Chairman that the seepage data shall also be shared with CWC, New Delhi on a regular basis.

12.2 Instrumentation of the dam and monitoring its performance:

As decided in 11th Meeting of the Committee, the project officials of Govt of Tamil Nadu agreed to share the catalogue of instruments with CWC, however the same has not been shared till now. The Chairman again asked member from Tamil Nadu to share the catalogue containing the details of number, type and performance of various instruments. The member from Tamil

Nadu apprised the committee that the specification of the instruments has been approved by NGRI and the process of approval of Govt of Tamil Nadu is in advance stage. The member from Tamil Nadu committed that the instrumentation shall be completed within 6 months and the data acquired shall be shared with the committee in its next meeting.

12.3. Restoration of Electric supply to the dam site:

Since, the dam has no regular electricity supply to operate the dam gates, a diesel generator exists instead for the purpose. Tamil Nadu has already made the payment for laying of electrical cable for electric power supply to KSEB in 2015. However, the electricity supply could not be provided. In this regard Tamil Nadu went to court and the matter is sub-judice.

The member from Kerala apprised the committee that he has taken up with the Kerala Forest Dept. for necessary clearance for laying the underground electric cables through the forest area which was rejected by Forest Deptt in first go. However Govt of Kerala has again written firmly to the Forest for urgent necessary requirement of electricity supply at the dam site. The chairman suggested to member from Kerala to take up with forest department stressing upon the safety issue of the dam.

Further, Chairman suggested to install an additional DG set at dam site to operate the dam gates till the regular electricity supply is provided to which it was intimated by the member from Tamil Nadu that they have sufficient standby capacity of generators. Solar energy as an alternative was also suggested by the Chairman, which was not agreed by both the members mentioning that during rains the working of solar panels is troubled.

12.4 Road connectivity to the dam site:

For the visit of Dam site as proposed for the meeting, Chairman took the kutchra road. It was found that the condition of the road was pathetic which made it extremely difficult and unsafe to approach the dam by present road. Moreover vehicle carrying construction material load are impossible to reach the dam site through it.

After seeing the condition of available forest road, the Chairman was of the view that road connectivity needs to be improved. Accordingly, Kerala member was advised to approach their forest deptt for clearance to facilitate Tamil Nadu necessary road improvement work. To this it was intimated by member from Kerala that their forest department has in principle agreed for construction of a motorable kuchcha road along with construction of culvert in place of existing causeway in the approach road. Member from Kerala further suggested that certain minimum specifications of the Kuchcha road to be constructed shall be worked out and then the proposal shall be taken up with the forest department for clearance. Member from Tamil Nadu agreed to work out the specification and submit the proposal within 15 days to the Govt of Kerala for getting permission from their Forest department.

12.5 Inflow forecasting system:

Member from Kerala informed that the work for installation of inflow forecast system in the catchment of the Mullaperiyar dam is already awarded but due to involvement of several departments, there is procedural delay in the execution of agreement. It was intimated that the work of installation shall be completed within 3 months. Tamil Nadu requested to share the scope of work for installation of inflow forecasting system. Member from Kerala agreed to share the scope formally with Tamil Nadu soon. It was further intimated by the member from Kerala that they are also planning to install automatic weather station also.

12.6 Gate Operation Schedule/ Reservoir operation Plan:

Chairman suggested to prepare the O&M Manual on the lines of model O&M Manuals available on the CWC website.

Regarding Rule curve and shutter operation, TN has submitted the data which was examined by the Hydrology (S) Directorate in CWC. In this regard, a meeting was held on 28/29.05.2019 at CWC HQ in which representative from Tamilnadu, Sh Selvaraj had discussions. He was suitably guided to do some further works.

After completing the above works it was requested to again consult the above Directors in CWC, New Delhi for finalisation of rule curve at the earliest (preferably by last week of June). The same was reported in the meeting. Officials of GoT were requested to expedite the matter.

12.7 Downstream Channel Flow Studies for Extreme Dam Releases:

CWC shared downstream channel flow studies and inundation maps of the MPD with state of Kerala and Tamil Nadu. However, it was intimated by the member from Tamil Nadu that the downstream rainfall is not considered in the studies. Also it was brought out by the member from Kerala in the 4th meeting of NEC in October 2018. CWC requested them to have a meeting with the CWC officials with the actual data of the 2018 flood so that the model may be modified accordingly. Chairman requested that the meeting regarding inundation model/EAP shall be clubbed with that of the rule curve meeting at the CWC HQ in the last week of June.

12.8 Permission for Felling of the Trees:

Since the matter is subjudice, Chairman advised member from Kerala to approach again Forest Department for necessary permission for cutting of the trees on earthen embankment dam. The matter of safety of the dam shall be stressed upon to the Forest Department for providing permission for felling / shifting of the tree.

12.9 Dam Strengthening Works:

Tamil Nadu informed that the baby dam can be strengthened only after removal of trees. Hence the matter of tree cutting shall be taken up by the member from Kerala with their state forest department.

12.10 Safety inspection of the Mullaperiyar dam by DSRP

In the 39th meeting of NCDS held on 12th Feb 2019 at Bhubaneswar, Chairman of Mullaperiyar Supervisory Committee recommended inspection of this dam by DSRP. To this it was intimated by the member from Tamil Nadu that the Comprehensive inspection by DSRP of the Mulla Periyar dam was last done in the year 2012 and hence next inspection shall be due on 2022.

The meeting ended with thanks to all concerned present in the meeting.

LIST OF PARTICIPANTS

S. No	Name of Official	Designation	Phone/email
CWC Members			
1.	Sh Gulshan Raj (Chairman SC on MPD)	Chief Engineer, Dam Safety Organisation	cedams@nic.in
2.	Sh Rajeev Singhal	Director, Dam Safety Monitoring Directorate	dsmdte-cwc@nic.in
3.	Smt Shachi Jain	Deputy Director, Dam Safety Monitoring Directorate	dsmdte-cwc@nic.in
Tamil Nadu Members			
1.	Mr. S.K. Prabakar, IAS (Member SC on MPD)	Principal Secretary to Government, Public works Department, Chennai.	secy_pwd@yahoo.com
2.	Sh R. Subramanian,	Chairman, Cauvery Technical Cell Chennai	9444455503 ctctngt@gmail.com
3.	Sh M. Selvaraj M.E.	Chief Engineer Cauvery Technical Cell Chennai	9443780306 ctctngt@gmail.com
4.	Er. M Krishnan	Chief Engineer Madurai Region, Madurai	M.No.9942632666 cepimmd@gmail.com
5.	Er. T. Subramanian, BE	Executive Engineer(I/C) Periyar Dam Special Division Cumbum	M.No.9443383979 e mail pdsdne@gmail.com
Kerala Members			
1.	Dr B Ashok, IAS (Member SC on MPD)	Secretary Water resources Department Government of Kerala, Thiruvananthapuram	
2.	Sh Joshy K. A.	Chief Engineer, ISW	
3.	Sh Maryam John M	Executive Engineer ISW	9446711553
4.	Sh Sally K Paul	Deputy Chief Engineer ISW	9447040237
5.	Sh James Wilson	Special Officer ISW	
6.	Smt Geetha N	Deputy Director ISW	9447492211
7.	Smt Anu Omen	Executive Engineer (Full additional charge) M I Division, Kattappana Idukki	9400012022
8.	Sh Praseed N S	Assistant Director Hydrology Section ALAPPUZHA	7293007007
9.	Smt Nandini S Nair	Assistant Director ISW	9495803197



No. 2/18/SC on MullaPeriyar /DSM/2019/2068 -73

Dated: 04/ April, 2020
May

To,

Dr. K Manivasan, IAS. Principal Secretary to Government State Government of Tamil Nadu, Public Works Department, Chennai- 600009	Dr. B Ashok, IAS Secretary, North Block Secretariat, Thiruvananthapuram- 695001 (Kerala)
(Members of the Supervisory Committee of Mullaperiyar dam)	

Sub: Minutes of the 13th meeting of Supervisory Committee of Mullaperiyar Dam held on 28th Jan, 2020.

Sir,

Please find enclosed, a copy of the minutes of the 13th meeting of Supervisory Committee of Mullaperiyar Dam held on 28th Jan, 2020 at Kumily (Kerala). This is for your kind information and necessary action please.

Yours faithfully

Encl: As above


(Gulshan Raj)

Chief Engineer, DSO, CWC &
Chairman (Ex-Officio), Supervisory Committee of Mullaperiyar Dam

Copy for kind information to:

1. PPS to Chairman, CWC, New Delhi.
2. PPS to Member (D&R), CWC, New Delhi
3. Addl. Secretary (RD&PP), MoJS, DoWR, RD&GR, Shram Shakti Bhawan, New Delhi
4. Shri M.S.Sarvanan Kumar, Executive Engineer SWRD, CWC & Chairman, Sub-Committee, Mullaperiyar dam, Jaladhara, D.No.27/1927-A, Kochu Kadavanthara, Kadavanthara (PO), Kochi-682020 (Kerala).



