Superintending Engineer
Dam Safety Organisation
Dindori Road, Nashik-422004.
Phone (Off.): 0253 – 2530030.
Fax: 0253 – 2530030.
E-mail: se.damsafety@gmail.com

सत्यमेव जयते

महाराष्ट्र शासन,
जलसंपदा विभाग
Government Of Maharashtra
Water Resources Department

अधीक्षक अभियंता,
धरण सुरक्षितता संघटना,
दिंडोरी मार्ग, नाशिक - ४२२ ००४.
दूरध्वनी (ऑ.): ०२५३ - २५३००३०
फॅक्स : ०२५३ - २५३००३०.
ई-मेल : se.damsafety@gmail.com

जा.क्र.धसुविक्र.१/ध.स्थि.अ.(पु) २०२१-२२ /242/२०२२ दिनांक : 10 /11/२०२२

ई-मेल व्दारे

प्रति,

मा. कार्यकारी संचालक,
विदर्भ पाटबंधारे विकास महामंडळ,
नागपूर

विषय :- धरण स्थिती अहवाल २०२१-२२ (नागपुर प्रदेश)
संदर्भ :- १) शासन, पाटबंधारे विभागाचे पत्र क्र .पा .वि.१०७७ / २४०२/ १८६७/२ दिनांक- १९/०१/१९८२
२) शासन ,जलसंपदा विभागाचे पत्र क्र. संकीर्ण २०१४ /(२२०/२०१४)/सिं.व्य. (कामे) दि. ९/१०/२०१५

संदर्भिय शासन पत्र क्र. १ अन्वये आपले अधिनस्त अधीक्षक अभियंता व कार्यकारी अभियंत्याकडून या कार्यालयास प्राप्त झालेल्या नागपुर विभागातील पर्जन्य पूर्व व पर्जन्योत्तर २०२१ धरण निरिक्षण अहवालांची छाननी तसेच धरण सुरक्षितता संघटनेकडुन करण्यात आलेल्या Test Inspection नुसार सन २०२१-२२ वर्षाचा धरण स्थिती अहवाल संदर्भ पत्र क्र. २ अन्वये प्राप्त निर्देशा नुसार मा. महासंचालक, संप्रजसंवसु, मेरी, नाशिक यांचेकडुन प्रकाशीत करण्यात आलेला आहे.

मा. महासंचालक, संप्रजसंवसु, मेरी, नाशिक यांचे निर्देशानुसार

१) उपरोक्त प्रकाशीत धरण स्थिती अहवालातील प्रस्तावनेच्या अनुषंगाने मुद्देनिहाय अनुपालन अहवाल या कार्यालयास पाठविण्याचे निर्देश संबंधित अधीक्षक अभियंता यांना आपल्या स्तरावरुन देण्यात यावेत ही विनंती.

२) सदरचा अहवाल दरवर्षी एप्रिल महिन्यात प्रकाशीत करण्यासंबंधी धरण सुरक्षा देखरेख संचालनालय, केंद्रिय जल आयोग, नवी दिल्ली यांचे निर्देश आहेत. तथापि संबंधित अधीक्षक अभियंता व कार्यकारी अभियंता यांच्याकडुन पर्जन्य पुर्व व पर्जन्योत्तर पाहणी अहवाल तसेच अधीक्षक अभियंता मार्फत प्राप्त होणारे त्रुटी पुर्तता अहवाल विहीत कालावधीत प्राप्त होत नसल्याने सदरचा धरण स्थिती अहवाल प्रकाशीत करण्यास विलंब झालेला आहे. यास्तव पाहणी व त्रुटी पुर्तता अहवाल विहीत कालावधीत पाठविण्यात यावेत. याबाबत आपल्या स्तरावरुन संबंधित अधीक्षक अभियंता यांना निर्देश देण्याची विनंती आहे.

३) महामंडळ स्तरावरुन त्रुटी दूर करण्यासाठी आवश्यक निधी उपलब्ध करुन देण्याची व आवश्यकतेनुरुप सनियंत्रण करण्याची विनंती आहे. जेणेकरुन धरण सुरक्षित ठेवण्यास मदत होईल.

४) शासन निर्णय संकीर्ण. २०१६ (८८/१६)) / आयएम (डब्ल्यू) दि.९/५/२०१६, नुसार पुढील कार्यवाही करण्यात यावी हि विनंती.

५) धरण तपासणी अहवालातील त्रुटीचा पुर्तता अहवाल व पर्जन्य पुर्व व पर्जन्योत्तर पाहणी अहवाल विहीत कालावधीत धरण सुरक्षितता संघटना, नाशिक येथे प्राप्त होणेच्या अनुषंगाने संबंधित अधीक्षक अभियंता (वर्ग-१ धरणांसाठी) व कार्यकारी अभियंता (वर्ग-२ धरणांसाठी) यांना आपल्या स्तरावरुन कळविण्यात यावे ही विनंती.

६) ***नागपूर विभागाचा एकत्रित धरणस्थिती अहवाल -२०२१-२२ चे अवलोकन केले असता वर्ग-२ धरणांचे १३ पावसाळा पूर्व २०२१ व तसेच वर्ग-१ धरणांचे १ व वर्ग-२ धरणांचे १३ पावसाळोत्तर २०२१ धरण निरिक्षण अहवाल प्राप्त झाले नाहीत.***

७) मा. महासंचालक मेरी, नाशिक यांचे वर्ग-१ व वर्ग-२ धरणांचे पावसाळा पुर्व व पावसाळोत्तर तपासणी अहवालासोबत धरणांवरील विशेष त्रुटीबाबतचे प्रपत्र (संदर्भ परिच्छेद क्र. १.११) तांत्रिक परिपत्रक जा. क्र. सं.प्र.ज.सं व सु/भ अ सं सं/प्रशा/अधि/८८/सन २०२०, दि. २१/७/२०२० सादर करण्याबाबत सर्व संबंधीतांना आपले स्तरावर सूचना देण्यात याव्यात ही विनंती.

8) दि. 30/12/2021 पासुन संपुर्ण देशात धरण सुरक्षा कायदा-2021 लागू करण्यात आला आहे. सदर कायदयाच्या पार्श्वभूमिवर राज्यातील वर्ग-1 व वर्ग-2 धरणांचे पावसाळापुर्व व पावसाळोत्तर तपासणी अहवाल व त्रुटीचा पुर्तता अहवाल वेळेत सादर करण्याचे निर्देश संबंधित अधीक्षक अभियंता यांना आपल्या स्तरावरुन देण्यात यावेत ही विनंती. जेणेकरुन नागपूरविभागाचा एकत्रित धरणस्थिती अहवाल वेळेत प्रकाशित करणे सोयीचे होईल.

हे आपले माहितीस्तव व पुढील कार्यवाहीसाठी सविनय सादर.

सहपत्र : धरण स्थिती अहवाल २०२१-२२(नागपुर प्रदेश)

(म. श. आमले)
अधीक्षक अभियंता,
राज्य धरण सुरक्षितता संघटना,
नाशिक

प्रत- सचिव (जसंव्य व लाक्षेवि), जलसंपदा विभाग, मंत्रालय, मुंबई-३२ यांना अहवालासह माहितीस्तव सविनय सादर.
प्रत- महासंचालक, संकल्पन, प्रशिक्षण, जलविज्ञान, संशोधन व सुरक्षितता, मेरी, नासिक यांना अहवालासह माहितीस्तव सविनय सादर.
प्रत- कार्यकारी संचालक, विदर्भ पाटबंधारे विकास महामंडळ, नागपूर यांना अहवालासह माहितीकरीता सविनय सादर.
प्रत- मुख्य अभियंता, नियोजन व जलविज्ञान, नाशिक यांना अहवालासह माहितीकरीता सादर.
प्रत- मुख्य अभियंता, यांत्रिकी (जलसंपदा विभाग), नाशिक यांना माहितीस्तव अहवालासह सादर.
प्रत- मुख्य अभियंता, जलसंपदा विभाग, सिंचन भवन, सिव्हिल लाईन्स, नागपूर-१.
२) मुख्य अभियंता , जलसंपदा विभाग, (गोसीखुर्द प्रकल्प)
सिंचन सेवाभवन, सिव्हिल लाईन्स, नागपूर-१

प्रत,

१. अधीक्षक अभियंता व प्रशासक, लाभक्षेत्र विकास प्राधिकरण, नागपूर
२. अधीक्षक अभियंता, चंद्रपूर पाटबंधारे प्रकल्प मंडळ, चंद्रपूर
३. अधीक्षक अभियंता, भंडारा पाटबंधारे मंडळ, भंडारा
४. अधीक्षक अभियंता, नागपूर पाटबंधारे मंडळ, नागपूर
५. अधीक्षक अभियंता, गोसीखुर्द प्रकल्प मंडळ, नागपूर
६. अधीक्षक अभियंता, गोसीखुर्द उपसा सिंचन मंडळ, अंबाडी (भंडारा)
७. अधीक्षक अभियंता, यांत्रिकी मंडळ, नाशिक.

यांना माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी अहवालासह सस्नेह अग्रेषित.

२/- कृपया वरील अहवालाची प्रत मिळाल्याची पोहच या कार्यालयास पाठवावी हि विनंती.

प्रत,

१. कार्यकारी अभियंता, नागपूर पाटबंधारे विभाग (दक्षिण), अजनी, नागपूर
२. कार्यकारी अभियंता, नागपूर पाटबंधारे विभाग (उत्तर), प्लॉट नं.१३, सिव्हिल लाईन्स, नागपूर-१
३. कार्यकारी अभियंता, वर्धा पाटबंधारे विभाग, वर्धा
४. कार्यकारी अभियंता, पेंच पाटबंधारे विभाग, नागपूर
५. कार्यकारी अभियंता, चंद्रपूर पाटबंधारे विभाग, चंद्रपूर
६. कार्यकारी अभियंता, चंद्रपूर मध्यम प्रकल्प विभाग क्र.१, चंद्रपूर
७. कार्यकारी अभियंता, लघु पाटबंधारे विभाग, चंद्रपूर
८. कार्यकारी अभियंता, बाघ ईटीयाडोह पाटबंधारे विभाग, गोंदिया
९. कार्यकारी अभियंता, लघु पाटबंधारे विभाग, भंडारा
१०. कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया

२/- सदर अहवालाची प्रत ई-मेल व्दारे पाठविण्यात आलेली आहे.

प्रत - कार्यकारी अभियंता, धरण सुरक्षा विभाग क्र .३, नाशिक ४

२/- यांना ग्रंथालयात संग्रहासाठी.

प्रत - ग्रंथालय, मध्यवर्ती संकल्पचित्र संघटना, नाशिक यांना अहवालाच्या प्रतीसह माहितीसाठी.

लक्षवेध :-

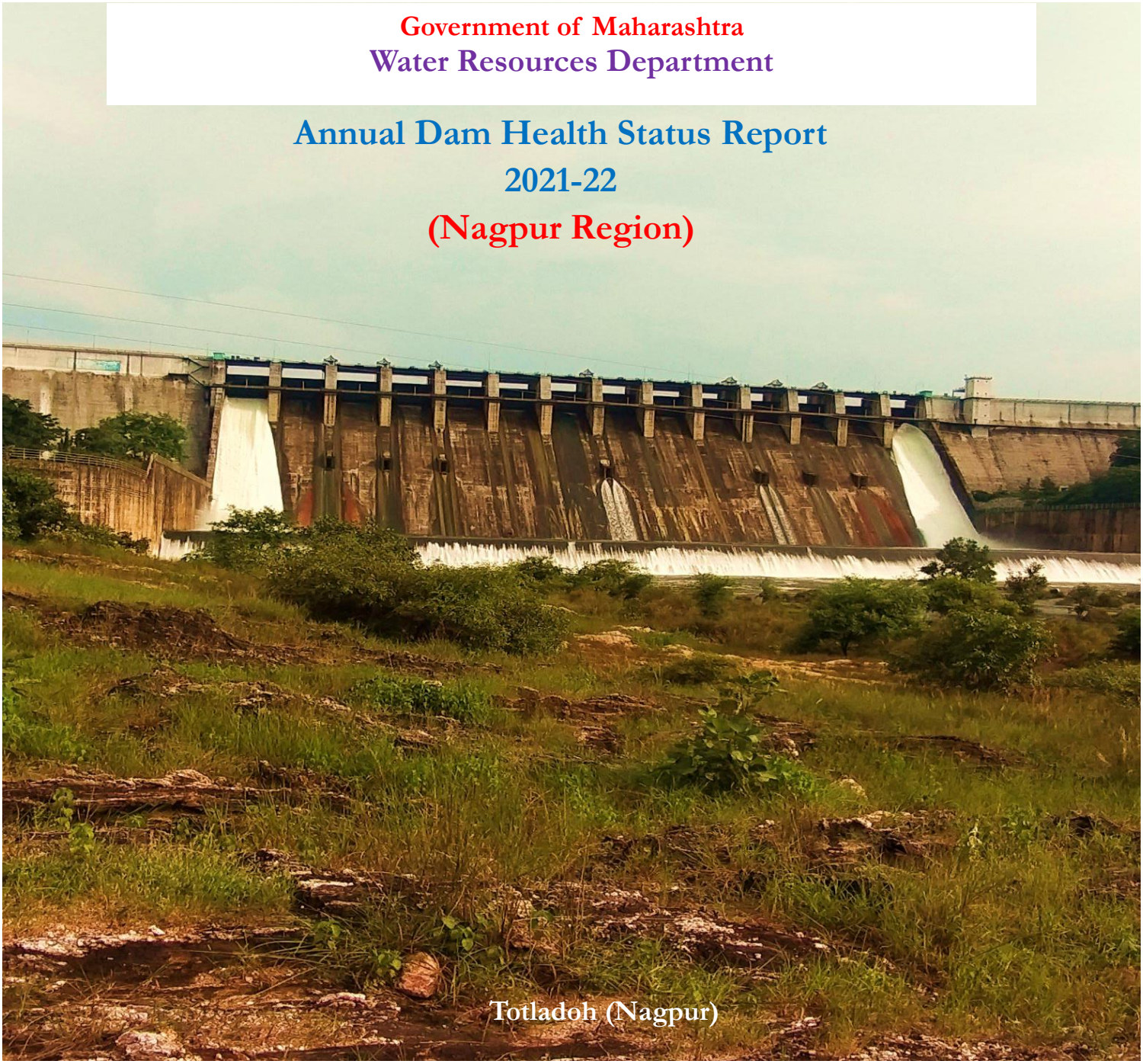
मुख्य अभियंता,जलविज्ञान व धरण सुरक्षितता, नाशिक यांचे पत्र जा.क्र.मु.अ./जवधसु./धसुसं/धसुविक्र.२/ १२६३/२०२२ दि. २८/९/२०२२ चे अवलोकन व्हावे व सदर त्रुटी बाबत कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया यांचा अहवाल राज्य धरण सुरक्षितता संघटना, नाशिक यांस देण्यात यावा, हि विनंती.

(For Office Use Only)

सत्यमेव जयते

Government of Maharashtra
Water Resources Department

Annual Dam Health Status Report
2021-22
(Nagpur Region)



Totladoh (Nagpur)

Superintending Engineer
Dam Safety Organisation
Nashik

Chief Engineer
Hydrology & Dam Safety
Nashik

Director General
Design, Training, Hydrology, Research and Safety,
MERI, Nashik

Government of Maharashtra
Water Resources Department

Annual Dam Health Status Report 2021-22 (Nagpur Region)

FOREWORD

1.0 Annual Dam Health Status Report (ADHSR) 2021-22 of Class-I & Class-II Dams in Nagpur Region is prepared based on the Inspection Reports (Pre and Post Monsoon 2021) received from field offices and test inspections carried out by Dam Safety Organisation (DSO), Nashik during Year 2021-22.The period of the report is from April 2021 to March 2022.