Minutes of 13th meeting of the Supervisory Committee on Mullaperiyar Dam held on 28th January, 2020

The 13th meeting of the Supervisory Committee on Mullaperiyar Dam was held at 1430 Hrs on 28th Jan, 2020 in the office of the Supervisory Committee at Kumily, Kerala preceded by inspection of the dam comprising of main dam, earthen embankment, baby dam and its appurtenant structures like galleries, hydro-mechanical works etc by the committee members and other officers from Central Water Commission and State Govt. of Kerala and Tamil Nadu. The overall condition of dam and its appurtenant structures as revealed by visual inspection was found to be satisfactory by the committee members.

At the outset, the Chairman extended a warm welcome to the members of the Supervisory Committee, officers of the Central Water Commission and the officers from the State Govt. of Kerala and Tamil Nadu. The Chairman expressed concerns with the committee members and project officials from both the states about stalemate situation on the issues concerning the safety of the dam. He expressed that these issues are continuously being discussed in the previous meetings of the committee which should have been resolved by now. List of participants in the meeting is enclosed at **Annexure-I**.

Subsequently, agenda issues as being carried from previous meetings were taken up one by one by Sh. Rajeev Singhal, Director, DSM, CWC for the discussion and the decisions thereupon are summarized as under. The committee acknowledged the receipt of observations from the States of Tamil Nadu and Kerala on the minutes of the 12th meeting circulated vide letter No.2/18/SC/DSM/2019/664-69 dated 04 July 2019, and took note of the observations.

13.1 Inspection by Supervisory Sub-Committee:

The Chairman of the Sub-Committee of the Supervisory Committee of Mullaperiyar Dam apprised the members of Supervisory Committee about the Sub-Committee's meetings, joint inspection of the dam alongwith officials of both the states and monitoring of reservoir level, water quality samples, seepage discharge and instrumentation etc and said that no sign of distress in the dam is observed during their inspections of the dam. The Chairman and members of Supervisory Committee took the note of the appraisal by the chairman of Sub-Committee. As requested by Govt. of Kerala in the previous meeting, the Govt. of Tamil Nadu agreed to share the seepage data since 2014 onwards with Kerala for making a comparative analysis of seepage over the years. It was expressed by the Chairman that the seepage data shall also be shared with CWC, Headquarters on a regular basis. The chairman also said that the tests for quality control should be performed by the Govt. of Tamil Nadu after compilation of the data and the results should be shared with Govt. of Kerala and CWC (HQ). The Chairman directed the Sub-Committee Chairman and members to work out the quantity of lime leached from the dam body based on the seepage data and water quality analysis.

13.2 Instrumentation of the dam and monitoring its performance:

The Chairman informed the committee members that CWC has received the information regarding the catalogue containing the details of number, type and performance of various instruments in the dam from Govt. of Tamil Nadu. It was noted that embedded instruments are not working. Some seismometers and accelerometers are to be procured by Tamil Nadu. The member from Tamil Nadu apprised the committee that the specification of the instruments has been approved by NGRI and the process of approval of Govt. of Tamil Nadu is in advance stage. Officials of Tamil Nadu intimated that grouting is planned in dam because of which its procurement is getting delayed. To this the chairman said that procurement of these instruments should not be linked to grouting of the dam and need to be procured at the earliest. The member from Kerala expressed his concern regarding safety of the dam and said that Tamil Nadu should install the instruments without any delay and start sharing the acquired data with Kerala. The member from Tamil Nadu said that the geodetic data is collected in every 15 days. The chairman asked the Govt. of Tamil Nadu to share the compiled geodetic data for checking the deflection in the dam and said that calibration of geodetic data with water level is needed.

13.3 Restoration of Electric supply to the dam site:

Since, the dam has no regular electricity supply to operate the dam gates, diesel generators exist instead for the purpose. The member from Tamil Nadu apprised the committee that Kerala Forest dept. has given nod for laying underground cables by KSEB and the Govt. of Tamil Nadu has sanctioned the requisite amount for payment to KSEB, however there are some issues regarding mode of payment. The member from Kerala assured that he will sort out the payment issue with KSEB and expedite the process.

13.4 Road connectivity to the dam site:

After seeing the condition of available forest road, the Chairman, in the previous meeting advised member from Kerala to approach their forest department for clearance to facilitate Tamil Nadu for necessary road improvement work. To this it was intimated by member from Kerala that their forest department has in principle agreed for construction of a motorable kuchcha road along with construction of culvert in place of existing causeway in the approach road. The specifications for repairing of the approach road to the Dam site have been submitted by Tamil Nadu to the Kerala Govt. vide letter No. 20465/ISW1/2012-24 dated 11.10.2019. The member from Kerala informed that their forest department has not cleared the road proposal yet and the latest status will be informed within one week. He also said that he will expedite the forest clearance. The member from Tamil Nadu informed that there is a causeway also in the road proposal. The Chairman stated that, to negotiate the causeway in monsoon season when regulator gates are opened, need for construction of a bridge may be included in the proposal of road.

13.5 Inflow forecasting system:

Member from Kerala informed that the work for installation of inflow forecast system in the catchment of the Mullaperiyar dam has already been completed in 9 out of the 13 proposed stations, but due to involvement of several departments, there is procedural delay in the execution of agreement and transfer of the recorded meteorological data. Member from Kerala intimated that the work of installation will be completed by April end and also agreed to share the data and its scope formally with Govt. of Tamil Nadu soon. The chairman suggested Govt. of Kerala to upload all the data in a server so that Govt. of Tamil Nadu can access the data on a real time basis which would be beneficial to both the States especially during monsoons. Chairman also suggested Govt. of Kerala to prepare a background note in which all the inflow forecasting instruments are mentioned and the way in which the data would be shared with Govt. of Tamil Nadu. To this member from Kerala said that they will prepare a note in this regard within one month. Govt. of Tamil Nadu officials told that IMD may be involved for finalization of location and specification of instruments. Govt. of Kerala officials informed the committee that location of the real time rain gauge stations were fixed at positions which are accessible like the Forest camp offices and the possibility of getting the measurements approved by IMD to be explored.

13.6 Gate Operation Schedule/ Reservoir operation Plan:

Chairman suggested to prepare the O&M Manual on the lines of model O&M Manuals available on the CWC website in previous meeting.

Regarding rule curve and shutter operation, Govt. of Tamil Nadu had submitted the data which was examined by the Hydrology (S) Directorate in CWC (HQ). In this regard, a meeting was held on 28/29.05.2019 at CWC (HQ) in which gate operation schedules were finalized in consultation with representative from Tamil Nadu. The chairman informed the committee that rule curves have not been finalized because the required inputs from Tamil Nadu have not been received in CWC (HQ). To this, the member from Tamil Nadu responded that the rule curve depends on the agricultural demands and since the cropping pattern has been changed over the years, hence they are in the process of collecting the new demand data by acquiring true cropping pattern information through their field offices. Also, the upper rule level could not be obtained because of low water availability in the current season. Chairman said that the rule curves are important so that we can be rest assured during monsoons and asked Govt. of Tamil Nadu the timeline for submitting the required data to CWC (HQ) as well to the Govt. of Kerala. Officers from Tamil Nadu said that they will visit CWC (HQ) with complete information in this regard by April end. Member from Kerala said that although Kerala has requested to share the draft Gate Operation Schedule of Mullaperiyar dam submitted by Tamil Nadu, the same has not been shared with Kerala. He requested that the Gate Operation Schedule and the data of the rule curve has to be shared with Kerala at the earliest and the views of Kerala should also be considered before finalizing the Rule Curves.

13.7 Downstream Channel Flow Studies for Extreme Dam Releases:

CWC had shared downstream channel flow studies and inundation maps of the Mullaperiyar Dam with state of Kerala and Tamil Nadu. However, it was intimated by the member from Tamil Nadu that the downstream rainfall is not considered in the studies. Also it was brought out by the member from Kerala in the 4th meeting of NEC in October 2018. CWC requested them to have a meeting with the CWC officials with the actual data of the 2018 flood so that the model may be modified accordingly. Chairman requested that the meeting regarding inundation model/EAP shall be clubbed with that of the rule curve meeting at the CWC (HQ). The officers from Kerala said that they will submit the rainfall data by April end.