2.0 This Report comprises of following Parts.

Part	Description
Part-1	General Information
Part-2	Action Taken Report (ATR)
Part-3	Annual Dam Health Status Report (ADHSR) of Pre & Post Monsoon 2021
Part-4	Annual Performance Report of Dam Instruments
Part-5	Annual Performance Report of Meteorological Instruments
Part-6	National Committee on Dam Safety (NCDS) Documents
Part-7	Dam Health and Rehabilitation Monitoring Application (DHARMA)
Part-8	Health Status of Gated Dam (As per Mechanical Organisation)

Part-1 & Part-6 to 8 are envisaged by DSO, Nashik & Part-2 to5 are in the format provided by Dam Safety Monitoring Directorate, Central Water Commission, New Delhi vide letter No. 3/19/NCDS/HS/DSM/2001/627-56 Dated 28/08/2002.

2.1 Part-1:Covers General Information viz. Time schedule of Inspection, Classification of Dams, Inspection Authorities, Preparation of ADHSR for Class-I & Class-II Dams, Categorization and Standardization of Deficiencies, NRLD updation, which will be helpful to field officers. Inspecting officers are requested to follow the suggestion given in 'Part-1' while carrying out forthcoming Pre/Post Monsoon inspections of dams.

2.2 Part-2: Covers Action Taken Report (ATR) on Deficiencies pointed out in last Year ADHSR 2020-21& Status of poor efforts taken by field office.

2.3 Part-3: Covers condensed summary of Dam deficiencies noticed during inspection carried out by field officer and Dam safety Organisation in the Year 2021-22.

2.4 Part-4: Covers details of Instrumentation provided in or on Dams & its Functionality. Prepared by Instrumentation and Research Division, Nashik.

2.5 Part-5: Covers details of Metrological Instrumentation provided at Dam Site & its Functionality. Prepared by Instrumentation and Research Division, Nashik.

2.6 Part-6: Covers status of Documents (EAP, ROS & GOS, Data Book, O & M Manual, Record Drawing, Completion Report) recommended by National Committee on Dam Safety.

2.7 Part-7: Covers Progress of updation of Dam Information filled in DHARMA Web Portal.

2.8 Part-8: Covers over overall Health Status Gated Dam in ADHSR- 2021-22 of Mechanical Organisation.

3.0 This report covers Dam Health Status of 20Class-I &62 Class-II Dams owned by WRD and Also covers 1 Class-I &2 Class-II Private Owned Dams inspected by DSO twice in the year.

4.0. There are total 85 Dams in this Region. Out of 170 expected Inspection Reports, this ADHSR is based on 140Inspection Reports received in DSO, Nashik.

Status of Dam inspection during 2021-22
(Ref. Table- 3.1 & 3.3)

Dam Owner	Expected Inspection Report in DSO			Inspection Report Received in DSO			Inspection Report Not Received in DSO		
	Class I	Class II	Total	Class I	Class II	Total	Class I	Class II	Total
WRD	40	124	164	39	98	137	1	26	27
Private	2	4	6	1	2	3	1	2	3
Total	42	128	170	40	100	140	2	28	30

Dams having Deficiencies

(Ref. Table- 3.6)

Dam owner	Year	No. of Dams								
		Class of Dam		Total	Class-I dams having Deficiencies			Class-II dams having Deficiencies		
		I	II		Cat-I	Cat-II	Cat-III	Cat-I	Cat-II	Cat-III
W.R.D	2020-21	20	62	82	0	9	20	0	13	62
	2021-22	20	62	82	0	12	20	0	16	49
Private	2020-21	1	2	3	0	1	1	0	2	2
	2021-22	1	2	3	0	1	1	0	2	2
Total	2020-21	21	64	85	0	10	21	0	15	64
	2021-22	21	64	85	0	13	21	0	18	51

Category wise Deficiencies

(Ref. Table- 3.7)

Dam owner	Year	No. of Deficiencies								
		Category–1			Category-2			Category-3		
		Class		Total	Class		Total	Class		Total
		I	II		I	II		I	II	
W.R.D	2020-21	0	0	0	24	32	56	125	299	424
	2021-22	0	0	0	41	45	86	139	249	388
Private	2020-21	0	0	0	5	8	13	9	6	15
	2021-22	0	0	0	4	7	11	9	6	15
Total	2020-21	0	0	0	29	40	69	134	305	439
	2021-22	0	0	0	45	52	97	148	255	403

Gated Dams having Deficiencies (Class-I)(As per Mechanical Organization)
(Ref. Table- 8.1)

Dam owner	Year	Number of Gated Dams	No. of dams inspected	No. of dams having deficiencies	Number of Deficiencies		
					Category		
					Category-1	Category-2	Category-3
W.R.D	2020-21	13	13	13	0	31	477
	2021-22	13	13	13	0	152	952
Private	2020-21	1	1	1	0	2	16
	2021-22	1	1	1	0	11	33
Total	2020-21	14	14	14	0	33	493
	2021-22	14	14	14	0	163	985

5.0: The responsibility of Health and Safety Monitoring of Class-III dams lies with the respective Chief Engineers. Hence for Class-III Dams based on periodical inspection reports, Annual Dam Health Status Report should be prepared & published by concerned Field Chief Engineers with submission to Government & forwarded to DSO, Nashik for record.

6.0: The deficiencies shown in the present report are based on the Pre/ Post Monsoon Inspections of the Dams carried out by the field officers and reports of them received by this organization. As such, the deficiencies and action taken thereof is the sole responsibility of the field officers.

7.0 Conclusions :

Government Owned Class-I Dams :

7.01 : Category-1 Deficiency is Not noticed in all 20 Dams.

7.02 :41 No. of Category-2 Deficiencies in 12out of total 20 No. of Dams are noticed.

7.03 :139 No. of Category-3 Deficiencies in total 20 Dams are noticed.

7.04**:** Out of ATR expected for 24 No. of Category-2 Deficiencies, No field action is noticed for removal of Deficiencies.

Government Owned Class-II Dams :

7.05: Category-1 Deficiency is Not noticed in all 49 Dams.

7.06:44 No. of Category-2 Deficiencies in 16 out of total 49 No. of Dams are noticed.

7.07:249 No. of Category-3 Deficiencies in total 49 Dams are noticed.

7.08:Out of ATR expected for 32 No. of Category-2 Deficiencies, field action for removal of Deficiencies is noticed for 1Deficiencies only.

Private Owned Class-I Dams :

7.09: Category-1 Deficiency is Not noticed in 1Dam.

7.10 :4 No. of Category-2 Deficiencies in 1 Dam are noticed.

7.11 : 9 No. of Category-3 Deficiencies in 1 Dam are noticed.

7.12:Out of ATR expected for 5 No. of Category-2 Deficiencies, No field action is noticed for removal of Deficiencies.

Private Owned Class-II Dams :

7.13:Category-1 Deficiency is Not noticed in all 2 Dams.

7.14 :7 No. of Category-2 Deficiencies in total 2 Dams are noticed.

7.15 : 6 No. of Category-3 Deficiencies in total 2 Dams are noticed.

7.16 **:** Out of ATR expected for 8 No. of Category-2 Deficiencies, No field action is noticed for removal of Deficiencies.

8. Points of Attention:

8.01: It is mandatory that Pre Monsoon Inspection Report must be submitted to DSO, Nashik by 30thJune & Post Monsoon Inspection Report must be submitted to DSO, Nashik by 31stDecember every Year.

8.02: As per Dam Safety Monitoring Directorate, Central Water Commission, New DelhiAnnual Dam Health Status Report (ADHSR) must be submitted in the month April every Year.

8.03: It is pointed out that only 47 (28.66 %) Pre & Post Monsoon Reports out of 164 Pre & Post Monsoon Reports are received in stipulated period.

90 (54.88 %) Pre & Post Monsoon Reports are received out of 164 Pre & Post Monsoon Reports after rigorous follow up by DSO officials & 27 (16.46 %) reports out of 164 Pre & Post Monsoon Reports were not received at all. All field officers & Higher Authorities shall take serious note of this in light of enactment of Dam Safety Act 2021.

8.04: ATR expected for 22 No. of Dams (56 Cat-2 Deficiencies). However ATR was received for 6No. (18Cat-2 Deficiencies) of Dams i.e. only 5.55% of Cat-2 Deficiencies fully addressed.

8.05: Concerned Chief Engineer should monitor and instruct field Superintending Engineer & Executive Engineer regarding submission of ATR to DSO, Nashik to reflect exact status of Dam Safety works.

8.06: The Chief Engineers should compel all Superintending Engineer & Executive Engineer of concerned Dams to carry out periodic inspections and submit report to D.S.O. in time. Brain storming of field officer regarding Dam Safety aspect is must otherwise the whole exercise done by Dam Safety Organisation tends to become futile.

8.07: In case of Mechanical Organisation inspections, Out of ATR expected for 33 No. of Category-2 Deficiencies, No Action Taken Report (ATR) from field for removal of Deficiencies.

8.08: Earthen dam uprooting of trees & shrubs grown on embankment of Dam follow CWC guidelines for safety of dams 2018. [Page 54/90]

8.09: Review of a need for painting of Gates & structural parts to avoid further deterioration in consultation with Mechanical orgnisation.

8.10: Being the dam owner, safety of the dam is the prime responsibility of the concerned field Executive Engineer. In order to ensure safety of dam/dams in his jurisdiction, he shall initiate The procedures for removal of deficiencies noticed in the Pre-Post Monsoon Inspection as well as pointed out in this ADHSR by following due procedure of approval.

8.11: Higher authorities i.e. Superintending Engineer and Chief Engineer shall accord timely sanction to most economical and sustainable technical work required for Deficiency removal.

8.12: Executive Director, Vidarbha Irrigation Development Corporation are requested to make required funds available to the Deficiency removal and monitor the progress periodically. This will help in keeping the Dam safe.

8.13: As per Marathi Government Resolution Misc. 2016/(88/16)/IM(W) Dtd.- 09/05/2016, Responsibility of Approval of M & R Work's Procurement List & Prioritisation of execution of work & its implementation is entrusted to Superintending Engineers. And Responsibility of Review & monitoring is entrusted to Chief Engineers.

8.14: Hence, It is expected that Superintending Engineers should verify whether Works of removal of Deficiencies are proposed to address Deficiencies pointed in ADHSR while approving Procurement List of the M & R works of the Project.

8.15:Gist of report is that though inspection of Dams are carried out & Reports are published however status of ATR depict that despite of M & R expenditure extreme poor performance of removal deficiency is observed. Field officers should take serious note of this.

8.16: Central Government has enacted Dam Safety Act 2021 from date 30/12/2021 to provide for surveillance, Inspection, Operation & Maintenance of the specified dam for prevention of dam failure disaster & to provide for institutional mechanism to ensure their safe functioning & for matters connected therewith or incidental thereto So that Dam owner shall give specific attention for implementation of Dam Safety Act 2021.

I hope this report will serve desired expectations expressed by Dam Safety Monitoring Directorate of C.W.C. New Delhi. Any error, discrepancies omissions if any may please kindly by brought to the notice. So that it can be taken into consideration in the next report.

The efforts taken by the Superintending Engineer, Dam Safety Organisation, Nashik and his team, for completion of this report are highly appreciated.

Place: Nashik
Date: / / 2022

(R.R. Shah)
Director General
Design, Training, Hydrology, Research and Safety
MERI, Nashik

INDEX

Part-1

General Information

Part-1 General Information

1.01 Introduction :

As per National Register of Large Dam (NRLD) published by CWC, New Delhi, Maharashtra has the distinction of having largest numbers of dams in the country.

A separate Organisation called Dam Safety Inspectorate, Nashik was functioning in the State since 20/10/1980. Its status is upgraded as Dam Safety Organisation, Nashik from 01/05/1985. The organization consists of a circle level unit headed by Superintending Engineer under which Executive Engineer, Dam Safety Division No.2, Nashik looks after Nagpur Region.

1.02 Inspection of Dams :

The Government of Maharashtra has delegated powers of Pre and Post Monsoon Inspection to competent authority for Pre and Post Monsoon Inspection of the Dams vide G.R Dtd.23/08/1998.

Dam Safety Organization, Nashik carries out scrutiny of the inspection reports received from field offices for Class-I & II Dams. Significant & Serious deficiencies observed during scrutiny are immediately intimated to Field Offices to carry out Remedial Measures.

The "Annual Dam Inspection Programme" is sanctioned by Director General, DTHRS MERI Nashik. Test inspections are carried out by Dam Safety Organization as a third party inspection to crosscheck the inspections carried out by Field Offices.

Nagpur Region comprising 160 Government owned Completed Dams (includes 2 National Important Dams, 13 Century old Dams & 29 Dams under Construction Dams) & 3 private Dams

DSO, Nashik monitors all Government Dams from safety point of view. In addition to this DSO, Nashik carried out detailed inspections of 3 Private Dams (2 owned by NMC, Nagpur and 1 by CSTPS, Chandrapur) on Consultancy basis.

1.03 District wise and class wise break up of number of Dams :

District	No. Of Class-I Dams	No. Of Class-II Dams	No. Of Class-III Dams	Grand Total
Wardha	4	13	08	**25**
Nagpur	7	24	34	**65**
Bhandara	1	03	12	**16**
Gondia	4	14	05	**23**
Chandrapur	2	08	13	**23**
Gadchiroli	2	-	06	**08**
Govt. Total	**20**	**62**	**78**	**160**
Nagpur	-	02	-	**02**
Chandrapur	01	-	-	**01**
Private Total	**01**	**02**	**00**	**03**
Grand total	**21**	**64**	**78**	**163**

1.04 Time Schedule of Inspections :

The Government of Maharashtra has designed systematic approach for monitoring each and every dam. The periodical inspection of dams must be completed as per following schedule.

Type of Inspection	Last dates for	
	Completion of Inspection	**Sending of Inspection reports to concerned authorities.**
(1) Pre Monsoon	15th May	30th June
(2) Post Monsoon	30th November	31st December
(3) Special inspection before the first filling (Report need not be sent to Dam safety Organization)	30th April	31st May
(4) Special inspection after the first filling	Within one week after the lake attains the intended storage level.	Within one week from the date of inspection.
(5) Special inspection after a severe distressing event or accident or incident.	Immediately after the event is noted.	Within one week form the date of inspection?

1.05 Classification of Dams :

The dams are categorized into three types based on their component and features as below.

SR No	Type of Dam	Height from general level of deepest foundation in m.	Impounded gross storage capacity Up to FRL in M Cum	Spillway capacity	Type of spillway
1	**2**	**3**	**4**	**5**	**6**
1	Class-I Dam	Above 30 m	Above 60 M Cum	Above 3,000 Cumecs	Gated Spillway
2	Class-II Dam	15 m to 30 m	15 M Cum upto 60 MCum	2,000 to 3,000 Cumecs	Ungated Spillway
3	Class-III Dam	10 m.to15m	1.0 M Cum upto 15 MCum	2,000 to 3,000 Cumecs	Ungated Spillway

Note :

1) All dams more than 15 meters in height will be classified under "Large Dam" Irrespective of other parameters.
2) All dams less than 10 meters in height will be classified as "Small Dam" irrespective of other parameters.
3) In order to determine the exact category of "Large Dam" following procedure shall be followed. The category of dam as per (I) Height (II) Storage Capacity & (III) Spillway Capacity shall be worked out individually. The highest of category shall be appropriate category of dam
4) Apart from above following additional parameters shall be considered for deciding the category of the dams between 10 to 15 m. in height.
   a) Dams having length of crest more than 2000 m. OR
   b) Dams having specially difficult foundation problems OR
   c) Dams with unusual design shall be classified under "Large Dams (Class-II)"
   d) Dams having length of crest more than 500 meters but less than 2000 meters

Shall be classified as "Large Dams (Class-III)"

1.06 Field Inspection Authorities :

The designated inspection authority for periodical inspection of dam depending upon the classification of type of dam is as below

Sr. No.	Type of Dam	Inspection authority	Inspection Reports to be sent to	Test Inspection
1	**2**	**7**	**8**	**9**
1	Class-I Dam	Superintending Engineer/ Administrator	1) Chief Engineer 2) Superintending Engineer Dam Safety Organization.	Test Inspection by the Regional Chief Engineer/ Chief Administrator for the dams having height more than 60 m or storage capacity more than 1000 MCum or spillway capacity 10000 Cumecs or more
2	Class-II Dam	Executive Engineer	1) Superintending Engineer/ Administrator 2) Superintending Engineer, Dam safety Organization	
3	Class-III Dam	Deputy Engineer	1)Superintending Engineer/ Administrator 2) Executive Engineer	

1.07 Preparation of Annual Dam Health Status Reports of Class-I & class-II Dams :

Dam safety Organization carried out scrutiny of the periodical inspection reports of Class-I & Class-II dams received from field offices and significant deficiencies are immediately communicated to concern authorities to carry out remedial measures.