13.8 Permission for Felling of the Trees:

In the last meeting, Chairman advised member from Kerala to again approach their Forest Department for necessary permission for cutting of the trees on earthen embankment of the dam to ensure its safety. The matter of safety of the dam shall be stressed upon to the Forest Department for providing permission for felling/shifting of the trees. The member from Kerala informed that they are coordinating with the Forest Department in this regard.

13.9 Dam Strengthening Works:

Tamil Nadu informed that the baby dam can be strengthened only after removal of trees. Hence, the matter of tree cutting shall be taken up by the member from Kerala with their state forest department. The chairman advised that the repairs should be done before the onset of monsoons (by 31st May) and the design estimates of all the works should be shared with the Govt. of Kerala. The member from Kerala said that they will expedite the Forest clearance once they receive the estimates of the works to be done by Tamil Nadu and before going for slippage works, the design and quantity is to be shared with Govt. of Kerala.

13.10 Other Issues:

Member from Kerala said that infrastructure development for residences for police, transit rooms, solar power etc should be made in the Dam regarding which they will share the data with Tamil Nadu. Member from Kerala also requested Tamil Nadu to expedite the repair work of damaged embankment on left side of spillway shutters of Mullaperiyar Dam.

Govt. of Tamil Nadu officials intimated that a boat purchased long back is lying unused because Forest Dept. of Kerala has not given it requisite permissions for its operations. Member from Kerala intimated that he will take up the matter with officials of Kerala Forest Dept.

The meeting ended with thanks to all concerned present in the meeting.

LIST OF PARTICIPANTS

S. No	Name of Official	Designation	Phone/email
CWC Members			
1.	Sh. Gulshan Raj (Chairman SC on MPD)	Chief Engineer, Dam Safety Organization, CWC, New Delhi	cedams@nic.in
2.	Sh. Rajeev Singhal	Director, Dam Safety Monitoring Directorate, CWC, New Delhi	dsmde-cwc@nic.in
3.	Sh. Nitin Kumar	Deputy Director, Dam Safety Monitoring Directorate, CWC, New Delhi	dsmde-cwc@nic.in
4.	Sh. M S Saravana (Chairman Sub-Committee on MPD)	Executive Engineer, SWRD, CWC, Kochi	
Tamil Nadu Members			
1.	Dr. K Manivasan, IAS (Member SC on MPD)	Principal Secretary to Government, Public works Department, Chennai.	secy_pwd@yahoo.com
2.	Sh. R Subramanian,	Chairman, Cauvery Technical Cell, Chennai	9444455503 ctctngt@gmail.com
3.	Sh. M Selvaraju	Member, Cauvery Technical Cell, Chennai	9443780306 ctctngt@gmail.com
4.	Sh. M Krishnan	Chief Engineer, WRD, Madurai Region, Madurai	9942632666 cepimmdu@gmail.com
5.	Sh. M Sugumar	Superintending Engineer, WRD, PVB Circle, Madurai	
Kerala Members			
1.	Dr. B Ashok, IAS (Member SC on MPD)	Secretary, Water resources Department, Government of Kerala, Thiruvananthapuram	secy.pwr@kerala.gov.in
2.	Sh. K H Shamsudeen	Chief Engineer, ISW, Govt. of Kerala	
3.	Smt. Sherly Sebastian	Superintending Engineer, Micro Irrigation Central Circle, Ernakulam	
4.	Smt. Geetha N	Deputy Director, ISW, Govt. of Kerala	9447492211
5.	Sh. Jose Scaria	Executive Engineer, M I Division, Kattappana Idukki	
6.	Sh. Praseed N S	Assistant Director, Hydrology Section, Alappuzha	7293007007
7.	Ms. Nandini S Nair	Assistant Director, ISW, Govt. of Kerala	9495803197

Minutes of 14th meeting of the Supervisory Committee on Mullaperiyar Dam held on 19th February, 2021

The 14th meeting of the Supervisory Committee on Mullaperiyar Dam was held at 1500 hrs on 19th Feb, 2021 at Kumily, Kerala preceded by inspection of the dam comprising of main dam, earthen embankment, baby dam and its appurtenant structures like galleries, hydro-mechanical works etc. by the Committee members and other officers of Central Water Commission and State Govt. of Kerala and Tamil Nadu. The overall condition of dam and its appurtenant structures, as revealed by visual inspection was found to be satisfactory by the Committee.

At the outset, the Chairman extended a warm welcome to the members of the Supervisory Committee, officers of the Central Water Commission and the officers from the State Govt. of Kerala and Tamil Nadu. He expressed his satisfaction as the Committee has so far achieved its intended objective as per the judgment of Hon'ble Supreme Court. He said that the meeting was long due but could not be held earlier due to pandemic situation prevailing since past one year. List of participants is enclosed as **Annexure-I**.

Subsequently, agenda, as being carried from previous meetings were taken up one by one by Sh. Amit Kumar Jha, Director, DSM, CWC for the discussion and the decisions thereupon are summarized as under. The Committee acknowledged the receipt of observations from the States of Tamil Nadu and Kerala on the minutes of the 13th meeting circulated vide letter No.2/18/SC/DSM/2019/2068-73 dated 4th May 2020, and took note of the observations.

14.1 Inspection by Supervisory Sub-Committee:

The Chairman of the Sub-Committee of the Supervisory Committee of Mullaperiyar Dam apprised the Supervisory Committee about the Sub-Committee's meetings, joint inspection of the dam along with officials of both the States and monitoring of reservoir level, water quality samples, seepage and instrumentation etc. and said that no sign of distress in the dam is observed during their inspections of the dam. The Supervisory Committee took note of the appraisal by the chairman of the Sub-Committee.

As decided in the previous meeting, the Govt. of Tamil Nadu has shared the daily seepage data and water quality test results from Jan 2011 to Dec 2019 with CWC vide letter dated 10.02.2020 for making a comparative analysis of seepage over the years. Chairman expressed his view that the data is of a very short interval to make a trend analysis and asked Tamil Nadu to compile the seepage and water quality data (especially annual lime loss in the dam body) since the time concrete backing of the dam was done and share the data along with trend analysis with CWC and Kerala. Representative of Tamil Nadu agreed to share the data with CWC and Kerala along with trend analysis since 1994 i.e. the time since when concrete backing of the dam was done.

14.2 Instrumentation of the dam and monitoring its performance:

The representative of Tamil Nadu apprised the Committee that the specification of the seismic instruments to be installed at dam site has been approved by NGRI. Administrative approval for procurement of these equipments through NGRI has been accorded by Govt. of Tamil Nadu in June 2020. A MoU has been entered by Govt. of Tamil Nadu with NGRI for procurement and installation of the seismic instruments for another project i.e. DRIP Phase II & III. MoU on similar pattern is under finalization for this project also. The representative of Kerala requested Tamil Nadu to install the instruments at the earliest and requested Chairman, Supervisory Committee to fix a time frame for the installation of instruments. Chairman requested Govt. of Tamil Nadu to ensure that MoU with NGRI be entered at the earliest and the installation of instruments completed by next Supervisory Committee meeting. Tamil Nadu agreed to do the needful for installation of the instruments before the next meeting.

The representative of Tamil Nadu informed the Committee that geodetic data is being collected in every 15 days. The chairman expressed that calibration of geodetic data with water level is also essential at regular intervals. The representative of Kerala informed that Tamil Nadu has not shared the past geodetic data to Kerala. The Chairman requested the representative of Govt. of Tamil Nadu to share the compiled geodetic data for last 10 years for checking the deflection in the dam. Representative from Tamil Nadu agreed to give the geodetic data of past 2 years within 1 month and the balance data at the earliest, say about 3 months time.

14.3 Restoration of Electric supply to the dam site:

Committee was informed that electricity supply to the dam site has been restored. The chairman expressed his gratitude to Govt. of Kerala for restoring regular electricity supply at the dam site.

14.4 Road connectivity to the dam site:

The Chairman, in the previous meeting advised representative from Kerala to approach their forest department for clearance to facilitate Tamil Nadu for necessary road improvement work. During the last meeting, it was intimated by representative from Kerala that their forest department has in principle agreed for construction of a motorable kuchcha road along with construction of culvert in place of existing causeway in the approach road. The specifications for repairing of the approach road to the Dam site have been submitted by Tamil Nadu to the Kerala Govt. The Chairman stated that, to negotiate the causeway in monsoon season when regulator gates are opened, construction of a bridge may be needed and accordingly be included in the proposal, which is extremely necessary to provide safe access to dam site.

Representative from Kerala informed that the proposal has been sent to Periyar Tiger Reserve Division of Kerala Forest and Wildlife Department for forest clearance and he will look to expedite the process.