Based on all periodical inspection reports from Field Offices and Test Inspections carried out by DSO, Nashik, Region wise Annual Dam Health Status Report is published by DG, DTHRS, MERI, Nashik and submitted to Government, CWC and circulated to all concerned Field Offices.

1.08 Preparation of Annual Dam Health Status Report of Class-III Dams :

The responsibility of Health and Safety Monitoring of Class-III dams lies with the respective Chief Engineer. Hence for Class-III Dams based on periodical inspection reports, Annual Health Status Report of Class-III dams should be prepared by concern Field Chief Engineers and forwarded to DSO, Nashik for record.

1.09 Guidelines Regarding Preparation of Annual Dam Health Status Report :

ADHSR is prepared in DSO, Nashik as per Central Water Commission New Delhi's guidelines received vide letter Dtd. 28/08/2002. As per this letter it is intimated that all States / Organizations should submit the Annual Dam Health Status Report (ADHSR) in the month of 'April' every year.

1.09.1 Categorization of Deficiencies

The deficiencies observed are categorized as per CWC, New Delhi's letter Dtd. 28/08/2002 as below

Category	Action to be taken
Category-1	Dams with Major deficiencies which may lead to dam failure.
Category-2	Dams with Major rectifiable deficiencies needing immediate attention.
Category-3	Dams having Minor/ No deficiencies.

For further detailing of deficiencies based on the nature and priority of deficiency, DSO, Nashik has standardized all the three types of deficiencies.
These standardized deficiencies are as follows

1.09.2 Category-1 Standard Deficiencies :

Sr. No.	Deficiencies	Category identifier
1 E -	**Earthen Dam**	
1	Seepage water has created an open pathway or pipe through dam, which may lead to failure of dam by piping.	1E.1
2	Heavy seepage with muddy or turbid water is observed through any part of dam.	1E.2
3	Seepage water flooding from a boil in the foundation or from relief well on downstream side of dam.	1E.3
4	Outlet well / Head regulator well and hoisting structure is collapsed/completely damaged.	1E.4
5	Outlet pipe in the body of the dam is damaged/failed and uncontrolled outlet-releases eroding Toe of dam.	1E.5
6	Debris stuck under gate or gate leaf is cracked / failed resulting uncontrolled flow through outlet.	1E.6
1 M	**Masonry Dam**	
1	Downstream movement or tilting of dam.	1M.1
2	Differential movement of dam blocks/monoliths.	1M.2
3	Vertical Displacement with visible cracking in the body of dam.	1M.3
4	Spillway gate damaged / not working.	1 M.4

1.09.3 Category-2 Standard Deficiencies :

Deficiency Cat II (A)	Deficiency Cat II (B)
Earthen Dam	
A.1: Boil/leakage/ seepage/ wet patches/ slushiness in Earthen Dam.	**B 1:** Dam section is not as per design
A 2: Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam	**B 2:** Cross and toe drains not working properly/ drains silted or vegetated causing stagnant pool of water.
A 3 : Leakages in vicinity of junction between earthen dam & masonry dam portion.	**B 3:** Considerable settlement of embankment / Rock toe/Pitching/ U/S & D/S slops, bulging/concavity of slopes.
A 4 : Major leakages through outlet conduit/pipe joints/Gates.	**B 4**: Longitudinal / Transverse cracks/ low area/sink holes/gully formation on top side slope of earthen dam.

Deficiency Cat II (A)	Deficiency Cat II (B)
A 5 ; Relief wells not functioning properly./ Abnormal rise in water level in wells.	**B 5:** Outlet gates not functioning properly. Stem rod is bent(Service gate/Emergency gate/Stop log gate/sluice gate)
A 6 : Outlet well is damaged/not in good condition /cracks observed/jets of water in well.	**B 6:** Approach to dam through all weather road not constructed/maintained properly.
A 7 : Retrogression /scouring in tail channel.	**B 7:** Waste weir/waste weir bar not in good condition/coping damaged/leakage through waste weir.
Masonry / Concrete Dam	
A 8 : Drainage gallery inaccessible/No adequate lighting./ No dewatering arrangement or failure.	**B 8:** Pointing on U/S face of dam not in good condition./deterioration spalling of concrete surface.
A 9 : Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes.	**B 9:** Instruments not in working condition.
A 10 : Heavy leakages through porous pipes/ through dam body in gallery /monolith joints.	**B 10:** Leakages through River sluice.
A 11 : Sweating / seepages through D/S of masonry dam	
A 12 : Excessive considerable leaching from seepage water.	
A 13 : Swelling / minor cracking observed on body of dam.	
A 14 : EDA / Stilling basin damaged/Hydraulic performance not good.	
A 15 : Leakages through spillway /piers//junction of flank wall.	
A 16: Damages / foundation erosion/ scour/undermining observed in vicinity of flank walls/ guide walls/ junction walls/return walls.	
A 17 :End weir not in good condition / scouring noticed on immediate D/S.	
Spillway gates	
A 18 :Wire ropes of hoist not in good condition/hoisting structure damaged/cracked.	**B 11**: Surface paint/steel surface of spillway gates deteriorated.
A 19 : Alternative power system Generator for gate operation not working properly.	**B 12** : Damage to Rubber seals/ considerable Leakages through gates.
A 20 : Operation of gates not smooth needs repair.	
Other structures	
	B 13 : Heavy vegetation/big trees on embankment top/slope making dam portion not accessible.
	B 14 : Deck bridge slab/ pier / damaged cracked/ alignment disturbed.
	B 15 :Major portion of Pitching damaged/washed away.

1.09.4 Category-3 Standard Deficiencies :

Sr. No.	Deficiencies	Category identifier
1	Profuse growth of bushes and trees over dam portion.	3.1
2	Guard stones/ chainage stones and parapet wall not provided /damaged.	3.2
3	Growth of aquatic weeds in reservoir of dam is observed.	3.3
4	Ant hills or crab holes/holes made by rodents/animals**.**	3.4
5	Minor undulation/ settlement/slightly less top width/ Rain cuts / pot holes observed on dam top & slopes.	3.5
6	Access road**/**Dam top road surface/ slab joints damaged needs repair.	3.6
7	Pitching on embankment of dam is dislocated /disturbed at some places.	3.7
8	Breaching section is not accessible/ Instruction board showing operation of breaching section is not available.	3.8
9	Section of Toe drain/cross drain/ out fall drain/rock toe damaged at some places. Pitching of drains disturbed. Some weed, vegetation growth/ siltation in nalla/drains. Nalla needs regradation.	3.9
10	Surface drain/ Catch water drains for berms are silted /damaged	3.10
11	Electric cable & wiring are damaged/not in good condition.	3.11
12	Minor leaching in the gallery/ body of dam.	3.12
13	V – notches/ measuring devices are not in working condition/ silted /damaged/ not provided.	3.13
14	Mosquito net door is to be provided to avoid entry of reptiles in the gallery.	3.14
15	Damage to natural slope protection works,guniting damaged/washed out. Wire mesh exposed.	3.15
16	Guide wall/Divide wall/Guide bund/End Sill wall damaged/ Pointing is not in good condition/weep holes not functioning. At some places w.w bar/coping is damaged.	3.16
17	Provision of access to stilling basin/ladder not provided.	3.17
18	EDA ponding with water not possible to Inspect.	3.18
19	Minor erosion/ Scouring/Retrogression/ pot holes in tail channel. Ponding, standing Water in EDA / Tail channel.	3.19
20	Lubrication/painting/minor repairs required for parts of Gates / hoisting Structure/Rubber seal damaged/ replacement.	3.20
21	Approach bridge to intake well / spillway gates railing /flooring plates damaged / need repairs. Need of ladder for inspection well/EDA.	3.21
22	Minor leakages through river sluice/outlet/ gates.	3.22
23	Air vent not periodically cleaned./damaged/closed.	3.23
24	EAP / ROS /GOS /Record drawings/ not provided / not prepared at dam site.	3.24
25	The record of periodical measurements of leakage discharge from dam / relief well is not maintained.	3.25
26	Street light on dam top is not provided/not working.	3.26
27	Security / CC TV camera/entry gate not provided/not working.	3.27
28	Sufficient staff arrangement is not available for security ,instrument readings and measurements and maintenance on dam site.	3.28
29	Fencing around dam is not provided/ damaged due to which unauthorized trespassers are seen.	3.29
30	Communication facilities like mobile wireless, warning devices, telephone is not available at dam site.	3.30
31	Sufficient stock of spares/stationary required is not available at dam site. Storage arrangement not provided at site.	3.31

Sr. No.	Deficiencies	Category identifier
32	Minor leakages through masonary/ concrete dam body/gallery of dam/outlet well.	3.32
33	Security cabin at dam entrance/Irrigation outlets not provided/damaged/needs repair.	3.33
34	Approach channel silted.Trash rack need to be cleaned/ damaged/not provided.	3.34
35	Minor damages to spillway / masonary/ concrete portion of dam/outlet well.	3.35
36	Porous pipes/foundation drains / holes not periodically cleaned.	3.36

1.10 Special Deficiencies

Director general, DTHRS, Nashik has circulated a circular of special deficiencies dated 21/07/202 (सं.प्रा.ज.सं.सु./म.अ.सं.सं./प्रशा/अधि/88/सन 2020) to all field offices to attend the above special deficiencies along with periodical inspection report

Statement No-1

Special Attention Deficiencies (Civil), Attached with Pre- Post monsoon Inspection Reports (Availability of Compulsory Manpower & Documents at dam Site)

Deficiency category	Deficiency
Sp-1	Whether Emergency Action Plan is kept at dam site or not ?
Sp-2	Whether Approved Reservoir Operation Schedule is kept at dam site or not ?
Sp-3	Whether Latest approved gate Operation Schedule is to be kept at dam site or not ?
Sp-4	Whether Record Drawings sets are kept at dam site / section / Sub Divn. office or not ?
Sp-5	Whether Standard Operating Procedure copy with Updated contact numbers of all concerned authorities are kept at dam site or not ?
Sp-6	Whether Chart showing location of rain gauges / river gauges on U/s catchment & approximate travel time of discharge is maintained & displayed at dam site.
Sp-7	If CCTV is established, how observations are done round the clock & who is responsible person to observe these.
Sp-8	Whether Sufficient arrangement of staff is available or not. Engineers / Operators / Electrician / Watchmen / Security etc. and also staff for instrument reading, measurement & maintenance.They may be Govt. employee or through outsourcing. This staff is especially compulsory during monsoon period.
Sp-9	Whether Communication facilities like mobile, wireless, warning devices, telephone are available at dam site, or otherwise.
Sp-10	Whether The record of periodical measurements of leakage discharge from dam / relief well etc. is maintained or not.

Deficiency category	Deficiency
Sp-11	Is there any profuse growth of bushes or trees over any portion of dam ?

Statement No-2

Special Attention Deficiencies (Mech & Elect), Attached with Pre- Post monsoon Inspection Reports

(Compulsory Minimum repairs, For Spillway Gates & Gallery)

Deficiency category	Deficiency
Sp-12	Whether Wire ropes of hoist are in good condition/hoisting structure damaged/cracked ?.
Sp-13	Whether Alternative power system- Stand by two Generators for gate operation are working properly or not ?
Sp-14	Whether the **o**peration of all gates is smooth or needs repair ?.
Sp-15	Whether Lubrication/ painting/ minor repairs for parts of Spillway Gates and Hoisting structure are carried out or not ?.
Sp-16	Whether Rubber seals of gates are damaged or needs replacement ?.
Sp-17	Due date of painting of each part should be displayed on dam site as per mechanical maintenance schedule
Sp-18	Whether Electric cable / wiring / lights etc are in working condition are not ?
Sp-19	Whether gallery is having excessive leakages ?

1.11 Standard Procedure For Confirmation And Removal of Category-1 Deficiency of Dams

A systematic approach and working methodology is very essential to monitor the safety aspects of the dams.

During the scrutiny of Pre and Post Monsoon report or during DSO test Inspection whenever it is found that the deficiency is of Category-I, it will be immediately communicated to concern SE and CE.

Concerned SE /CE should immediately visit the dam and should satisfy himself that the deficiency pointed out is a major deficiency which may lead to failure of dam and should confirm to the DSO, Nashik regarding the classification of deficiency as per his opinion.

After conformation from Field Chief Engineer it will appear in ADHSR.

Remedial Measures for Category-I deficiency removal shall be undertaken immediately. And after completion of physical work of deficiency removal, Concern Chief Engineer should communicate status to DSO, Nashik immediately.

1.12 National Register of Large Dams (NRLD) :

Dams having Height above 10 meter are classified as per the norms of International Commission on Large Dams (ICOLD).

NRLD is consists of information of Large Dams as per 20 columns proforma covering information regarding salient features.

NRLD is updated in every January. Hence Field offices need to submit the information of new dams every year to DSO by December to incorporate it in NRLD. The response regarding

submission of NRLD information from field offices is very poor, it is always observed that DSO officials has to take rigorous follow up to obtain requisite information.

1.13 Point of Attention :

General	Details
Inspection details	1) The periodical inspection reports of all the dams shall be sent in original instead of carbon or xerox copy. (Signed copy shall be emailed in advance to DSO. 2) Ambiguous or incomplete replies shall be avoided. It is necessary to check point wise replies, which should clear and self explanatory. 3) The deficiencies observed frequently since long shall be deleted after verification of rectification work. 4)The inspecting officer is advised to write the word "special attention" in inspection report against all such items wherever immediate attention is necessary from concerned field officer in charge of dam from safety point of dams and life & property on the downstream & would be useful for identifying categorization of deficiencies in Dam Safety Organization, Nashik. 5) The information in Appendix II (Performance of meteorological instruments installed) and Appendix III (performance of taking observation of instruments installed in large dams) shall be filled properly and complete. 6) The compliance of rectification work of deficiencies of each dam mentioned in status report shall be communicated to Dam Safety Organization, Nashik every year so that this can be included in the Action Taken Report Part-I of status report.
Salient features	1) Due care shall be taken while filling the salient features of dam and information regarding N.C.D.S. documents. 2) Date of inspections is not mentioned in some Pre / Post Inspection Reports. This is mandatory since it will reflect in the Annual health status report.
Dam and Dam reach (Embankment)	1) If the existing dam section is found under section as compared to the design section during inspection then the work of re-sectioning shall be carried out and opinion of inspecting officer shall be stated in inspection report. 2) The extent of embankment settlement shall be furnished with its measurement & Reduced Distance (R.D.) and it shall be with compared designed cross section.
Gallery / Shaft Drainage (Concrete / Masonry)	The monolith wise quantum of leaching in galleries and all type of leakages in dam shall be noted in inspection report.
Spillway and Energy Dissipation Structure	The quantum of retrogression/scouring in tail channel shall be given in inspection report.
Hydro-Mechanical Component and Turbine/Pump	The trial of spillway gates shall be carried out before monsoon every year &observed condition shall be mentioned in inspection report.
Instrumentation	It is observed that the information regarding number of instruments installed does not tally for pre & post monsoon inspection report of the same dam. In some cases it is observed that the list of instruments given in previous year do not appears in the current year. These discrepancies should be avoided.