14.5 Inflow forecasting system:

Representative of Kerala informed that the work for installation of telemetry based rainfall stations for inflow forecast system in the catchment of the Mullaperiyar dam has been completed for all the 13 proposed stations. Representative of Tamil Nadu said that he will provide the telemetry IDs along with other required details to Kerala for receiving the data through telemetry. The Chairman opined that sharing of rainfall data is very essential for formulation of inflow forecast and proper gate operation and the data transfer protocol between two States may be established at the earliest. Representative of Kerala informed that suitable decisions on the methodology of data sharing will be taken and the data will be shared at the earliest.

14.6 Gate Operation Schedule/ Reservoir operation Plan:

The Chairman informed that the Rule Levels and simulated Performance of Mullaperiyar reservoir, after long deliberations and consideration of all the information provided by Cauvery Technical Cell, Water Resources Department, Government of Tamil Nadu has been finalized by CWC and shared with Tamil Nadu and Kerala. The Chairman requested officers of Tamil Nadu to update Operation and Maintenance (O&M) Manual, accordingly.

Representatives of Tamil Nadu and Kerala both requested for some time to study the rule levels, as the same has been provided just few days back. The Chairman opined that updation of O&M manual is due since long and it cannot be further deferred. Any suggestion can always be incorporated in the O&M manual after mutual consultations. It was agreed by the representative of Tamil Nadu for updation of O&M manual, at the earliest.

14.7 Downstream Channel Flow Studies for Extreme Dam Releases:

CWC had shared downstream channel flow studies and inundation maps of the Mullaperiyar Dam with state of Kerala and Tamil Nadu. However, it was intimated by the member from Tamil Nadu that the downstream rainfall is not considered in the studies. Also, it was brought out by the member from Kerala in the 4th meeting of NEC in October 2018. CWC had requested them to have a meeting with the CWC officials with the actual data of the 2018 flood so that the model may be modified accordingly. In this regard, Govt. of Kerala has submitted the daily rainfall details recorded during the year 2018 in August, 2020.

The Chairman informed the committee that discharge, flood arrival time, maximum water depth, maximum velocity and maximum water level at different locations downstream

of Mullaperiyar for known discharge from Mullaperiyar along with rainfall data in Mullaperiyar catchment is required for verification of the model. Representative from Kerala agreed to share the same for 2018, as per availability.

The Chairman further informed the Committee that Emergency Action Plan (EAP) for Mullaperiyar dam needs to be prepared by both the States for their respective parts. EAP at dam site has to be prepared by Tamil Nadu, whereas EAP downstream of Mullaperiyar has to be prepared by Kerala.

In this regard, He requested both the States to start preparation of EAP for their respective portion in consultative manner. Representatives of Kerala and Tamil Nadu agreed for the same.

14.8 Permission for Felling of the Trees:

Representative of Tamil Nadu informed that online proposal for forest clearance has been submitted by them; however clearance from Kerala forest department is yet to be received. Representative of Kerala informed that some confusion on the methodology for consideration in number of trees has been indicated by the Kerala Forest and Wildlife Department.

Chairman suggested that Govt. of Tamil Nadu may re-apply to Kerala Forest and Wildlife Department with suitable modifications, as per their norms. A joint inspection with Kerala Forest and Wildlife Department may help in clearing all the doubts regarding norms and procedure. He requested Kerala WRD officers to arrange a joint inspection to avoid further delays and confusion.

14.9 Dam Strengthening Works:

Tamil Nadu informed that the baby dam can be strengthened only after removal of trees. However, they have prepared the design estimates of the works and are ready to take up the work immediately after removal of trees. Representative from Kerala requested Tamil Nadu to share the estimates with Kerala.

14.10 Other Issues:

It was pointed out by Tamil Nadu that permission to transport materials and machinery for grouting the dam is being delayed. Representative from Kerala requested for a copy of the Estimate for the grouting work. The following documents were handed over by Tamil Nadu to Kerala across the table.

- a) CSMRS report relating to grouting specification and methodology;
- b) CWC concurrence for grouting and front face treatment.
- c) Drawing showing the location of the grouting points.
- d) Estimate for grouting.

- e) Letter addressed by the Executive Engineer, Periyar Dam Special Division, to the Executive Engineer, Minor Irrigation Division, Kattappana on 27.07.2020 and 19.08.2020 containing the list of materials to be transported to the dam site.

The Chairman requested the Chief Engineer, Kerala to sort out the issue at the earliest. The Chairman also requested Tamil Nadu to expedite the repair work of damaged embankment on left side of spillway shutters of Mullaperiyar Dam and requested Kerala for their cooperation in execution of the work.

Regarding other issues not directly concerning with safety of the dam such as issue of purchase of new boat by Govt. of Tamil Nadu, reconstruction of Dormitory Block at Thekkady Inspection Bungalow premises and other items such as infrastructure development for residences for police, transit rooms, solar power etc., it was suggested to the representatives of both the States to take up the matter in coordination and consultation with each other.

The meeting ended with vote of thank to the Chair.

**Minutes of the Seventh Meeting of the Supervisory Committee on
Mullaperiyar Dam held on 22.06.2015 at Kumili**

Members Present

1. Shri. L.A.V. Nathan, Chief Engineer, DSO, CWC - Chairperson
2. Shri. V.J. Kurien, Additional Chief Secretary, Water Resources Department, Kerala
3. Shri. N.S.Palaniappan, Principal Secretary, PWD, Tamil Nadu

4. Other Special Invitees

Shri.R.Subramanian, Chairman, Cauvery Technical Cell, Govt of Tamil Nadu

The Chairman welcomed the Committee Members and other technical officers to the meeting and took up Agenda items for discussions as detailed below:

1. Minutes of the 6th meeting of the Supervisory Committee held at Kumili on 24th November, 2014 were confirmed after making necessary modifications proposed by Additional Chief Secretary, Water Resources Department, Kerala and also by Chairman, CTC, GoTN. Accordingly, a copy of the revised minutes of the sixth meeting of the Supervisory committee is enclosed at Annexure-I. It was also decided that the Minutes of the Meeting will henceforth be recorded in a folder and signed by both the Members of the Supervisory Committee and Chairman.

a. Kerala Member further added that a “Note by State of Kerala” placed before the Committee did not find mention in the Minutes of 6th Meeting. TN Member reminded that such a Note cannot be accepted across the table. Both the Members stuck to their earlier stand of the previous meeting and it is recorded as such here.

b. Chairman, CTC, GoTN also brought attention to the statement attributed to sub-committee report about coloration of seepage water downstream of the dam. Chairman accepted to rectify the incorrect entry in the Minutes.

c. Kerala side also pointed out the reporting of incident of Kerala MLA on his visit to MullaPeriyar Dam in the context of dam security is not direct observations of the Supervisory Committee as implied in the previous Agenda. Chairman acknowledged it and assured to rectify the Minutes accordingly.

d. Adl Chief Secretary & Member, Kerala enquired about any report from Shri Sunil Jain, Director(Instrumentation) of CWC during his early visit. Chairman said no report as such is traceable and it could not be confirmed whether such a report was produced in the first instance. Efforts will be taken to trace it further; however with the importance of instrumentation for the dam under monitoring activity, future visit by Shri Jain is most likely to take place soon.

2. A discussion about the working of the sub-committee ensued. It was agreed that the frequency of monitoring by the subcommittee should increase and accordingly decided as follows:-

- During June-July, the subcommittee will meet every fortnight.
- During August-December, the subcommittee will meet every week.
- During January – May, the subcommittee will meet once every month.

It was also decided that the seepage water samples will be tested at CWC Laboratory at Coimbatore.

3. Tamil Nadu representative mentioned about taking up balance strengthening works in the Dam as per Directions of the Hon'ble Supreme Court and stated about the hurdles faced by the officials of Tamil Nadu on three major issues –

- a) delay in giving clearance for repairing the forest road from Vallakadavu to Periyar Dam
- b) restoration of power supply to the Dam
- c) Transport of material for repair and maintenance

As for repairing the forest ^{Road} land from Vallakadavu to MullaPeriyar Dam and restoration of power supply to the Dam, Tamilnadu reported before the Committee that Kerala Forest deptt is yet to take action for providing the clearance in spite of many correspondences at various stage. Addl. Chief Secretary, GoK and Member of the Committee representing Kerala explained that the environmental clearance is a lengthy process covering Wild Life Clearance, Forest clearance and MoEF clearance in that order. Hence Kerala forest department is not having any authority to grant permission of its own to do non-forestry activities inside the Periyar Tiger reserve. He further informed that the Kerala forest department informed that the delay in processing the applications is due to defects in the applications submitted by Tamilnadu Govt. He, however assured to do his best and requested for the copies of the letters to be sent to him for coordinating and quickening the process for obtaining the clearance which has been agreed to by TN delegation.