Part-2

Action Taken Report

Part-2: Action Taken Report (ATR)

2.1 General :

Annual Dam Health Status Reports (ADHSR) of Dams for Year 2020-21 was published by Director General, DTHRS, MERI, Nashik in June 2021 and submitted to Govt. of Maharashtra and also circulated to all Field Offices ranging from Divisions to Corporations for information and carrying out remedial measures.

It is expected that Field Officers should go through the Status Report scrupulously and attend remedial measures on priority basis and submit Action Taken Report (ATR) for reflecting necessary repairs & attention given for maintaining safety of Dams in the ADHSR.

2.2 ATR Submitted by Field Offices :

In this region there are Government owned 20 Class-I & 62 Class-II Dams & Private owned 1 Class-I & 2 Class-II Dams

As per ADHSR 2020-21 Action Taken Report was expected from Government owned 9 Class-I & 13 Class-II Dams & Private owned 1 Class-I & 2 Class-II Dams.

However Action Taken Report were received from Government owned 2 Class-I & 4 Class-II Dams & Private owned 0 Class-I & 0 Class-II Dams. [Ref. Table 2.1, 2.2 & 2.3]

2.3 Action Taken Report of Class-I & Class-II Dams (Government & Private owned)

	Category	Total Dam				ATR received				Physically fully completed						Physically partly completed					
	Class	I		II		I		II		I		II		%		I		II		%	
	No. of	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency
	Category 1																				
1	WRD	Nil																			
2	Private																				
	Category 2																				
3	WRD	9	24	13	32	2	7	4	11	0	0	0	1	0	5.55	0	0	1	0	14.28	0
4	Private	1	5	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	10	29	15	40	2	7	4	11	0	0	0	1	0	5.55	0	0	1	0	14.28	0

2.4 Conclusions :

Out of 10 Class I dams ATR of 8 dams are not received in DSO. Also Out of 15 Class II Dams ATR of 11 dams are not received. After scrutiny of ATR received it is concluded that only 0 % dams and 5.55% deficiencies are physically fully completed. And 0% dams and 14.28% deficiencies are physically Partly completed. Field officers & higher Authorities shall take note of this seriously.

2.5 Points of Attention:

A) Government & Private Owned Dams :

Sr. No.	Expected Inspection Report in DSO	Received in time in DSO		Even after rigorous follow up by DSO		ATR were not received	
		Number	%	Number	%	Number	%
1	25	0	0.00	6	24.00	19	76.00

1. ***Concerned Chief Engineer should monitor and instruct field Superintending Engineer & Executive Engineer regarding submission of ATR to DSO, Nashik to reflect exact status of Dam Safety works. Otherwise whole execercise of publishing ADHSR will be futile.***

2. ***Concerned Dam owner should give serious attention regarding submission (Before 15th feb 2022) of ATR to DSO, Nashik to reflect exact status of Dam Safety works. Otherwise whole execercise of publishing ADHSR will be futile.***

Table - 2.1

Consolidated Abstract of Status of Compliance of Category-1 Deficiencies in ADHSR 2020-21

Sr.No	Agency	Dams & Deficiencies						Status of Deficiencies removal as per compliance report received in DSO, Nashik																					
		Class-I Dam		Class-II Dam		Total		Physically fully completed						Physically partly completed						Administrative action initiated						Compliance report not received in DSO					
								Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total	
		No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1	No. Of Dams	No. of Def. Cat -1
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
----------NIL----------																															

Table - 2.2

Consolidated Abstract of Status of Compliance of Category-2 Deficiencies in ADHSR 2020-21

Sr. No	Agency	Dams & Deficiencies						Status of Deficiencies removal as per compliance report received in DSO																					
		Class-I Dam		Class-II Dam		Total		Physically fully completed						Physically partly completed						Administrative action initiated						ATR Not Received in DSO					
								Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total		Class-I Dam		Class-II Dam		Total	
		No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2	No. Of Dams	No. of Def. Cat -2
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
A) C.E W.R, Nagpur																															
1	CIPC, Chadrapur	0	0	1	1	**1**	**1**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	1	1	**1**	**1**
2	C.A.D.A.Nagpur	6	19	10	28	**16**	**47**	0	0	0	1	**0**	**1**	0	0	1	0	**1**	**0**	2	7	3	10	**5**	**17**	4	12	6	17	**10**	**29**
3	BIC, Bhandara	3	5	2	3	**5**	**8**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	3	5	2	3	**5**	**8**
Government Total		**9**	**24**	**13**	**32**	**22**	**56**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**7**	**3**	**10**	**5**	**17**	**7**	**17**	**9**	**21**	**16**	**38**
Private																															
1	CSTPS, Chandrapur	1	5	0	0	**1**	**5**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	1	5	0	0	**1**	**5**
2	N.M.C.Nagpur	0	0	2	8	**2**	**8**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	0	0	**0**	**0**	0	0	2	8	**2**	**8**
	Private Total	**1**	**5**	**2**	**8**	**3**	**13**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**2**	**8**	**3**	**13**
	Grand Total	**10**	**29**	**15**	**40**	**25**	**69**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**2**	**7**	**3**	**10**	**5**	**17**	**8**	**22**	**11**	**29**	**19**	**51**

Table - 2.3

Dams for which Compliance Report Not Received in DSO, Nashik

Sr. No.	Compliance Report not received	Total Number of Dam	Sr. No.	Compliance Report Not Received	Total Number of Dam
1	2	3	4	5	6
Class-I Dams				**Class-II Dams**	
A) Chief Engineer, Water Resources Department, Nagpur					
I) Superintending Engineer & Administrator, C.A.D.A., Nagpur					
1) Executive Engineer, Pench Irrigation Division, Nagpur			**1) Executive Engineer, Wardha Irrigation Division , Wardha**		
1.	Kamti Khairy	3	1	1. Dhaegaon Gondi	3
2.	Totaladoh		2	2. Parsodi	
3.	Ramtek		3	Pothra	
2) Executive Engineer, Nagpur Irrigation Division (North), Nagpur			**2) Executive Engineer, Nagpur Irrigation Division (North), Nagpur**		
4	Kolar	1	4	Khumari- nalla (Kalmeshwar)	2
			5	Makardhokada	
			3) Executive Engineer, Nagpur Irrigation Division (South), Nagpur		
			6	Kanolibara	1
II) Superintending Engineer, Bhandara Irrigation Circle, Bhandara					
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia				**1) Executive Engineer, Gondia Irrigation Division, Gondia.**	
5	Sirpur	2	7	Risala	2
6	Kalisarar		8	Mangad	

Sr. No.	Compliance Report not received	Total Number of Dam	Sr. No.	Compliance Report Not Received	Total Number of Dam
7	Pujaritola	1			
III) Superintending Engineer, Chandrapur Irrigation Project Circle, Chandrapur					
			1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur		
			1	Ghorzari	1
	Total	**7**		**Total**	**9**
Private Owned					
	CSTPS,Chandrapur				
7	Eari	1	**1**	Gorewada	**2**
			2	Ambazari	
	Total	**1**		**Total**	**2**
	Grand Total	**8**		**Total**	**11**

Table 2.4

ATR on Category-1 Deficiency in Class-I Dams

Sr. No.	Dam Features	Date Of Inspection	Main Component Of Dam	Observation / Significant Deficiencies Noticed	Remedial Measures Suggested	Implementation Status
1	2	3	4	5	6	7
---------- NIL ----------						

Table 2.5

ATR on Category-2 Deficiency in Class-I Dams

Sr. No.	Dam Features	Date Of Inspection	Main Component Of Dam	Observation / Significant Deficiencies Noticed	Remedial Measures Suggested	Implementation Status
1	2	3	4	5	6	7
A) Chief Engineer, Water Resources Department, Nagpur						
I) Superintending Engineer & Administrator, C.A.D.A., Nagpur						
1) Executive Engineer, Nagpur Irrigation Division (South) Nagpur						
1.	**Name :-Lower Wenna (Nand)** Dist. Nagpur Year of Completion: **1990** Location Longitude: **79° 07′ 00″** Latitude: **20° 43′ 45″** Height: **16.25 m** Gross capacity: **62.18 Mm³** Spillway capacity: **5238 m³/sec (Gated)** Sr. No. in National Register of Large Dams (July 2002) : **1227**	06/05/2020 19/12/2020	W.W. Bar & Tail channel	1) Scouring is observed for 20.0 m. length from end wall of stilling basin.(A7)		Rectification will be carried through Special Repairs (SR) works.
			Spillway Gates	2) There is tendency for water to under cut the ends of right side guide wall. (A16)		Necessary rectification will be carried out through Annual repairs (AR) works.
2.	**Name :-Lower Wenna (Wadgaon)** Dist. Nagpur	06/05/2020 19/12/2020	Earthen Dam	1)Relief well not functioning. (A5)	What is distress of non-functioning of relief well to be communicating to DSO Nashik.	Surging of relief well proposed in DRIP II

Sr. No.	Dam Features	Date Of Inspection	Main Component Of Dam	Observation / Significant Deficiencies Noticed	Remedial Measures Suggested	Implementation Status
1	2	3	4	5	6	7
	Year of Completion: **1997** Location Longitude: **79° 07′ 00″** Latitude: **20° 43′ 45″** Height: **23.65 m** Gross capacity: **152.6 Mm³** Spillway capacity: **9613 m³/sec (Gated)** Sr. No. in National Register Large Dams (July 2002) : **1353**		Masonry Dam	2) Considerable seepage and leaching is observed through body of dam. (A11)	Source of seepage should be find out and Monolith wise leaching should be tested in MERI Nashik and Communicate DSO, Nashik. Also find out source and quantity of leakage.	Provision of grouting to piers is proposed in DRIP II. UV coating proposed to entire dam.
				3) Leakage through pier of radial gates. (A15)	Source of seepage should be find out and Monolith wise leaching should be tested in MERI Nashik and Communicate DSO, Nashik. Also find out source and quantity of leakage.	
			W.W. Bar & Tail Channel	4) Erosion in tail channel from RD 80 to 210 m & 435 to 810 m.(A7)	To recommend remedial measure to give details regarding factual data and drawing of tail channel.	To arrest the extent of erosion in tail channel, cross wall, apron and spall fillings is proposed in tail channel as per recommendation of DSRP Panel. Proposed in DRIP II. Weep holes are proposed to be clean.
				5) Drainage holes not functioning due to chock up (A 9)	Find out in the when re-drilling of drainage hole was carried out.	

Table 2.6

ATR on Category-1 Deficiency in Class-II Dams

Sr. No.	Dam Features	Date Of Inspection	Main Component Of Dam	Observation / Significant Deficiencies Noticed	Remedial Measures Suggested	Implementation Status
1	2	3	4	5	6	7
---------- NIL ----------						

Table 2.7

ATR on Category-2 Deficiency in Class-II Dams

SR. NO	DAM FEATURES	DATE OF INSPECTION	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED	IMPLEMENTATION STATUS
1	2	3	4	5	6	7
A) Chief Engineer, Water Resources Department, Nagpur						
I) Superintending Engineer & Administrator, C.A.D.A., Nagpur						
1) Executive Engineer, Nagpur Irrigation Division (South) Nagpur						
1	Name:- **Makardhokada (Nagpur)** Date of completion :-**1978** Location : - Longitude :- **78° 56' 45"** Latitude :- **20° 32' 12"** Height :- **18.80 m.** Gross capacity :**21.35 Mm³** Design Spillway capacity **929 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **MH09MH0718**	09/05/2020 27/12/2020	Earthen Dam	1) Standing pool of water in gorge portion of nalla. (A2)	Try to drain out stagnant water through ditches and it should kept under observation with respect to reservoir level.	The work will be carried out through annual repairs (AR works)
			Outlet	2) Emergency gate not in working condition. (B5)	Trail Run of Emergency Gate/ Valve is must to keep it fit for emergency use. Authenticated Register of Trial run must be maintained.	Necessary repairs will be done through Mechanical division.
			W.W Bar & Tail channel	3) In EDA concrete portion is damaged. Also Divide wall is damaged. (A14)	Severity of exact type of damage and its magnitude shall be communicate to DSO Nashik to recommends proper remedial measures.	The work will be rectified through Special repairs.
				4) Partial retrogression noticed in tail Channel. (A7)	To recommend remedial measure to give details regarding factual data damage and d drawing of tail channel.	Not noted in ATR
2	Name:-**Nishanghat (Nagpur)** Date of completion :-**1985** Location : -	09/05/2020 27/12/2020	Earthen Dam	1) Standing pools of water observed on the D/S of dam at gorge portion. (A2)	Try to drain out stagnant water through ditches and it should kept under observation with respect to reservoir level.	All repairs suggested are proposed under Special Repairs of Nishnaghat Dam & Canal works.

SR. NO	DAM FEATURES	DATE OF INSPECTION	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED	IMPLEMENTATION STATUS
1	2	3	4	5	6	7
	Longitude :- **79° 06' 26"** Latitude :- **20° 48' 20"** Height :- **16.16 m.** Gross capacity :-**2. 471 Mm³** Design Spillway capacity **159.10 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **:-MH09MH1074**			2) Section profile of dam from RD 210m to 390m is not as per design. (B1)	Superimpose Existing Cross Section on Design Cross Section at every 30.00 m C/C to ascertain whether earthen embankment is under section or not. Communicate facts to DSO, Nashik	
			W.W Bar & Tail channel	3) Heavy scouring in W.W. spill RD. 0 to 510 m. in tail channel is noticed. (A7)	To recommend remedial measure to give details regarding factual data and drawing of tail channel.	
3	Name:-**Pandharabodi (Nagpur)** Date of completion :-**1967** Location : - Longitude :- **79° 17' 00"** Latitude :- **20° 49' 45"** Height :- **15. 24 m.** Gross capacity :-**13. 86 Mm³** Design Spillway capacity **432 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :-**MH09MH0147**	09/05/2020 27/12/2020	Earthen Dam	1) Standing pool of water on d/s of dam in gorge portion. (A2)	Try to drain out stagnant water through ditches and it should kept under observation with respect to reservoir level.	Necessary works proposed under annual repairs (AR) works
			Outlet	2) Rubber seal damaged & needs replacement.(B12)	Rubber seal should be replace in consultation with mechanical wing.	Necessary Rectifications are done.
			W.W. Bar & Tail channel	3) Major retrogression is observed at 100 m. from waste weir bar & stilling basin concrete is damaged due to scouring of stilling basin. (A7)	To recommend remedial measure to give details regarding factual data and drawing of tail channel.	Detailed survey is carried out. Estimate is under preparation. Work will be proposed under special reapirs.
4	Name:-**Saikinalla (Nagpur)** Date of completion :- **1994** Location : - Longitude :-**79° 12' 00"** Latitude :- **20° 51' 00"** Height :- **14. 65 m.** Gross capacity :-**8.990 Mm³** Design Spillway capacity :- **728 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **:-MH09LH1334**	09/05/2020 27/12/2020	Earthen Dam	1) Standing pool of water on d/s in gorge portion. (A2)	Try to drain out stagnant water through ditches and it should kept under observation with respect to reservoir level.	Necessary works proposed under annual repairs (AR) works
			Outlet	2) Emergency gate not in working condition .(B5)	Trail Run of Emergency Gate/ Valve is must to keep it fit for emergency use. Authenticated Register of Trial run must be maintained.	