With reference to power supply, the representative of Tamil Nadu informed that about Rs.95.00 lakhs has already been paid to KSEB and as requested, an additional amount of Rs.70.00 lakhs, will also be paid shortly. Tamilnadu representative stated that KSEB has not taken up the work yet, as further clearance has to be obtained from the Regional Office of Ministry of Environment and Forests, Bangalore, for which the Deputy Director, Periyar Tiger Reserve, Kerala has to furnish further details, which is pending with Deputy Director for quite a long time. Kerala Member pointed out that Tamilnadu has agreed in the previous meeting that they would coordinate the subject matter with KSEB Ltd to expedite the work and he suggested that TN must follow up the matter with MoEF regional Office, Bangalore. Chairman urged the TN representatives to examine the requirements thoroughly, even get necessary advice from MoEF and act accordingly.

4. TN member requested the Chairman, Supervisory Committee to advice the State of Kerala not to proceed with the study of the Environment Impact Assessment in respect of a New Dam, as it is a settled issue by the Hon'ble Supreme Court. For this, the representative of Kerala argued that this matter is not a mandate of the Supervisory Committee and also the issue is sub judice and the matter is likely to come up for hearing before an appropriate Bench in July 2015 and hence need not be discussed. However, the representatives of both the States requested to record their respective statements, which were agreed to by the Chairman, Supervisory Committee.

5. Integrated Operation of Vaigai & MullaPeriyar and Spillway Operation Rules

Kerala member placed before the Committee a letter dated 15th February written by Chairman to GoTN to consider action on three counts-- integrated operation of the two reservoirs, comprehensive Gate operational schedule for flood management at MullaPeriyar Dam and to have forecasting system for estimating inflows into the Dam. It was already decided during the previous meeting that they fall under the state's domain and TN has also assured that there will not be sudden release of water and adequate warnings would be issued as per the approved rules of regulations of Periyar reservoir, vide, Government Order approved in 1939 for keeping the FRL at 152 ft., and added that the same rules keeping the FRL of +142 ft. would be followed. It was also emphasised that this issue was already discussed in the last meeting and minuted and hence it should not be allowed to be raised again. However, the representative of the State of Kerala did not agree to and argued that the gate operation of Mullai Periyar Dam has to be furnished before the Committee. It was argued on behalf of the State of Tamil Nadu that the State of Kerala filed an I.A. 24 of 2014 on 15.11.2014 in the Hon'ble Supreme Court, wherein they had pleaded for the Integrated Operation of both the reservoirs and about the operation rules of Periyar dam. However, when the I.A. came up for hearing on 20.02.2015, the State of Kerala had withdrawn the application and accordingly, the Court ordered that the I.A. is disposed of as withdrawn. Under this scenario, the State of Kerala cannot agitate on the same issue before the Supervisory Committee. Chairman mentioned that for efficient operation of the gates, assured power supply is essential. Further as stated supra, the Integrated Operation of these two reservoirs and operation of the spillway gates falls entirely under the domain of the State of Tamil Nadu. However, it will follow the guidelines of the Central Water Commission in such issues. It was also recorded in the Minutes of the previous meeting that the approval of the operation rules is not mandatory by the Central Water Commission. Chairman emphasized that it is purely a matter of technical advice exhorting TN to prepare a comprehensive schedule for operation of spillway gates and for integrated operation of the reservoirs. On flood forecasting system on the upstream, it was pointed out by TN that rainfall data could not be collected from Mullaikodi rainfall station as Kerala Forest deptt is not permitting TN people. At this juncture, Kerala member offered to install a raingauge station set up by Govt of Kerala and data will be shared with Centre and GoTN by telemetry system.

6. The Chairman, Supervisory Committee reiterated that the State of Kerala must strive to extend cooperation in the repair of the existing forest road to the Periyar Dam site from

Vallakadavu and provide electricity to the dam, to enable Tamil Nadu to undertake maintenance and strengthening works in the Baby dam, as these requirements are vital to the safety of the dam. The Chairman also requested the active intervention of the Kerala member of the committee in persuading the matters with the State of Kerala in this connection. Further he added that the two States should sort out the issues amicably.

The meeting ended with a vote of thanks.

(Shri. N.S.Palaniappan)
Principal Secretary, PWD
Government of Tamilnadu
(Members of the Supervisory Committee on MullaPeriyar Dam)

(Shri. V.J.Kurian)
Addl. Chief Secretary, Water Resources
Government of Kerala
(Members of the Supervisory Committee on MullaPeriyar Dam)

(Shri. L A V Nathan)
Chief Engineer, Dam safety organization, Central water Commission
Ministry of Water Resources, Government of India
Chairman, Supervisory Committee on MullaPeriyar Dam

I/8022372524(8)

जल शक्ति मंत्रालय

जल संसाधन नदी विकास एवं गंगा संरक्षण विभाग

केन्द्रीय जल आयोग

बांध सुरक्षा प्रबोधन निदेशालय



सत्यमेव जयते

ANNEXURE -P4

Government of India

Ministry of Jal Shakti

Dept. of Water Resources, RD&GR

Central Water Commission

Dam Safety Monitoring Directorate

To,

Shri Sandeep Saxena, IAS.
Additional Chief Secretary,
Public Works Department,
Govt. of Tamil Nadu,
Chennai-600009

Shri T. K. Jose, IAS
Additional Chief Secretary, WRD,
Govt. of Kerala
Main Block, Secretariat,
Thiruvananthapuram- 695001

Sub: Minutes of the virtual meeting held on 8th December 2021 regarding discussion over releases of water from Mullaperiyar Dam Reservoir – reg.

Sir,

Please find enclosed herewith the minutes of the virtual meeting held on 8th Dec, 2021 through Video Conferencing regarding discussion over releases of water from Mulla Periyar Dam.

This issues with the approval of Chief Engineer, DSO, CWC & Chairman, Supervisory Committee on Mulla Periyar Dam.

Yours sincerely,

(R. K. Gautam)

Deputy Director (DSM)

Encl: As above

Copy for kind information to:

1. PPS to Chairman, CWC, New Delhi.
2. PPS to Member (D&R), CWC, New Delhi
3. Chief Engineer, DSO & Chairman, Supervisory Committee, CWC, New Delhi
4. Additional Solicitor General of India, Supreme Court of India. (aishwarya.bhati@gov.in)
5. Senior Joint Commissioner (PR), DoWR, RD&GR, Ministry of Jal Shakti, New Delhi
6. Executive Engineer, SWRD, CWC & Chairman, Sub-Committee, MullaPeriyar dam, Kochi

चतुर्थ तल (दक्षिण),सेवा भवन,
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दूरभाष: 011-29583348
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Minutes of the Meeting of the Supervisory Committee of Mullaperiyar Dam held on 08.12.2021 at 5.00 pm for discussion over release of water from the Dam

A virtual meeting was convened on 08.12.2021 at 5.00 pm by the Chairman, Supervisory Committee & Chief Engineer, DSO, CWC on the request of State of Kerala to discuss the releases from Mullaperiyar Dam.

The list of participants is enclosed as **Annexure-I**.

The Chairman, Supervisory Committee & Chief Engineer, DSO, CWC at the outset, extended a warm welcome to all the participants. He then invited Mr T K Jose, ACS, Govt. of Kerala to express his concerns on the recent releases from Mullaperiyar Dam (MPD) by the State of Tamil Nadu. Mr Jose, placed before the committee the issues of Kerala on the recent releases from MPD through a power point presentation titled "Mullaperiyar Dam Operations during N-E Monsoon 2021" which is enclosed as **Annexure II**.

The major observations of the State of Kerala (SoK) are as follows-

- i. Tamil Nadu authorities resorted to erratic spillway shutter operation at Mullaperiyar reservoir during the past one week
- ii. Sudden large releases were made during late evening to early morning, with the intimations issued only 10 to 30 minutes prior or after executing the shutter operation.
- iii. Water through the diversion tunnel is not being diverted at its full capacity.

The discharges released from Mullaperiyar dam during the past few days pointed out by the Govt. of Kerala are as under:-

Date	Time	Discharge
23.11.2021	10 PM	3,949 cusecs
25.11.2021	10 PM	798 cusecs
28.11.2021	11 AM	833 cusecs
30.11.2021	3 AM	837 cusecs
02.12.2021	8 PM	8,017 cusecs
05.12.2021	6 PM	7,341 cusecs
06.12.2021	7 AM	5,691 cusecs
06.12.2021	9 PM	12,654 cusecs

It was also informed that Tamil Nadu did not issue warnings before releasing huge quantum of water in the night because of which the people located d/s of MPD had to face flood like situation.

As a solution to above issues, Kerala proposed to form a joint committee of officials from Govt. of Tamil Nadu and Govt. of Kerala for deciding the quantity and time of spill from the Mullaperiyar dam.