Table 2.8

ATR on Category-1 Deficiency in Class-I Dams (Private Owned)

SR.NO.	NAME OF DAM	DATE OF INSPECTION	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED	REMEDIAL MEASURES SUGGESTED	IMPLEMENTATION STATUS
1	2	3	4	5	6	7
---------- NIL----------						

Table 2.9

ATR on Category-2 Deficiency in Class-I Dams (Private Owned)

SR.NO.	NAME OF DAM	DATE OF INSPECTION	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED	REMEDIAL MEASURES SUGGESTED	IMPLEMENTATION STATUS
1	2	3	4	5	6	7
---------- NIL----------						

Table 2.10

ATR on Category-1 Deficiency in Class-II Dams (Private Owned)

Sr.No.	Name of Dam	Date of Inspection	Main component of Dam	Significant Deficiencies Noticed	Remedial Measures Suggested	Implementation Status
1	2	3	4	5	6	7
---------- NIL----------						

Table 2.11

ATR on Category-2 Deficiency in Class-II Dams (Private Owned)

SR.NO.	NAME OF DAM	DATE OF INSPECTION	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED	REMEDIAL MEASURES SUGGESTED	IMPLEMENTATION STATUS
1	2	3	4	5	6	7
---------- NIL----------						

Part-3

Dam Health Status Report of Pre & Post Monsoon 2021

Part-3: Dam Health Status Report of Pre & Post Monsoon 2021

3.1 General :

Dam Safety Division No. 2 under Dam Safety Organization, Nashik excersies compilation of Annual Pre & Post Inspection Reports of Dams submitted by Field Offices as well as Test Inspection Reports of Selected Dams carried out by Dam Safety Organization, Nashik in the form of Annual Dam Health Status Report (ADHSR).

3.2 Inspection Reports submitted by Field Offices :

In all there are 82 Government owned Dams & 3 Private owned Dams are monitored by Dam Safety Organization, Nashik from safety point of view.

82 Government owned Dams constitute 20 Class-I & 62 Class-II Dams. 3 Private owned Dams constitute 1 Class-I & 2 Class-II Dams.

Government owned Dams : Out of 82 Dams, Pre Monsoon Reports were received from 69 Dams. 13 class-II Dams Reports were not received in DSO. However, out of 82 Dams, Post Monsoon Reports were received from 68 Dams. 1 class- & 13 class-II Dams Reports were not received in DSO. [Ref. Table 3.1 & 3.2]

3.3 Test Dam Inspection by Dam Safety Organisation :

Test Inspection Programme for Test Inspection of selected Dams is approved by Director General, DTHRS, MERI, Nashik.

As per approved Annual Test Dam Inspection Programme, Class-I Dams are inspected by SE, DSO along with EE, DSD-2 & Class-II Dams are inspected by EE, DSD-2, Nashik.

On similar lines in case of Private owned Dams, full fledged inspection of Class-I Dam is carried out by SE, DSO along with EE, DSD-2 & Class-II Dam is carried out by EE, DSD-2, Nashik.

Government owned Dams : Despite of Covid-19 pandemic 100% Dams (4 Class-I, 5 Class-II) as proposed for test inspection were inspected by team of Dam Safety Organization, Nashik. *[Ref. Table 3.5]*

Private owned Dams : Pre & Post Monsoon Inspections for all 3 Dams were carried out by DSO. *[Ref. Table 3.3 & 3.4]*

Following team of officers have inspected targeted Dams in Nagpur region

1) Shri M.S. Amale, Superintending Engineer Dam Safety Organization, Nashik
2) Smt. S.Y. Kurhade, Executive Engineer, Dam Safety Division No.2, Nashik
3) Shri S.B. Khairnar, Sub Divisional Engineer, Dam Safety Division No.2, Nashik
4) Shri K.V. Gunjal, Sub Divisional Officer, Dam Safety Division No.2, Nashik
5) Shri. L.I. Dudhal, Junior Engineer, Dam Safety Division No.2, Nashik

And Following team of officers have taken efforts to prepare this report.

1) Shri M.S. Amale, Superintending Engineer Dam Safety Organization, Nashik
2) Smt. S.Y. Kurhade, Executive Engineer, Dam Safety Division No.2, Nashik
3) Shri. K.V. Gunjal, Sub Divisional Officer (Retd), Dam Safety Division No.2, Nashik
4) Shri. P.K. Wandeshkar, Sub Divisional Officer, Dam Safety Division No.2, Nashik
5) Shri. L.I. Dudhal, Junior Engineer, Dam Safety Division No.2, Nashik

3.4 Health Status of Class-I & Class-II Dams (Government owned)

This report excerpts details of Deficiencies received from Pre & Post Monsoon Inspections Reports based on detailed inspections carried out by concerned field Superintending Engineer for Class-I Dams & Executive Engineer for Class-II Dams.

And it also covers test inspection carried out by team of officers from Dam Safety Organization, Nashik.

Sr. No.	Category	Total Dams		Reports received in DSO				Cat 1				Cat 2				Cat 3			
	Class	I	II	I		II		I		II		I		II		I		II	
	No. of			Pre	post	Pre	post	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency	Dam	Deficiency
1	WRD	20	62	20	19	49	49	0	0	0	0	12	41	16	45	20	139	49	249
2	Private	1	3	0	1	0	2	0	0	0	0	1	4	2	7	1	9	2	6
	Total	21	65	20	20	49	51	0	0	0	0	13	45	18	52	21	148	51	255

3.5 A Graphical Representation of Deficiencies attended, Submission of Pre/Post Monsoon Reports, Category wise Deficiencies, Class wise of Deficiencies is appended in Annexure I.

3.6 Selected Snapshots of DSO Test Inspection Test Inspections are compiled in Annexure II.

3.7 Conclusions :

3.7.1 Frequent Deficiencies Class-I Dams

1. **A 12**: Excessive considerable leaching from seepage water. (07 Dams)
2. **A 9:** Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes. (05 Dams)
3. **A 7 :** Retrogression / scouring in tail channel. (04 Dams)
4. **A 17 :** End weir not in good condition / scouring noticed on immediate D/S. (02 Dams)
5. **A 18:** Wire ropes of hoist not in good condition/hoisting structure damaged/cracked. (02 Dam)

3.7.2 Frequent Deficiencies Class-II Dams

1. **B 5:** Outlet gates not functioning properly. Stem rod is bent (Service gate / Emergency gate / Stop log gate/sluice gate) (08 Dam)
2. **B 1** Dam section is not as per design. (07 Dam)
3. **A 7:** Retrogression /scouring in tail channel. (06 Dam)
4. **A 2:** Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam (05 Dam)
5. **A 14:** EDA / Stilling basin damaged/Hydraulic performance not good. (03 Dam)

3.8 Points of Attention :

Sr. No.	Expected Inspection Report in DSO	Pre & Post Monsoon Inspection Report Received in time		Pre & Post Monsoon Inspection Report Not Received in time		Pre & Post Monsoon Inspection Report Not Received	
		Number	%	Number	%	Number	%
1	164	47	28.66	90	54.88	27	16.46

1) This overview provides condensed summary of deficiencies noticed in the Pre & Post Monsoon Inspection Reports Received in DSO & also during test inspection conducted by DSO Officials. Field Officers / Owners of the Dams are required to pay attention to Deficiencies pointed out in ADHSR to maintain Dams in Safe condition.

2) The Chief Engineers are requested to flag this issue and compel all Superintending Engineer & Executive Engineer of concerned Dams to carry out periodic inspections and submit report to D.S.O. in time.

Table 3.1

Status of Receipt of Pre & Post Monsoon Inspection Reports 2021

Sr. No.	Name of Office	Expected Inspection Report in DSO			Pre Monsoon Inspection Report Received in time (By 30th June)			Pre Monsoon Inspection Report Not Received in time (By 30th June)			Pre Monsoon Inspection Report Not Received			Post Monsoon Inspection Report Received in time (By 31st Dec)			Post Monsoon Inspection Report Not Received in time (By 31st Dec)			Post Monsoon Inspection Report Not Received		
		Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
	A) Chief Engineer, Water Resources Department, Nagpur																					
1	SE,CIPC Chandrapur	4	8	12	4	0	4	0	8	8	0	0	0	0	0	0	4	8	12	0	0	0
2	SE,CADA Nagpur	9	39	48	6	15	21	3	11	14	0	13	13	0	14	14	9	12	21	0	13	13
3	SE, B.I.C. Bhandara	4	11	15	4	0	4	0	11	11	0	0	0	0	0	0	4	11	15	0	0	0
	B) Chief Engineer, Gosikhurd Project, Water Resources Department, Nagpur																					
4	SE,NIC Nagpur	1	4	5	0	3	3	1	1	2	0	0	0	0	0	0	0	4	4	1	0	1
5	SE,GPS, Nagpur	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0
6	SE, GLIC, Ambadi	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0
	Total	**20**	**62**	**82**	**14**	**18**	**32**	**6**	**31**	**37**	**0**	**13**	**13**	**1**	**14**	**15**	**18**	**35**	**53**	**1**	**13**	**14**

Table 3.2

Dams for which Inspection Report of 2021 is Not Received in DSO, Nashik

Sr. No.	Pre & Post Monsoon Report Not Received (Both)		Either Pre or Post Inspection Not Received			
			Pre Monsoon		Post Monsoon	
	Class-I	Class-II	Class-I	Class-II	Class-I	Class-II
1	2	3	4	5	6	7
	A) Chief Engineer, Irrigation Department, Nagpur					
	I) Superintending Engineer & Administrator , C.A.D.A, Nagpur					
	1) Executive Engineer, Wardha Irrigation Division, Wardha					
1		Ashti				
2		Kanamwargram				
3		Lahadevi				
4		Panchdhara				
5		Panjara-bothali				
6		Pothara				
7		TakaliBorkhedi				
8		Dongargaon				
9		Dahegaongondi				
10		Umari (Wardha)				
11		Harshi				
12		Parsodi				
13		Madan				

Sr. No.	Pre & Post Monsoon Report Not Received (Both)		Either Pre or Post Inspection Not Received			
			Pre Monsoon		Post Monsoon	
	Class-I	Class-II	Class-I	Class-II	Class-I	Class-II
1	2	3	4	5	6	7
B) Chief Engineer, Gosikhurd Project, Nagpur						
III) Superintending Engineer, Nagpur Irrigation Circle, Nagpur						
1) Executive Engineer, Lower Wardha Project Division, Wardha						
					Lower Wardha	
	00	**13**	**00**	**00**	**01**	**00**

Note :- Parsodi (Wardha), Dahegaon (G), Pothra these dams having cat-2 deficiencies in ADHSR 2020-21

Table 3.3

Status of Pre & Post Monsoon Inspection 2021 by DSO, Nashik (Private Owned)

Sr. No.	Name of Office	To be Inspected by DSO			Pre Monsoon Inspection in time (By 30th June)			Pre Monsoon Inspection Not in time (By 30th June)			Pre Monsoon Not Inspected by DSO			Post Monsoon Inspection in time (By 31st Dec)			Post Monsoon Inspection Not in time (By 31st Dec)			Post Monsoon Not Inspected by DSO		
		Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	**CE, CSTPS, Chandrapur**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	1	**1**	0	0	**0**
2	**NMC , Nagpur**	0	2	**2**	0	2	**2**	0	0	**0**	0	0	**0**	0	0	**0**	0	2	**2**	0	0	**0**

Table 3.4

Dams for which Inspection Not carried out by DSO, Nashik (Private Owned)

Sr. No.	Pre & Post Monsoon Report Not Received (Both)		Either Pre or Post Inspection Not Report			
			Pre Monsoon		Post Monsoon	
	Class-I	Class-II	Class-I	Class-II	Class-I	Class-II
1	2	3	4	5	6	7
	CE, CSTPS, Chandrapur					
1			Eari			
	NMC , Nagpur					
2				Ambazari		
3				Gorewada		
	00	**00**	**01**	**02**	**00**	**00**

Table 3.5

Dams inspected by Dam Safety Organization, Nashik (2021-22)

Sr. No.	Name of Dam	Date of Inspection	Sr. No.	Name of Dam	Date of Inspection
1	2	3	4	5	6
Class-I Dams			**Class-II Dams**		
A) Chief Engineer, Water Resources Department, Nagpur					
I) Superintending Engineer & Administrator , C.A.D.A, Nagpur					
1) Executive Engineer, Pench Irrigation Division, Nagpur			**1) Executive Engineer, Wardha Irrigation Division, Wardha.**		
1	Totaladoh (National Important)	28/03/2022	1	Donagargaon	01/04/2022
2) Executive Engineer, Pench Irrigation Division, Nagpur			2	Kannamwargram	01/04/2022
2	Ramtek (Century Old)	05/06/2020			
II) Superintending Engineer, Chandrapur Irrigation Circle, Chandrapur					
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur					
3	Dina	08/02/2022	6	Pagadiguddam	07/02/2022
4	Asolamendha	09/02/2022	7	Chargaon	09/02/2022
			8	Ghorazari	09/02/2022
B) Chief Engineer, Gosikhurd Project, Nagpur					
I) Superintending Engineer, Gosikhurd Project Circle, Nagpur					
1) Executive Engineer, Gosikhurd Dam Division, Pavani					
4	Gosikhurd (National Important)	29/03/2022	9	Kar	31/03/2022
Private Dams					

Class-I Dams			Class-II Dams		
CE, CSTPS, Chandrapur					
5	Erai	30/03/2022			
			NMC , Nagpur		
			12	Gorewada	10/02/2022
			13	Ambazari	10/02/2022

Table 3.6

Deficiency Classification (No. of Dam wise)

Sr. No	Authority	Total Number of Dams			Number of Dams (Class-I)			Number of Dams (Class-II)		
		Class-I	Class-II	Total	Cat-1	Cat-2	Cat-3	Cat-1	Cat-2	Cat-3
	Government of Maharashtra, Water Resources Department									
1	CE, WRD, Nagpur	17	58	75	0	10	17	0	15	45
2	SE,CADA, Nagpur	9	36	45	0	7	9	0	8	23
3	EE, NID (S), Nagpur	2	9	11	0	2	2	0	6	9
4	EE, NID (N), Nagpur	2	14	16	0	2	2	0	2	14
5	EE, PID, Nagpur	3	0	3	0	3	3	0	0	0
6	EE, WID, Wardha	2	13	15	0	0	2	0	0	0
7	SE,CIPC, Chandrapur	4	8	12	0	0	4	0	1	8
8	EE, CID, Chandrapur	4	8	12	0	0	4	0	1	8
10	SE, B.I.C. Bhandara	4	14	18	0	3	4	0	6	14
11	EE, BIID, Godia	4	0	4	0	3	4	0	0	0
12	EE, BID, Bhandra	0	3	3	0	0	0	0	0	3
13	EE, GID, Godia	0	11	11	0	0	0	0	6	11
14	CE, G.P, WRD, Nagpur	3	4	7	0	2	3	0	1	4
15	SE,NIC Nagpur	1	4	5	0	1	1	0	1	4
16	EE,LWPD, Wardha	1	0	1	0	1	1	0	0	0
17	EE, MPD, Godia	0	3	3	0	0	0	0	0	3
18	EE, MID, Wardha	0	1	1	0	0	0	0	1	1
19	SE, GPC, Nagpur	1	0	1	0	1	1	0	0	0
20	EE, GDD, Pavani	1	0	1	0	1	1	0	0	0
21	SE, GLIC, Ambadi	1	0	1	0	0	1	0	0	0
22	EE, LIPD, Tirora	1	0	1	0	0	1	0	0	0
	WRD Total	**20**	**62**	**82**	**0**	**12**	**20**	**0**	**16**	**49**

Sr. No	Authority	Total Number of Dams			Number of Dams (Class-I)			Number of Dams (Class-II)		
		Class-I	Class-II	Total	Cat-1	Cat-2	Cat-3	Cat-1	Cat-2	Cat-3
	Dam inspection on consultancy basis									
23	C.E. CSTPS, Chandrapur	1	0	**1**	0	1	1	0	0	0
24	NMC, Nagpur	0	2	**2**	0	0	0	0	2	2
	PrivateTotal	1	2	3	0	1	1	0	2	2
	Grand Total	**21**	**64**	**85**	**0**	**13**	**21**	**0**	**18**	**51**

Note - 1. Out of 62 Govt. owned Class-II Dams, Only 49 Dams Post Monsoon Report were received in DSO and 13 Class-II Dams Post Monsoon Report were not received in DSO.