The Chairman then requested Mr Sandeep Saxena, ACS, Govt. of Tamil Nadu to express his views on the observations of the ACS Kerala on the recent releases by the Tamil Nadu and his proposal for constituting the joint committee for releasing the water from MPD.

Mr Saxena, informed the committee that-

- i. 3 advance warnings have been issued in the month of November on 14, 18 and 30 Nov 2021.
- ii. Intimation regarding releases is issued to everyone concerned, immediately the moment any decision regarding spillway discharge is taken.
- iii. 2 officers from Kerala WRD are always present at the dam site. They have access to all the information.
- iv. The spill from the reservoir is hardly 2-3% of the PMF value and hardly 8-10% of the spillway discharge capacity. The channel (D/s of MPD) carrying capacity should be improved.
- v. In general the rainfall starts in the evening and therefore peak inflows come in night so the spillway discharge has to be made during night to keep the water level in the reservoir at or below 142 ft as per Honb'le Supreme Court directions. It is not possible to maintain reservoir level at 142 ft without operating the spillway.
- vi. **Tamil Nadu disagreed to the Kerala's proposal regarding formation of a joint committee consisting of officials from Tamil Nadu and Kerala for deciding the quantity and time of spill from the Mullaperiyar dam.**

ACS, Tamil Nadu also submitted that the Tamil Nadu is not receiving the hourly rainfall data from the rain gauges situated in the Periyar Wildlife Sanctuary, Kerala. The daily data is being sent by SoK, therefore, they don't have sufficient time for making decisions in advance for issuing warning. He also requested the SoK to expedite the installation of telemetry equipment in the catchment area as the same is pending since a long, so as to receive the rainfall data in time and issue the warnings for releases well in time.

ACS, Kerala informed that he is handicapped in providing hourly inflow data because they receive only daily rainfall data from the rain gauges situated in the Periyar Wildlife Sanctuary.

Mr N N Rai, Director, Hydrology, CWC explained that the topography of the catchment of MPD is such that the time of concentration is very less, about 3 hrs. Also to maintain 142 ft level in reservoir, water has to be released. As per data submitted by Kerala, max water discharge during recent releases is 12,654 cusec, which very less and is approximately 17% of 100 yr flood value, 5-6% of PMF value and 7% of spillway carrying capacity. There is some problem in the downstream area regarding channel carrying capacity which may be investigated leading to inundation of the area as reported by SoK.

The Chairman, Supervisory Committee & Chief Engineer, DSO, CWC after hearing the deliberations made following observations:

- i. Fixing the water level in the MPD reservoir at 142 ft and keeping the water level below danger mark (as submitted by SoK) in the downstream channel will be a difficult proposition. The downstream channel carrying capacity needs to be improved.
- ii. Kerala should improve the inflow data acquisition system which may be shared with Tamil Nadu so that they get sufficient time for issuing warnings well in advance.
- vii. **The request made by Kerala to form a joint committee prima facie does not seem feasible at this stage. However, Kerala may submit a detailed proposal suggesting the release mechanism of water and regulation of the reservoir of the Mullaperiyar Dam in order to examine proposition in consultation with Tamil Nadu.**

ACS, Tamil Nadu and ACS, Kerala agreed that Kerala would submit the detail proposal which would be discussed in the next meeting to be convened as per mutual convenience.

The meeting ended with vote of thanks by the Chairman, Supervisory Committee & Chief Engineer, DSO.

LIST OF PARTICIPANTS**1. Central Water Commission, New Delhi**

- i. Shri Gulshan Raj, Chairman, Supervisory Committee & Chief Engineer, DSO
- ii. Shri S S Bakshi, Director, DSM Dte.
- iii. Shri N N Rai, Director, Hydrology (S) Dte.
- iv. Shri Rishi Srivastva, Director, Remote Sensing Dte.

2. Govt. of Tamil Nadu

Shri Sandeep Saxena, Member, Supervisory Committee & Additional Chief Secretary, Public Works Department

3. Govt. of Kerala

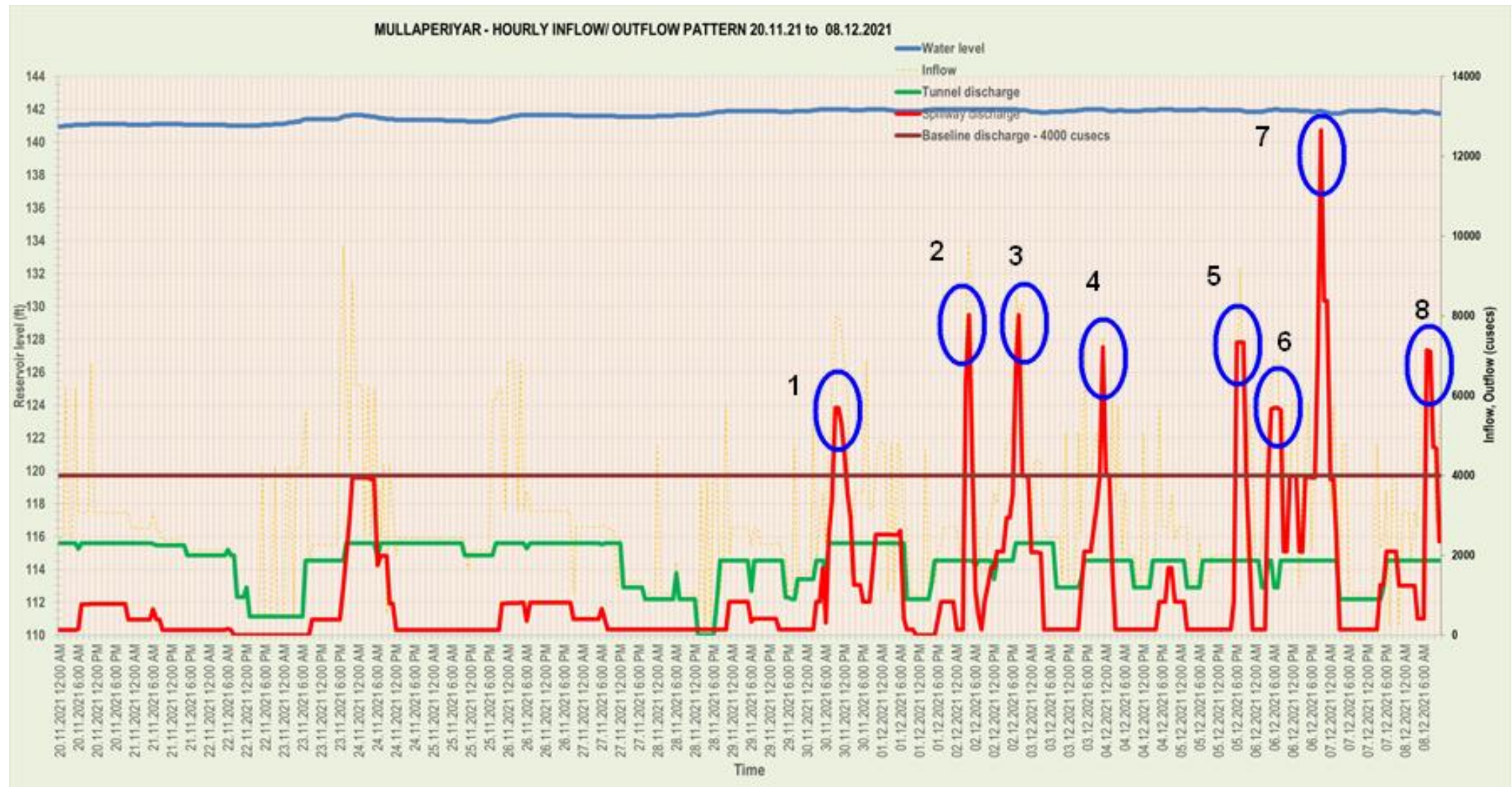
Shri T K Jose, Member, Supervisory Committee & Addl. Chief Secretary, WR & CSIN Department



MULLAPERIYAR DAM OPERATIONS DURING N-E MONSOON 2021

Meeting of the Supervisory Committee dated 8th December 2021

Reservoir flow pattern – 20th Nov to 8th Dec, 2021



Date	Time	LAKE LEVEL in Feet	INFLOW IN cusecs	SPILLWAY DISCHARGE IN cusecs	TUNNEL DISCHARGE IN			V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	R 1	R 2	R 3
21.11.2021	5:00 AM	141.05	2,689	389	2,300		a			30										
21.11.2021	6:00 AM	141.10	3,104	649	2,298		a			30										
23.11.2021	8:00 AM	141.40	1,867	-	1,867	V3 opened @ 0.3	a			30										
23.11.2021	9:00 AM	141.40	2,264	397	1,867		a			30										
23.11.2021	6:00 PM	141.45	6,014	397	1,867		a			30										
23.11.2021	7:00 PM	141.55	9,766	1,209	1,867	V2, V3 & V4 opened	a		30	30	30									
23.11.2021	8:00 PM	141.60	6,826	2,024	2,300	V1, V2, V3, V4 & V5	a	30	30	30	30	30								
23.11.2021	9:00 PM	141.60	4,324	2,834	2,300	V1, V2, V3, V4, V5 & V6	a	30	30	30	30	30	30	30						
23.11.2021	10:00 PM	141.65	8,884	3,949	2,300	V1, V5, V6 & V7 closed	a	30	60	60	60	30	30	30						
23.11.2021	11:00 PM	141.65	6,249	3,949	2,300		a	30	60	60	60	30	30	30						
25.11.2021	9:00 PM	141.40	6,185	135	2,300		a			10										
25.11.2021	10:00 PM	141.45	6,187	798	2,300	V3 & V4 opened	a			30	30									
25.11.2021	11:00 PM	141.45	3,098	798	2,300		a			30	30									
26.11.2021	12:00 AM	141.50	6,848	802	2,300		a			30	30									
26.11.2021	6:00 AM	141.65	3,623	359	2,170		a			30	30									
26.11.2021	7:00 AM	141.65	3,114	814	2,300		a			30	30									
28.11.2021	10:00 PM	141.90	5,760	143	1,867		a			10										
28.11.2021	11:00 PM	141.90	2,010	833	1,867	V3 opened @ 0.3	a			30	30									
30.11.2021	2:00 AM	141.95	5,294	144	1,400		a			10										
30.11.2021	3:00 AM	141.95	1,778	837	1,867	V3 & V4 opened	a			30	30									
30.11.2021	4:00 AM	142.00	2,704	837	1,867	V2, V3, V4 & V5 closed	a		30	30	30	30								
30.11.2021	5:00 AM	142.00	3,549	1,682	1,867		a		30	30	30	30								
30.11.2021	8:00 PM	142.00	3,140	840	2,300		a		30	30										
30.11.2021	9:00 PM	142.00	3,140	1,680	2,300	V2, V3, V4 & V5 closed	a		30	30	30	30								
30.11.2021	10:00 PM	142.00	3,980	2,520	2,300	V1, V2, V3, V4, V5 & V6	a	30	30	30	30	30	30							
30.11.2021	11:00 PM	142.00	4,824	2,524	2,300		a	30	30	30	30	30	30							

Date	Time	LAKE LEVEL in Feet	INFLOW IN cusecs	SPILLWAY DISCHARGE IN cusecs	TUNNEL DISCHARGE IN		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	R 1	R 2	R 3
01.12.2021	5:00 PM	142.00	1,300	-	1,867														
01.12.2021	6:00 PM	142.00	2,077	421	1,867	V3 opened at 30			30										
01.12.2021	7:00 PM	142.00	2,288	841	1,867	V3 & V4 opened	a		30	30									
01.12.2021	8:00 PM	142.00	2,708	841	1,867		a		30	30									
02.12.2021	1:00 AM	142.00	2,012	144	1,867		a		10										
02.12.2021	2:00 AM	142.00	2,012	144	1,867		a		10										
02.12.2021	3:00 AM	142.00	8,281	6,414	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60					
02.12.2021	4:00 AM	142.00	9,884	8,017	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60	60	60			
02.12.2021	3:00 PM	142.00	3,970	2,103	1,867		a	30	30	30	30								
02.12.2021	4:00 PM	142.00	4,811	2,944	1,867	V1. V2. V3. V4. V5	a	30	30	30	30	30	30						
02.12.2021	5:00 PM	142.00	4,811	2,944	1,867		a	30	30	30	30	30	30						
02.12.2021	6:00 PM	142.00	5,383	3,516	1,867	V1. V2. V6. V7 op	a	30	30	60	60	30	30						
02.12.2021	7:00 PM	142.00	8,491	6,624	2,300	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60	60	60			
02.12.2021	8:00 PM	141.95	8,017	8,017	2,300	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60	60	60			
03.12.2021	3:00 PM	141.95	5,093	144	1,200		a		10										
03.12.2021	4:00 PM	141.95	2,522	1,122	1,400	V1. V2. V3. V4. V5	a	30	30	30	30	30							
03.12.2021	5:00 PM	142.00	7,483	2,100	1,867	Tunnel discharge	a	30	30	30	30								
03.12.2021	6:00 PM	142.00	3,967	2,100	1,867		a	30	30	30	30								
03.12.2021	7:00 PM	142.00	3,967	2,100	1,867		a	30	30	30	30								
03.12.2021	8:00 PM	142.00	4,541	2,674	1,867	V1. V5 opned at 3	a	30	60	60	60	30							
03.12.2021	9:00 PM	142.00	5,113	3,246	1,867		a	30	60	60	60	30							
03.12.2021	10:00 PM	142.00	4,009	4,009	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60							
03.12.2021	11:00 PM	142.00	7,479	7,215	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60	60				
04.12.2021	12:00 AM	141.95	5,332	4,009	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60							
04.12.2021	4:00 PM	141.95	2,011	144	1,867		a		10										
04.12.2021	5:00 PM	142.00	5,761	841	1,867	V3. V4 opened at	a			30	30								
04.12.2021	6:00 PM	142.00	2,708	841	1,867		a			30	30								
04.12.2021	7:00 PM	142.00	2,708	841	1,867		a			30	30								
04.12.2021	8:00 PM	142.00	2,708	1,682	1,867	V2. V3. V4. V5 op	a		30	30	30	30							
04.12.2021	9:00 PM	142.00	3,549	1,682	1,867		a		30	30	30	30							

Date	Time	LAKE LEVEL in Feet	INFLOW IN cusecs	SPILLWAY DISCHARGE IN cusecs	TUNNEL DISCHARGE IN		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	R 1	R 2	R 3
05.12.2021	5:00 PM	141.95	2,011	840	1,867	V3. V4 opened 30	a			30	30								
05.12.2021	6:00 PM	141.95	5,905	7,341	1,867	V1. V2. V3. V4. V5	a	90	90	90	90	90	30	30	30	30			
06.12.2021	3:00 AM	141.90	5,092	142	1,200		a			10									
06.12.2021	4:00 AM	141.95	5,092	3,968	1,867	V1 to V5 opened	a	60	60	60	60	60							
06.12.2021	5:00 AM	141.95	6,685	5,668	1,867	V1 to V5 opened	a	60	60	60	60	60	30	30	30	30			
06.12.2021	6:00 PM	141.85	2,085	3,948	1,867		a	60	60	60	60	60							
06.12.2021	7:00 PM	141.85	5,814	3,947	1,867		a	60	60	60	60	60							
06.12.2021	8:00 PM	141.90	10,354	7,106	1,867	V1. V2. V3. V4. V5	a	60	60	60	60	60	60	60	60	60			
06.12.2021	9:00 PM	141.90	10,636	12,654	1,867	V1. V2. V3. V4. V5	a	120	120	120	120	120	120	120	120	120			
07.12.2021	3:00 PM	141.95	4,791	144	900		a			10									
07.12.2021	4:00 PM	141.95	2,160	1,260	900	V2. V4 opened 30	a		30	30	30								
07.12.2021	5:00 PM	141.95	2,460	1,260	1,200	Tunnel discharge in	a		30	30	30								
07.12.2021	6:00 PM	141.95	3,634	2,100	1,867	V1 to V5 opened at	a	30	30	30	30	30							
08.12.2021	6:00 AM	141.90	6,030	413	1,867	V1. V2. V4. V5 ope	a	60	60	60	60	60							
08.12.2021	7:00 AM	141.85	6,231	7,142	1,867	V1 to V7 opened at	a	60	60	60	60	60	60	60	60	60			
08.12.2021	8:00 AM	141.85	5,259	7,106	1,867		a	60	60	60	60	60	60	60	60	60			

Events of sudden spillway releases at short notice in past week

- Tamil Nadu authorities resorted to erratic spillway shutter operation at Mullaperiyar reservoir during the past one week

 - Sudden large releases were made during late evening to early morning, with the intimations issued only 10 to 30 minutes prior or after executing the shutter operation
- I. 30.11.2021: Spillway release increased from 143.1 cusecs to 837 cusecs at 3:00 AM, after issuing intimation about 30 minutes prior to operating shutters
 - II. 02.12.2021: Spillway release increased from 144.36 cusecs to 6413.92 cusecs at 2:30 AM, after issuing intimation about 15 minutes after operating shutters
 - III. 02.12.2021: Spillway release increased from 6624 cusecs at 6:30 PM to 8017 cusecs at 8:00 AM, without issuing intimation
 - IV. 03.12.2021: Spillway release increased from 4009 cusecs to 7215.3 cusecs at 11:00 PM, after issuing intimation 30 minutes prior to operating shutters

Details of sporadic water discharge from Mullapperiyar during the past few days

- 23.11.2021 – 10 PM – 3,949 cusecs
- 25.11.2021 – 10 PM – 798 cusecs
- 28.11.2021 – 11 AM – 833 cusecs
- 30.11.2021 – 3 AM – 837 cusecs
- 02.12.2021 – 8 PM – 8,017 cusecs
- 05.12.2021 – 6 PM – 7,341 cusecs
- 06.12.2021 – 7 AM – 5,691 cusecs
- 06.12.2021 – 9 PM – 12,654 cusecs

Constant request - discharge of water through spillway shutter operations of Mullapperiyar Dam

- a) Shall not be carried out during night and early morning hours and
- b) At least 24-hour notice to the State of Kerala and District Disaster Management Authorities of Kerala.
- c) To avoid sudden surge spillage through spillway shutters.