Table 3.7

Deficiency Classification (No. of Deficiency wise)

Sr. No	Authority	No. of Dams having Deficiencies						Number of Deficiencies								
		Cat-1		Cat-2		Cat-3		Category–1			Category–2			Category–3		
		Class-I	Class-II	Class-I	Class-II	Class-I	Class-II	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total
	Government of Maharashtra, Water Resources Department															
1	CE, WRD, Nagpur	0	0	10	15	17	45	0	0	0	34	42	76	121	232	353
2	SE,CADA, Nagpur	0	0	7	8	9	23	0	0	0	26	28	54	71	126	197
3	EE, NID (S), Nagpur	0	0	2	6	2	9	0	0	0	6	22	28	24	57	81
4	EE, NID (N), Nagpur	0	0	2	2	2	14	0	0	0	7	6	13	15	69	84
5	EE, PID, Nagpur	0	0	3	0	3	0	0	0	0	13	0	13	18	0	18
6	EE, WID, Wardha	0	0	0	0	2	0	0	0	0	0	0	0	14	0	14
7	SE,CIPC, Chandrapur	0	0	0	1	4	8	0	0	0	0	2	2	31	54	85
8	EE, CID, Chandrapur	0	0	0	1	4	8	0	0	0	0	2	2	31	54	85
10	SE, B.I.C. Bhandara	0	0	3	6	4	14	0	0	0	8	12	20	19	52	71
11	EE, BIID, Godia	0	0	3	0	4	0	0	0	0	8	0	8	19	0	19
12	EE, BID, Bhandra	0	0	0	0	0	3	0	0	0	0	0	0	0	22	22
13	EE, GID, Godia	0	0	0	6	0	11	0	0	0	0	12	12	0	30	30
14	CE, G.P, WRD, Nagpur	0	0	2	1	3	4	0	0	0	7	3	10	18	17	35
15	SE,NIC Nagpur	0	0	1	1	1	4	0	0	0	3	3	6	12	17	29
16	EE,LWPD, Wardha	0	0	1	0	1	0	0	0	0	3	0	3	4	0	4
17	EE, MPD, Godia	0	0	0	0	0	3	0	0	0	0	0	0	0	13	13
18	EE, MID, Wardha	0	0	0	1	0	1	0	0	0	0	3	3	0	4	4
19	SE, GPC, Nagpur	0	0	1	0	1	0	0	0	0	4	0	4	2	0	2
20	EE, GDD, Pavani	0	0	1	0	1	0	0	0	0	4	0	4	2	0	2

Sr. No	Authority	No. of Dams having Deficiencies						Number of Deficiencies								
		Cat-1		Cat-2		Cat-3		Category–1			Category–2			Category–3		
		Class-I	Class-II	Class-I	Class-II	Class-I	Class-II	Class-I	Class-II	Total	Class-I	Class-II	Total	Class-I	Class-II	Total
21	SE, GLIC, Ambadi	0	0	0	0	1	0	0	0	0	0	0	0	4	0	4
22	EE, LIPD, Tirora	0	0	0	0	1	0	0	0	0	0	0	0	4	0	4
	WRD Total	**0**	**0**	**12**	**16**	**20**	**49**	**0**	**0**	**0**	**41**	**45**	**86**	**139**	**249**	**388**
	Private															
23	C.E. CSTPS, Chandrapur	0	0	1	0	1	0	0	0	0	4	0	4	9	0	9
24	NMC, Nagpur	0	0	0	2	0	2	0	0	0	0	7	7	0	6	6
	PrivateTotal	**0**	**0**	**1**	**2**	**1**	**2**	**0**	**0**	**0**	**4**	**7**	**11**	**9**	**6**	**15**
	Grand Total	**0**	**0**	**13**	**18**	**21**	**51**	**0**	**0**	**0**	**45**	**52**	**97**	**148**	**255**	**403**

Note - 1. No. of Deficiencies are from 82 Pre Monsoon Reports (Class-I /20 + Class-II /62) and 49 Post Monsoon Reports (Class-I /19+ Class-II /49) Received in DSO.

Table 3.8

Category-1 Deficiency Classification (Dam wise)

Sr. No	Name of Dam	No. of deficiencies noticed	Sr. No	Name of Dam	No. of deficiencies noticed
1	2	3	4	5	6
Class - I Dams			Class - II Dams		
---------- NIL ----------					

Table 3.9

Category-2 Deficiency Classification (Dam wise)

Sr. No	Name of Dam	No. of deficiencies noticed	Sr. No	Name of Dam	No. of deficiencies noticed
1	2	3	4	5	6
Class - I Dams			**Class - II Dams**		
A) Chief Engineer, Water Resources Department, Nagpur					
I) Superintending Engineer & Administrator, CADA, Nagpur.					
1) Executive Engineer, Nagpur Irrigation Division (South), Nagpur					
1	Lower Wenna (Nand)	02	1	Makardhokada	05
2	Lower Wenna (Wadgaon)	04	2	Kanolibara	04
			3	Nishanghat	05
			4	Pandharabodi	04
			5	Saikinalla	03
			6	Wenna	01
2) Executive Engineer, Nagpur Irrigation Division (North), Nagpur					
3	Kolar	04	7	Khumari- nalla (Kalmeshwar)	02
4	Bor	03	8	Nagalwadi	04
3) Executive Engineer, Pench Irrigation Division, Ajni, Nagpur					
5	Kamthikhairy	04			
6	Totladoh	07			
7	Ramtek	02			

Sr. No	Name of Dam	No. of deficiencies noticed	Sr. No	Name of Dam	No. of deficiencies noticed
1	2	3	4	5	6
II) Superintending Engineer, Bhandara Irrigation Circle, Bhandara					
1) Executive Engineer, Bag Itiadoh Division.,Gondia			**1) Executive Engineer, Gondia Irrigation Division, Gondia.**		
8	Pujaritola	03	9	Risala	02
9	Kalisarar	01	10	Mangad	02
10	Sirpur	04	11	Bodalkasa	03
			12	Khairbhand	02
			13	Chorkhamara	02
			14	Umarzari	01
III) Superintending Engineer, Chandrapur Irrigation Project Circle, Chandrapur					
			1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur		
			15	Chargaon	02
B) Chief Engineer, GosiKhurd Project, Nagpur					
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur					
1) Executive Engineer , Lower Wardha Irrigation Division, Wardha			**1) Executive Engineer , Minor Irrigation Division, Wardha**		
11	Lower Wardha	3	16	Kar	03
I) Superintending Engineer, Gosikhurd Project Circle, Nagpur					
1) Executive Engineer, Gosikhurd Dam Division, Pavani					
12	Gosikhurdh	4			
	Total	**41**			**45**

Sr. No	Name of Dam	No. of deficiencies noticed	Sr. No	Name of Dam	No. of deficiencies noticed
1	2	3	4	5	6
Private Dam					
A) C.E. CSTPS, Chandrapur					
11	Erai	04			
			A) Commissioner, NMC, Nagpur		
			17	Gorewada	02
			18	Ambazari	05
	Private Total	**04**			**07**
	Grand Total	**45**			**52**

Table 3.10

Class-I Dams with Category-1 Deficiency

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
---------- NIL ----------						

Table 3.11

Class-I Dams with Category-2 Deficiency

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
A) Chief Engineer, Water Resources Department, Nagpur						
I) Superintending Engineer & Adm., C.A.D.A., Nagpur						
1) Executive Engineer, Nagpur Irrigation Division (south) Nagpur						
1.	**Name :-Lower Wenna (Nand)** Dist. Nagpur Year of Completion: **1990** Location Longitude: **79° 07′ 00″** Latitude: **20° 43′ 45″** Height: **16.25 m** Gross capacity: **62.18 Mm³** Spillway capacity: **5238 m³/sec** **(Gated)** Sr. No. in National Register of Large Dams (July 2002) : **1227**	21/05/2021 24/11/2021	Shri J.G. Gawali S.E. & Adm.C.A.D.A. Nagpur	W.W. Bar & Tail channel	1) Scouring is observed for 20.0 m. length from end wall of stilling basin.(A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression/ scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression/ scouring protection work should be done in consultation with Central Design Organisation, Nasik

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
				Walls	2)There is tendency for water to under cut the ends of right side guide wall. (A16)	1. Location, type, and extent of the damages of the guide wall should be identified and photographed 2. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.
2.	**Name :-Lower Wenna (Wadgaon)** Dist. Nagpur Year of Completion: **1997** Location Longitude: **79° 07′ 00″** Latitude: **20° 43′ 45″** Height: **23.65 m** Gross capacity: **152.6 Mm³** Spillway capacity: **9613 m³/sec** **(Gated)** Sr. No. in National Register Large Dams (July 2002) : **1353**	18/04/2021 24/11/2021	Shri J.G. Gawali S.E. & Adm.C.A.D.A. Nagpur	Earthen Dam	1)Relief well not functioning. (A5)	1. Relief wells should be properly cleaned by surging, jetting or pumping, as per the provision given in IS Code 5050 (1992): Code of practice for design, construction and maintenance of relief well. 2. Cleaning of relief wells should normally restore capacity of the well so that they should be in good working condition and functioning well..
				Masonry Dam	2) Considerable seepage and leaching is observed through body of dam. (A11)	1. Source of leakage should be identified chainage wise along the length of masonry dam and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para 5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Necessary repairs should be carried out with prior approval from competent technical authority.

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
					3) Leakage through pier of radial gates no.1,2,4,5, 6,7,9,12,13,14, 15,20 & 21(A15)	1. Source of leakage should be identified chainage wise along the length of masonry dam and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Necessary repairs should be carried out with prior approval from competent technical authority.
				W.W. Bar & Tail Channel	4) Erosion in tail channel from RD 80 to 210 m & 435 to 810 m.(A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression/ scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression/ scouring protection work should be done in consultation with Central Design Organisation, Nasik

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
2) Executive Engineer, Pench Irrigation Division, Nagpur						
3.	**Name :-Kamti Khairy** Dist :- Nagpur Year of Completion: **1976** Location Longitude: **79° 11′ 30″** Latitude: **21° 27′ 15″** Height: **32 m** Gross capacity: **220 Mm³** Spillway capacity: **12000 m³/sec(Gated)** Sr. No. in National Register of Large Dams (July 2002) : **573**	13/05/2021 12/12/2021	Shri J.G Gawali S.E. & Adm.C.A.D.A. Nagpur	Earthen Dam	1)Relief wells not functioning.(A5)	1. Relief wells should be properly cleaned by surging, jetting or pumping, as per the provision given in IS Code 5050 (1992): Code of practice for design, construction and maintenance of relief well. 2. Cleaning of relief wells should normally restore capacity of the well so that they should be in good working condition and functioning well..
				Masonary Dam	2) Considerable seepage & leaching observed through the body of dam. (A12)	1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained. 4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik. .
				Gallary	3) Out of 86 Vetical drainage	1. The clogged porous pipes and

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
					holes 79 are chocked. (A9)	foudation drains should be identified chainagewise along the gallery and proper treatment of the blockages should be carried out.
				River outlet / Sluice	4) Leakage through gates (3Cusecs) and also some leakage through conduit (B10)	1. Source of leakage should be identified and leakages should be quantified with respect to reservoir water level. 2. Necessary repairs should be carried out in accordance with approved drawing in consultation with mechanical department with prior approval from competent technical authority.
4.	**Name :-Totaladoh** Dist :- Nagpur Year of Completion: **1989** Location Longitude: 79° **14′ 00″** Latitude: **21° 39′ 30″** Height: **74.5 m** Gross capacity: **1241 Mm³** Spillway capacity: **12072 m³/sec** (Gated) Sr. No. in National Register of Large Dams (July 2002) : **1212**	13/05/2021 12/12/2021	Shri J.G Gawali S.E. & Adm.C.A.D.A. Nagpur	Masonry dam	1) Seepage observed through pores pipes. (A9) 2) Cosiderable Seepage & white leaching material observed on U/s face of gallery at many places (A12)	The clogged porous pipes and foudation drains should be identified chainagewise along the gallery and proper treatment of the blockages should be carried out. 1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained.

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
						4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik. .
				River Outlet	3) Leakage through river sluice gate no 4,5,& 6 (2 to 3 lps per gate). (B10)	1. Source of leakage should be identified and leakages should be quantified with respect to reservoir water level. 2. Necessary repairs should be carried out in accordance with approved drawing in consultation with mechanical department with prior approval from competent technical authority.
		28/03/2022	M.S. Amale SE, DSO, Nashik		Same as above 4) It is also observed that the both the banks of river are heavily scoured/eroded and washed away. (A7)	Same as above 1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik The clogged porous pipes and

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
						foudation drains should be identified chainagewise along the gallery and proper treatment of the blockages should be carried out.
					5) Some foundation drainage holes in gallery & VPD pipes are seems to be chocked. (A9)	Necessary repairs shall be carried out immediately. it should be always in proper working condition.
					6)There are three VT pumps are installed for lifting water from sump wells. All three are not in working condition.(A8)	1. Necessary repairs should be carried out in accordance with prior approval from competent technical authority 2. Instrumentation Research Division under DSO, Nashikmay be contacted for repairs
					7)Plumb bob and Uplift pressure cell is not in working condition (B9)	
5.	**Name :-Ramtek** Dist :- Nagpur Year of Completion: **1913** Location Longitude: 79° **20′ 25″** Latitude: **21° 20′ 25″** Height: **22.20 m** Gross capacity: **105.00 Mm³** Spillway capacity: **514.26 m³/sec**(UnGated) Sr. No. in National Register	13/05/2021 12/12/2021	Shri J.G Gawali S.E. & Adm.C.A.D.A. Nagpur	Outlet	1) Conduit is not structurally sound and Seepage noticed around the conduit. (A6)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
	of Large Dams (July 2002) : 33					4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be lowered if saturated areas increase in size at a fixed storage level or if flow increases. 7. Necessary repairs should be carried out in consultation with Central Desogn Organisation, Nasik
					2) Guide wall of Intake well collapsed on R/s.(A16)	1. Location, type, and extent of the damages of the guide wall should be identified and photographed 2. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.
3) Executive Engineer, Nagpur Irrigation Division (North) Nagpur						
6.	**Name :-Kolar** Dist :- Nagpur Year of Completion: **1984** Location Longitude: **78° 48′ 46″** Latitude: **21° 24′ 00″** Height: **30.16 m** Gross capacity: **35.38 Mm³** Spillway capacity: **1598 m³/sec.** (Ungated)	08/04/2021 21/12/2021	Shri J.G Gawali S.E. & Adm.C.A.D.A. Nagpur	Earthen Dam	1) Considerable seepage & leaching is observed through the body of dam. (A12)	1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage.

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
	Sr. No. in National Register of Large Dams (July 2002) : **1040**					3. Monolith wise Record of quantity of leaching material should be maintained. 4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik.
				Masonry Dam	2) Standing pool of water observed at D/S near gorge portion. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section leading to serious consequences if not attended immediately. 2. Necessary arrangements should be made like removing any obstacles or techno economical nallaregradation etc. so that water will not get stagnant.
					3) Some leakages are observed through W.W.bar masonry (B7)	1. Source of leakage should be identified chainage wise along the length of waste weir bar and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Location, type, and extent of the damages of the spillway bar should be

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
						identified and photographed 4. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.
				Outlet Gates	4) Wire rop of Emergency Gate is to be replaced.(A18)	1. It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority.
7.	**Name :-Bor** Dist :- Nagpur Year of Completion: **1965** Location Longitude: **78° 45′ 30″** Latitude: **21° 03′ 35″** Height: **36.28 m** Gross capacity: **138.75 Mm³** Spillway capacity: **3058m³/sec.** (Ungated) Sr. No. in National Register of Large Dams (July 2002) : **1040**	22/05/2021 25/12/2021	Shri J.G Gawali S.E. & Adm.C.A.D.A. Nagpur	W.W. Bar & Tail Channel	1) Scouring is observed on D/s of the Bar. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik
				Spillway Gate Outlet Gate	2) One gate rubber seal not touching uniformly (B12)	1. It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority 1. Necessary repairs should be carried out with the help of Mechanical

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
					3) Among Two Gates gate no.2 is not in working Condition (B5)	Organisation.
II) Superintending Engineer Bhandara Irrigation Circle, Bhandara						
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia						
8.	**Name :-Sirpur** Dist :- Gondia Year of Completion: **1969** Location Longitude: **80° 27′ 00″** Latitude: **21° 03′ 20″** Height: **24.69 m** Gross capacity: **203. 85 Mm³** Spillway capacity: **3633 m³/sec** (Gated) Sr. No. in National Register of Large Dams (July 2002) : **227**	12/05/2021 30/11/2021	Shri R.G.Parate S.E. B.I.C.Bhandara	Masonry Dam	1) Seepage water and leaching material is observed through body of dam (A12)	1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained. 4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik. The clogged porous pipes and foudation drains should be identified chainagewise along the gallery and proper treatment of

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
						the blockages should be carried out.
					2) Foundation drainage holes are chocked.(A9)	
				EDA	3) Cocrete surface of the stilling basin and apron is not in good condition.	1. Location, type, and extent of the deterioration of the EDA should be identified and photographed 2. Structural damages including misalignment, settlement, vertical and horizontal displacement should be checked 3. Survey or surface mapping to document all problems in the structure and their characteristics should be done thoroughly 4. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority. 5. If deterioration is extensive, repairs to the EDA, should be done in consultation with Central Design Organisation, Nasik
				End Weir	4) In the central portion of D/s of the end weir bar Scouring noticed. (A17)	1. Location, type, and extent of the damages of the End weir should be identified and photographed 2. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
9.	**Name :-Kalisarar** Dist :- Gondia Year of Completion: **1988** Location Longitude: 78° 27′ 00 Latitude: 21° 10′ 30 Height: 25.52**m** Gross capacity: 30.46 **Mm³** Spillway capacity: 1402.00 **m³/sec** (Gated) Sr. No. in National Register of Large Dams (July 2002) : 1174	12/05/2021 31/11/2021	Shri R.G.Parate. S.E.,B.I.C.Bhandara	E.D.A.	1) Reinforcement exposed of gate No.1 & 4 (A14)	Necessary repairs should be carried out with prior approval from competent technical authority.
10.	**Name :-Pujaritola** Dist :- Gondia Year of Completion: **1970** Location Longitude: 80° **27 ′ 00″** Latitude: **21° 14′ 20″** Height: **19.20 m** Gross capacity: **65.11 Mm³** Spillway capacity: **42.46 m³/sec** (Gated) Sr. No. in National Register of Large Dams (July 2002) : 222	12/05/2021 30/11/2021	Shri R.G.Parate. S.E.,B.I.C.Bhandara	Earthen Dam W.W. Bar & Tail Channe	1)Relief wells not functioning.(A5) 2) Considerable leakage & leaching is observed through the body of dam. (A12)	1. Relief wells should be properly cleaned by surging, jetting or pumping, as per the provision given in IS Code 5050 (1992): Code of practice for design, construction and maintenance of relief well. 2. Cleaning of relief wells should normally restore capacity of the well so that they should be in good working condition and functioning well.. 1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
						installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained. 4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik.
				End weir	3) Scouring observed on D/S of end weir in foundation.(A17)	1. Location, type, and extent of the damages of the End weir should be identified and photographed. 2. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority

B) Chief Engineer, Gosikhurd Project, Nagpur						
I) Superintending Engineer, Gosikhurd Project Circle, Nagpur						
1) Executive Engineer, Gosikhurd Dam Division, Pavani						
11.	**Name :-Goshikhurd** Dist :- Nagpur Year of Completion: **2008** Location Longitude: **79° 37′ 00″** Latitude: **20° 52′ 30″** Height: **44.05 m** Gross capacity: **1146 Mm³** Spillway capacity: **63726 m³/sec.**(Gated) Sr. No. in National Register of Large Dams (July 2002) : **1040**	04/05/2021 12/12/2021 28/03/2022	Shri A.K Desai, S.E. & Adm. C.A.D.A. Nagpur M.S. Amale SE, DSO, Nashik	Gallery	1) All foundation drainage holes are chocked. (A9) 2) Leaching material are observed in gallery at many places at RD 5966, 5975, 6054.06,6100,6909.20, 6114.20 etc (A12)	The clogged porous pipes and foudation drains should be identified chainagewise along the gallery and proper treatment of the blockages should be carried out.. 1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained. 4. Seepage water and Leaching material shall be tested regularly for chemical composition from MERI, Nashik.
				EDA	3) Errosion on both the flanks on D/s of EDA and guide wall are observed. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring

						3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik Stilling basin shall be emptied a necessary inspection shall be carried out at field level & deficiencies if any shall be intimated to this office.
					4) Standing pool of water in stilling basin observed. Ponds,silt & Vegitation observed in basin pond.	
II) Superintending Engineer, Nagpur Irrigation Circle, Nagpur						
1) Executive Engineer, Lower Wardha Project Division , Wardha						
12.	**Name :-Lower wardha Dist :- Nagpur Year of Completion: 2009 Location Longitude: 78o 15′ 30″ Latitude: 21o 52′ 30″ Height: 29.60 m Gross capacity: 253.34 Mm3 Spillway capacity: 22596.32m3/sec.(Gated) Sr. No. in National Register of Large Dams (July 2002) : 1040**	06/05/2021 NR	Shri. K.S.Vemulkonda, S.E. NIC, Nagpur		1) Water logging,Slushy condition & weeds growth on D/s of the dam at RD 7000 to 7900 (A2)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be

					2) Out fall drain shows stagnant pools of waterat RD 7000 to 8000 (B2)	lowered if saturated areas increase in size at a fixed storage level or if flow increases. Necessary repairs should be carried out in consultation with Central DesognOrganisation, Nasik. Drains should be cleared and desilted for carrying effective flow of water in accordance with provisions given in the IS Code 9429(1999): Drainage system for earth and rock fill dams - code of practice.
				Outlet Gate	3) Leakage through Gate no.1 due to rubber seal damaged. (B12)	It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority

Table 3.12

Class-I Dams with Category-3 Deficiency

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude/ Latitude	Height in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
A) Chief Engineer, Water Resources Department, Nagpur											
I) Superintending Engineer, Chandrapur Irrigation Circle, Chandrapur											
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur											
1	**Asolamendha(Dist. Chandrapur**)	1918	79° 49′ 00″ 20° 13′ 10″	26.63	67.01	758	MH09MH0040	Ungated	18/05/2021 18/12/2021	3.1,3.2,3.5, 3.19,3.20.	05
2	**Lal Nalla (Dist. Wardha)**	2006	79° 03′ 00″ 20° 30′ 30″	14.54	29.515	925 .0	MH09LH1663	Gated	12/05/2021 09/12/2021	3.1,3.5,3.9,3.18,3.19,3.22,3.26, 3.28	08
3	**Dina (Dist:- Gadchiroli)**	1974	80° 07′ 00″ 19° 45′ 10 ″	21.49	61.15	1671	MH09MH0451	Gated	21/05/2021 12/11/2021	3.1,3.2,3.5,3.6,3.9,3.10,3.16, 3.20,3.23,3.24,3.28,3.31,3.35	13
4	**Chichdoh Barrage**	2018	79° 54′ 45″	18	62.584	59056	-	Gated	21/05/2021 15/11/2021	3.1,3.9,3.24,3.30,3.31.	05
II) Superintending Engineer & Adm., C.A.D.A., Nagpur											
1) Executive Engineer, Wardha Irrigation Division, Wardha											
5	**Dham (Dist:- Wardha)**	1986	78° 28′ 00 ″ 27° 57′ 55 ″	33.35	72.46	5416.6	MH09HH1143	Ungated	22/05/2021 25/12/2021	3.2,3.5,3.6,3.7,3.9,3.10,3.16	07
6	**Bor (Dist-Wardha)**	1965	78° 45′ 30 ″ 21° 03′ 35 ″	36.28	138.75	3058	MH09HH0115	Gated	22/05/2021 25/12/2021	3.1,3.3,3.5,3.93.10,3.13,3.20.	07

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude/ Latitude	Height in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
2) Executive Engineer, Nagpur Irrigation Division (North), Nagpur											
7	**Khekarnalla. Dist :- Nagpur**	1988	78° 56′ 45″ 21° 32′ 12″	24.50	26. 32	1343	MH09MH1197	Gated	08/04/2021 21/11/2021	3.7,3.9,3.18, 3.19,3.28,3.30, 3.31	07
8	**Kolar**	1984	78° 48′ 46″ 21° 24′ 00″	30.16	35.38	1598	MH09HH1061	Gated	08/04/2021 21/11/2021	3.6,3.9,3.13,3.16,3.22, 3.23 ,3.30,3.31	08
3) Executive Engineer, Nagpur Irrigation Division (South), Nagpur											
9	**Lower Wenna (nand)**	1990	79° 07′ 00″ 20° 43′ 45″	16.25	62.18	5238	MH09MH1253	Gated	21/05/2021 24/11/2021	3.1,3.2,3.3,3.6,3.7,3.9,3.10,3.13,3.18, 3.19, 3.20,3.28,3.31, 3.33,3.35	15
10	**Lower Wenna (wadgaon)**	1997	79° 07′ 00″ 20° 43′ 45″	23.65	152.06	9613	MH09MH1446	Gated	18/04/2021 24/11/2021	3.2,3.3,3.6,3.9,3.16,3.20,3.25, 3.28,3.30	09
4) Executive Engineer, Pench Irrigation Division, Nagpur											
11	**Kamathikairy**	1976	79° 11′ 30″ 21° 27′ 15″	32.00	220	12000	MH09HH0596	Gated	13/05/2021 12/12/2021	3.9,3.12,3.11,3.16,3.20,3.28, 3.30,3.31.	08
12	**Totaladoh**	1989	79°14′ 00″ 21° 39′ 30″	74.05	1241	12072	MH09HH1229	Gated	13/05/2021 12/12/2021	3.9, 3.12,3.16,3.20,3.28, 3.33	06
13	**Ramtek**	1913	79°20′ 25″ 21° 20′ 25″	22.20	105	514.26	MH09MH0033	Ungated	13/05/2021 12/12/2021	3.16,3.20,3.30,3.33	04
II) Superintending Engineer Bhandara Irrigation Circle, Bhandara											
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia											

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude/ Latitude	Height in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
14	**Itiatoh**	1970	80° 27′18 ″20° 48′ 00	29.85	288.78	32.30	MH09MH0227	Ungated	12/05/2021 31/11/2021	3.19,3.20,3.30,3.33	04
15	**Kalisarar**	1988	78° 27′ 00 21° 10′ 30	25.52	30.46	10402	MH09MH1198	Gated	12/05/2021 31/11/2021	3.9,3.16,3.19,3.20,3.28.	05
16	**Sirpur**	1969	80° 27 ′ 00″ 21° 03′ 20″	24.69	203.85	30633	MH09MH0228	Gated	12/05/2021 30/11/2021	3.7,3.9,3.16,3.19,3.20,3.28.	06
17	**Pujaritola**	1970	80°27 ′ 00″ 21° 14′ 20″	19.20	65.11	42.46	MH09MH0229	Gated	12/05/2021 30/11/2021	3.10,3.13,3.28,3.30.	04
B) Chief Engineer, Gosikhurd Project, Nagpur											
I) Superintending Engineer, Gosikhurd Project Circle, Nagpur											
1) Executive Engineer, Gosikhurd Dam Division, Pavani											
18	**Gosi Khurd (Dist:- Bhandara)**	2008	79° 37′00″ 20° 52′ 30″	44.05	1146	63726	MH09MH1817	Gated	04/05/2021 12/12/2021	3.5,3.18.	02
II) Superintending Engineer, Gosikhurd Lift Irrigation Circle, Ambadi											
1) Executive Engineer, Lift Irrigation Project Division,Tirora											
19	**Dhapewada Barrage**	2013	N.A.	33.39	44.05	16124.61	MH09MH2251	Gated	06/05/2021 24/01/2022	--	04
III) Superintending Engineer, Nagpur Irrigation Circle, Nagpur											
1) Executive Engineer, Lower Wardha Project Division, Wardha											
20	**Lower Wardha**	**2009**	78° 15′30″ 21° 52′ 30″	29.60	253.34	22596.32	MH09MH1811	Gated	06/05/2021 Report not received	3.9,3.30,3.31,3.33	04

Table 3.13

Class-II Dams with Category-1 Deficiency

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Observation / Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
---------- NIL ----------						

Table 3.14

Class-II Dams with Category-2 Deficiency

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
A) Chief Engineer, Water Resources Department, Nagpur						
I) Superintending Engineer & Administrator CADA, Nagpur.						
1) Executive Engineer, Nagpur Irrigation Division, (North), Nagpur						
1.	Name:-**Khumari nalla (Kalmeshwar)** Date of completion :- **1993** Location : - Longitude :-**78° 15' 30"** Latitude :- **21° 18' 45"** Height :- **15. 60 m.** Gross capacity :- **5.1058 Mm³** Design Spillway capacity **478.9 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **MH09MH1312**	03/05/2021 30/11/2021	Mr. R.D. Hatwar EE, NID North, Nagpur	Earthen Dam	1) Dam top is not in proper level. Undulations are observed. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not. 3. Checking of crest profile is essential to identify the excessive/uneven settlement of the dam. 4. Dam owner should figure out the cause of low area and supervise all steps necessary to reduce the threat to the dam and to correct the condition. 5. A uniform crest elevation may be re-established over the crest length by placing proper filler material in the low area in accordance with relevant IS codes with prior approval from competent technical authority. 6. Monuments should be established across the crest of dam and be monitored their movement on a