Water level touched 142 ft on
30.11.2021 (*Photo Source: The Hindu*)



(*Photo Source: The Hindu*)

A swollen Periyar flows through Vallakadavu, downstream of the Mullaperiyar dam, after its shutters were opened on November 30, 2021 when the water level reached 142 feet. Photo: Special Arrangement



*Photographs of
flooded houses
and streets due
to spillway
release from
Mullaperiyar*





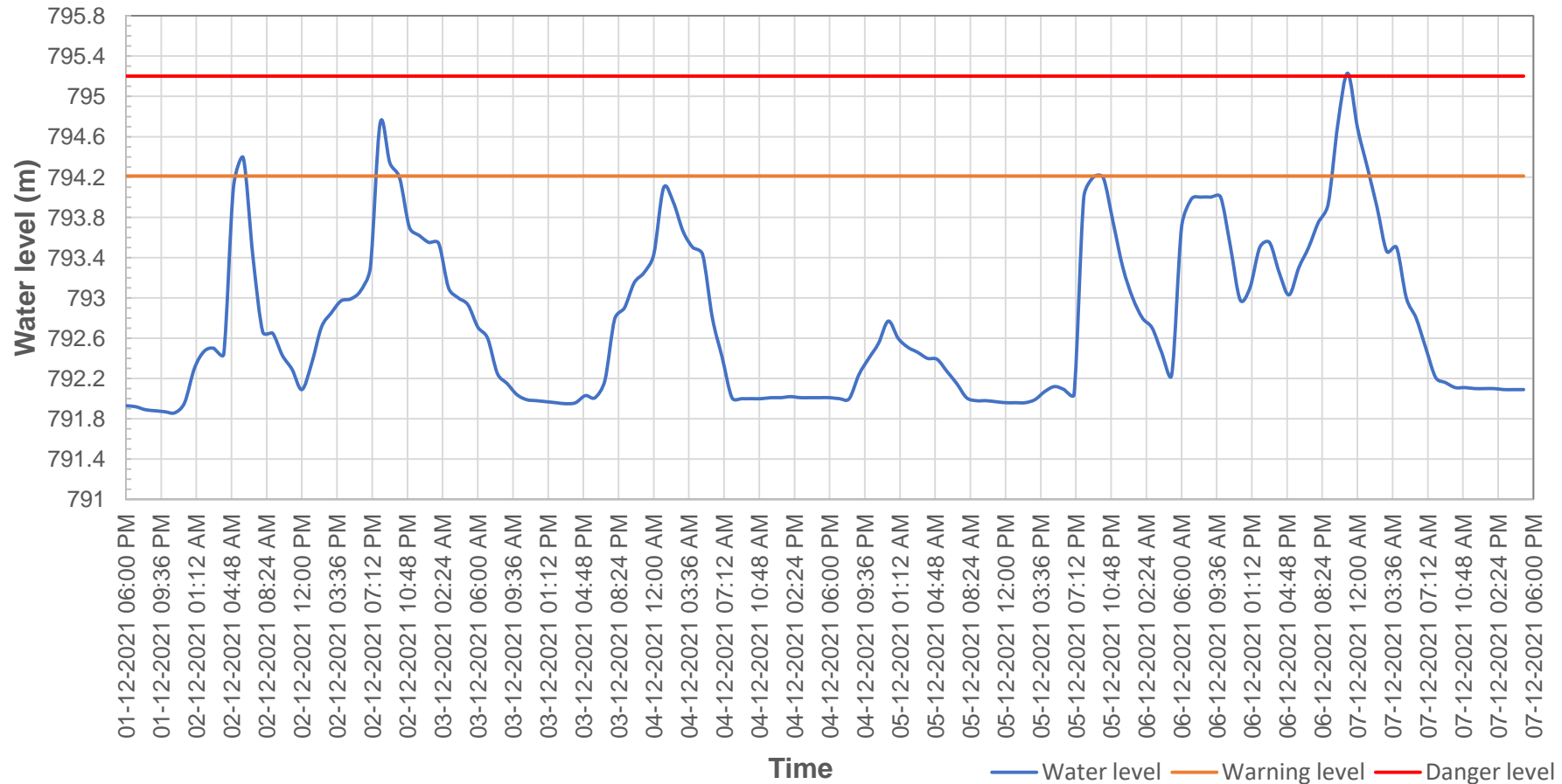
Photographs of flooded houses and streets due to sudden large spillway release from Mullaperiyar



River flow pattern downstream of MPD⁸¹ - Week I, December 2021

CWC Vandiperiyar gauging station - Water level variation
(from 01.12.2021 6 PM onwards)

HFL – 797 m (16.08.2018); Danger Level – 795.2 m; Warning level – 794.2 m



THANK YOU

Chapter-VIII**“Way forward – towards an amicable resolution”**

1. The Empowered Committee had, after due consideration of the grievance raised by the SoTN about their inability to raise the Mulla Periyar Dam (MPD) reservoir water level from 136 ft to 142 ft and beyond, and the concern of the SoK that the Dam is not safe and has outlived its life span and the water level of the MPD reservoir should not be raised from 136 ft, that, its break / bursting would cause a grave threat to the people of Kerala, living in the down-stream of the Dam (Chapter-III and Chapter-V), directed certain Investigations, Tests and Studies (ITS) to be carried out by the three apex national organizations namely, Central Water Commission (CWC), New Delhi, Central Soil Materials and Research Station (CSMRS), New Delhi and Central Water & Power Research Station (CWPRS), Pune, besides through other specialist organizations of Government of India (IMD & GSI) and specialist expert agencies, for proper appraisal of the stands of the two States (Chapter – VI). The Committee has appraised and analyzed the reports of the ITS and on that basis drawn its conclusions (Chapter - VII) on:
 - i) Hydrologic Safety;
 - ii) Structural Integrity and Safety; and
 - iii) Seismic Safety of Mulla Periyar Dam

2. The Empowered Committee has inter alia found (Chapter VII):
 - (A) **Hydrologic Safety**
 - i) *That the Mulla Peryiar Dam is hydrologically safe;*
That in view of the hydrologic Safety of Mulla Periyar Dam, the FRL can be safely raised from 136 ft to 142 ft;
 - a) *That top elevation of the Dam and the parapet rises sufficiently above the MWL, so that reservoir water will not spill over it leading to jeopardizing its safety; and*
 - b) *That the spillway allows safe passage of a moderated PMF.*

(B) Structural Safety

- ii) *Both the Main and Baby Dam (gravity and earth), are structurally safe;*
- iii) *Requisite maintenance and repair measures should be carried out in a time-bound manner;*
- iv) *Remaining strengthening measures for the entire dam should be carried out;*
- v) *That the seepage through the Dam is within permissible limits;*
- vi) *That the Dam has not been adversely affected due to leaching of free lime dissolved in seepage water.*

(C) Seismic Safety

- vii) *That the Dam is found to be seismically safe for FRL 152 ft/ MWL 155 ft for the identified seismic design parameters with acceleration time histories under Dynamic 2D FEM Analysis;*
- viii) *That the Strength and other properties of dam material indicate ample reserve against the likely stresses / impacts assessed under this analysis. In addition, reserve strength of cable anchors makes the dam further safe.*
- ix) *That the recent earthquake activity in the dam area is found to be of no consequence to the seismic safety. It has caused no distress to MPD / Idukki dams.*

That as the existing Dam is found Hydrologically, Structurally and Seismically safe, to raise the FRL from EL 136 ft to 142 ft. That a new independent Expert Committee may be required to look into the need of raising the FRL beyond 142 ft as laid down by the Hon'ble Supreme Court.

The proposal of SoK to build a new Dam, therefore, may be reconsidered by SoK.