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						routine basis to detect probable future settlement.
				Outlet	2) Stem rod is bend. (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
2.	Name:-**Nagalwadi (Nagpur)** Date of completion :- **1978** Location : - Longitude :-**79° 02' 00"** Latitude :- **21° 34' 00"** Height :- **16. 37 m.** Gross capacity :-**2. 679 Mm³** Design Spillway capacity **08. 84 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :-**MH09MH0688**	30/05/2021 30/11/2021	Mr. R.D. Hatwar EE, NID North, Nagpur	Earthen Dam	1) There is settlement of embankment. The section of dam is not as per design. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not. 3. Checking of crest profile is essential to identify the excessive/uneven settlement of the dam. 4. Dam owner should figure out the cause of low area and supervise all steps necessary to reduce the threat to the dam and to correct the condition. 5. A uniform crest elevation may be re-established over the crest length by placing proper filler material in the low area in accordance with relevant IS codes with prior approval from competent technical authority. 6. Monuments should be established across the crest of dam and be monitored their movement on a routine basis to detect probable future settlement.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
				Outlet	2) Surface of gates deteriorated. (B11)	It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority
				W .W .Bar & Tail channel	3) Scouring noticed on d/s of w. w. bar. (A14)	1. Location, type, and extent of the deterioration of the EDA should be identified and photographed 2. Structural damages including misalignment, settlement, vertical and horizontal displacement should be checked 3. Survey or surface mapping to document all problems in the structure and their characteristics should be done thoroughly 4. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority. 5. If deterioration is extensive, repairs to the EDA, should be done in consultation with Central Design Organisation, Nasik
					4) The Retrogression is still @ 1200m from w.w. bar. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik
2) Executive Engineer, Nagpur Irrigation Division (South), Nagpur						
3	**Kanolibara** Date of completion :- 1976 Location : - Longitude :- 78°51'30" Latitude :- 20°56'30" Height :- 21.05 **m.** Gross capacity : 22.213 **Mm³** Design Spillway capacity 1141.00 **cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- MH09MH0590	14/04/2021 29/11/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	Earthen Dam	1) Slushy portion D/S near RD 1263 m near overflow section is observed and instructed for observation. (A2) 2) Slushy portion leakages or seepage is observed at level 306.45 m and after 306.450 m is dry. Water is clear. (A2) 3) Boils, wet patches is observed @ 1150 and 1263 m. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section leading to serious consequences if not attended immediately. 2. Necessary arrangements should be made like removing any obstacles or techno economical nallaregradation etc. so that water will not get stagnant.
					4) Emergency gate are in not working condition. (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
4	Name:- **Makardhokada (Nagpur)** Date of completion :-**1978** Location : - Longitude :- **78° 56' 45"** Latitude :- **20° 32' 12"** Height :- **18.80 m.**	11/04/2021 13/11/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	Earthen Dam	1) Standing pool of water in gorge portion of nalla. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
	Gross capacity :**21.35 Mm³** Design Spillway capacity **929 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **MH09MH0718**					leading to serious consequences if not attended immediately. 2. Necessary arrangements should be made like removing any obstacles or techno economical nallaregradation etc. so that water will not get stagnant.
				Outlet	2) Emergency gate not in working condition. (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
				W.W Bar & Tail channel	3) In EDA concrete portion is damaged. Spillway portion concrete is damaged. (A14)	1. Location, type, and extent of the deterioration of the EDA should be identified and photographed 2. Structural damages including misalignment, settlement, vertical and horizontal displacement should be checked 3. Survey or surface mapping to document all problems in the structure and their characteristics should be done thoroughly 4. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority. 5. If deterioration is extensive, repairs to the EDA, should be done in consultation with Central Design Organisation, Nasik
					4) Partial retrogression noticed in tail Channel. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik
					5) Divide wall is damaged. (A16)	1. Location, type, and extent of the damages of the guide wall should be identified and photographed 2. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.
5	Name:-**Nishanghat (Nagpur)** Date of completion :-**1985** Location : - Longitude :- **79° 06' 26"** Latitude :- **20° 48' 20"** Height :- **16.16 m.** Gross capacity :-**2. 471 Mm³** Design Spillway capacity **159.10 cumecs (Ungated)**	11/04/2021 13/11/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	Earthen Dam	1) Standing pools of water observed on the D/S of dam at gorge portion. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section leading to serious consequences if not attended immediately. 2. Necessary arrangements should be

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
	Sr. No. in National register oflarge Dams July 2009 :- **:-MH09MH1074**					made like removing any obstacles or techno economical nalla regradation etc. so that water will not get stagnant.
					2) Section profile of dam from RD 210m to 390m is not as per design. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not. 3. Checking of crest profile is essential to identify the excessive/uneven settlement of the dam. 4. Dam owner should figure out the cause of low area and supervise all steps necessary to reduce the threat to the dam and to correct the condition. 5. A uniform crest elevation may be re-established over the crest length by placing proper filler material in the low area in accordance with relevant IS codes with prior approval from competent technical authority. 6. Monuments should be established across the crest of dam and be monitored their movement on a routine basis to detect probable future settlement.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
				Outlet	3) Steam rod is bend (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
				W.W Bar & Tail channel	4) Heavy scouring in W.W. spill RD. 0 to 510 m. in tail channel is noticed. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik
					5) Repair to falls at W.W and tail channel are essential at priority basis. (A7)	
6	Name:-**Pandharabodi (Nagpur)** Date of completion :-**1967** Location : - Longitude :- **79° 17' 00"** Latitude :- **20° 49' 45"** Height :- **15. 24 m.** Gross capacity :-**13. 86 Mm³** Design Spillway capacity **432 cumecs (Ungated)**	11/04/2021 13/11/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	Earthen Dam	1) Standing pool of water on d/s of dam in gorge portion. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section leading to serious consequences if not attended immediately.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
	Sr. No. in National register oflarge Dams July 2009 :-**MH09MH0147**					2. Necessary arrangements should be made like removing any obstacles or techno economical nallaregradation etc. so that water will not get stagnant.
				Outlet	2) Rubber seal damaged & needs replacement. (B12)	It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority
					3) Alignment of gate is disturbed. (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
				W.W. Bar & Tail channel	4) Major retrogression is observed at 100 m. from waste weir bar & stilling basin concrete is damaged due to scouring of stilling basin. Downstream wall of stilling basin is washed away. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik ण्

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
7	Name:-**Saikinalla (Nagpur)** Date of completion :- **1994** Location : - Longitude :-**79° 12' 00"** Latitude :- **20° 51' 00"** Height :- **14. 65 m.** Gross capacity :-**8.990 Mm³** Design Spillway capacity :- **728 cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :- **:-MH09LH1334**	11/04/2021 13/11/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	Earthen Dam	1) Standing pool of water on d/s in gorge portion. (A2)	1. The cause of ponding should be identified. Confirm wheather this water is coming from reservoir through seepage or may be from toe drain. This stagnant water in toe drain may lead to building of pore pressure in the earthen dam section leading to serious consequences if not attended immediately. 2. Necessary arrangements should be made like removing any obstacles or techno economical nallaregradation etc. so that water will not get stagnant.
				Outlet	2) Emergency gate not in working condition.(B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
					3) Rubber seal is damaged. (B12)	It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority
8	Name:- **Wunna** Date of completion :- 1966 Location : - Longitude :- 78°52'00" Latitude :- **20**20° 08'00" Height :- 18.18 **m.** Gross capacity :-**23.56 Mm³** Design Spillway capacity :- 1326.64 **cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 :-	13/04/2021 02/12/2021	Mr. R.N. Dhumne EE, NID (S), Nagpur	W.W. Bar	1) Wing wall of upstream and downstream side is breached. (B7)	1. Source of leakage should be identified chainage wise along the length of waste weir bar and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
	:- MH09MH0129					(Page 47 of 112) published by Central Water Commission 3. Location, type, and extent of the damages of the spillway bar should be identified and photographed 4. Necessary repairs should be carried out in accordance with approved drawing with prior approval from competent technical authority.
II) Superintending Engineer , Bhandara Irrigation Project Circle, Bhandara						
1) Executive Engineer, Gondia Irrigation Division, Gondia.						
9	Name:- **Risala** Date of completion :- 1967 Location : - Longitude :- 79°53'30 " Latitude :- 21°15'00 " Height :- 16.62 **m.** Gross capacity :- 6.575 **Mm^3** Design Spillway capacity 302 . 50 **cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009:- MH09MH0142	02/06/2021 12/10/2021	Smt. S.S. Sonule EE,GID, Gondia	Outlet	1) Leakages observed through conduit of head regulator. Grouting is required. (A4)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						lowered if saturated areas increase in size at a fixed storage level or if flow increases. 7. Necessary repairs should be carried out in consultation with Central Design Organisation, Nasik
					2) The pier of approach bridge has been collapsed which needs urgent repairs. (B14)	1. Location, type, and extent of the damages of the Deck bridge slab/ pier should be identified and photographed 2. Necessary repairs should be carried out in in consultation with Central Design Oraganisation, Nasik with prior approval from competent technical authority.
10	Name:- **Mangad** Date of completion :- 1970 Location : - Longitude :- 80° 31'30" Latitude :- 21°13' 30" Height :- 15 .70 **m.** Gross capacity :- 7 .825 **Mm^3** Design Spillway capacity 302 . 50 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH0208	11/06/2021	Smt. S.S. Sonule EE,GID, Gondia	W.W. Bar & Tail channel	1) Scouring is found at 30 m. D/s of w.w. pitching. (A7) 2) Progressive erosion was found at 100 m to 180 m of W.W. bar. Erosion depth 0.30m to 3.00m. (A7)	1.The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3.Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4.If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
11	Name:- **Bodalkasa** Date of completion :- 1917 Location : - Longitude :- 80° 01'00" Latitude :- 21°21'15" Height :- 19.20 **m.** Gross capacity :- 17 .393 **Mm^3** Design Spillway capacity 206. 687 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH0039	02/06/2021 15/10/2021	Smt. S.S. Sonule EE,GID, Gondia	**Outlet**	1) Pillar of approach bridge of left Bank head regulator is collapsed. It needs to be repaired immediately. (B14)	1. Location, type, and extent of the damages of the Deck bridge slab/ pier should be identified and photographed. 2. Necessary repairs should be carried out in in consultation with Central Design Oraganisation, Nasik with prior approval from competent technical authority.
					2) Rubber seal replacement is required. (B12)	It may be repaired in consultation with the of Mechanical Organisation and with prior approval from competent technical authority
				W.W. Bar	3) There is scouring in EDA at some places & surface of EDA is not in plane. It needs to be repair immediately. (A7)	1. The extent and location of such retrogression/scouring with reference to the various components of dam, spillway, outlet, power house etc. should be identified with the respect to the levels and contour plans and reference marks 2. Dam owner should identify the cause of retrogression/scouring 3. Necessary retrogression / scouring protection work should be carried out with prior approval from competent technical authority. 4. If retrogression / scouring is extensive, retrogression / scouring protection work should be done in consultation with Central Design Organisation, Nasik

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
12	Name:- **Khairbandh** Date of completion :- 1915 Location : - Longitude :- 80° 00' 45" Latitude :- 21° 28' 30" Height :- 18.16 **m.** Gross capacity :- 16.798 **Mm³** Design Spillway capacity 363.30 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH0023	02/06/2021 30/10/2021	Smt. S.S. Sonule EE,GID, Gondia	**Outlet**	1) Stem rod of right bank head regulator gate drop down automatically due to weathering of threads. (B5)	Necessary repairs should be carried out with the help of Mechanical Organisation.
					2) Piller of approach bridge of left blank head regulator is collapsed.	Necessary repairs should be carried out after approval of competent authority.
13	Name:- **Chorkhamara** Date of completion :- 1970 Location : - Longitude :- 79° 57'00" Latitude :- 21° 18' 0" Height :- 21.05 **m.** Gross capacity :- 21.051 **Mm³** Design Spillway capacity 264.94 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH0044	02/06/2021 10/11/2021	Smt. S.S. Sonule EE,GID, Gondia	Earthen Dam	1) There is leakage noticed on D/S slope of bund @ RD 210 m at junction of berm, clear water comes out like boiling water.. (A1)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						6. Reservoir level may need to be lowered if saturated areas increase in size at a fixed storage level or if flow increases. 7. Necessary repairs should be carried out in consultation with Central Design Organisation, Nasik.
					2) Some part on D/S slope of bund patch settlement found. Casing material required for filling patches in D/s of bund. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not. 3. Checking of crest profile is essential to identify the excessive/uneven settlement of the dam. 4. Dam owner should figure out the cause of low area and supervise all steps necessary to reduce the threat to the dam and to correct the condition. 5. A uniform crest elevation may be re-established over the crest length by placing proper filler material in the low area in accordance with relevant IS codes with prior approval from competent technical authority.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
						6. Monuments should be established across the crest of dam and be monitored their movement on a routine basis to detect probable future settlement.
14	Name:- **Umarzari** Date of completion :- 1996 Location : - Longitude :- 80°0 3' 45" Latitude :- 21° 28' 30" Height :- 18.50 **m.** Gross capacity :- 17.33 **Mm^3** Design Spillway capacity 450 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH1472	02/06/2021 12/10/2021	Smt. S.S. Sonule EE,GID, Gondia	Earthen Dam	1)During construction spring was observed at D/ S of hearting at RD 1270 m of which discharge is channelized through pipes & then it is allowed to pass in nalla. The discharge is being approximately constant & is 3.5 lps. I t has no connection with the reservoir level as there is no effect on the discharge due to fluctuation in water level in the dam. (A1)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be lowered if saturated areas increase in size at a fixed storage level or if flow increases. Necessary repairs should be carried out in consultation with Central Design Organisation, Nasik.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
III) Superintending Engineer , Chandrapur Irrigation Project Circle , Chandrapur						
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur						
15	Name:- **Chargaon** Date of completion :- 1983 Location : - Longitude :- 79° 10'10" Latitude :- 20° 25'40" Height :- 14.40 **m.** Gross capacity :- 21.70**Mm³** Design Spillway capacity 1450 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09LH1007	07/04/2021 17/12/2021	Shri. S.B.Kale EE, CID, Chandrapur	Earthen Embankment	1) RD 1710 to 1830 & RD 1950 to 2100 are settled portion. (Exact settlement is not given) (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not. 3. Checking of crest profile is essential to identify the excessive/uneven settlement of the dam. 4. Dam owner should figure out the cause of low area and supervise all steps necessary to reduce the threat to the dam and to correct the condition. 5. A uniform crest elevation may be re-established over the crest length by placing proper filler material in the low area in accordance with relevant IS codes with prior approval from competent technical authority. 6. Monuments should be established across the crest of dam and be monitored their movement on a routine basis to detect probable future settlement.

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
				Outlet	2) Leakage observed through the well proper and the conduit concrete or masonry. Leakage observed may be from service gate rubber seal. (A4)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be lowered if saturated areas increase in size at a fixed storage level or if flow increases. 7. Necessary repairs should be carried out in consultation with Central Design Organisation, Nasik
B) Chief Engineer, GosiKhurd Project, Nagpur						
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur						
1) Executive Engineer , Minor Irrigation Division, Wardha						

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
16	Name:- **Kar** Date of completion :- 2000 Location : - Longitude :- 78°27'14" Latitude :- 21°13'39" Height :- 25.13 **m.** Gross capacity :- 25.96 **Mm^3** Design Spillway capacity 2315 **cumecs (Ungated)** Sr. No. in National register of large Dams July 2009:- MH09MH1556	29/05/2021 07/12/2021	Shri. A.O. Sawarkar EE, MID, Wardha	Earthen Embankment	1) Boils, wet patches, water seepage, slushy or boggy ground on downstream is observed at 100m on downstream side. (A1)	1. Record the findings and photograph the area. Notes, sketches, and photographs are useful in documenting and evaluating seepage problems. 2. Determine the extent, severity, and cause of the seepage. Measure and photograph any damage caused by the seepage so that its progression can be monitored if necessary. 3. Always measure the seepage and flow rate with respect to reservoir water level on a regular and frequent Basis 4. The seepage should be checked for turbidity which would show the presence of soil in the water. 5. Search for opening on the upstream side and plug it if possible. 6. Reservoir level may need to be lowered if saturated areas increase in size at a fixed storage level or if flow increases. 7. Necessary repairs should be carried out in consultation with Central Design Organisation, Nasik.
				Masonry	2)Porous pipes are not properly functioning. (A9)	The clogged porous pipes and foundation drains should be identified chainagewise along the gallery and proper treatment of the blockages should be carried out.
				Outlet	3) Outlet well needs to be repaired for	Outlet well should be surged and

SR. NO	DAM FEATURES	DATE OF INSPECTION	INSPECTING OFFICER	MAIN COMPONENT OF DAM	SIGNIFICANT DEFICIENCIES NOTICED.	REMEDIAL MEASURES SUGGESTED
1	2	3	4	5	6	7
					UCR cracks. (A6)	cleaned to restore original working capacity of the well, with prior approval from competent authority

Table 3.15

Class-II Dams with Category-3 Deficiency

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude / Latitude	Heig ht in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	Sr. No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
A) Chief Engineer, Irrigation Department, Nagpur											
I) Superintending Engineer & Administrator , C.A.D.A, Nagpur											
1) Executive Engineer, Nagpur Irrigation Division, (North), Nagpur											
1	**Chandrabhaga**	1973	78°46'00" 21°16'00"	20.10	8.886	771.51	MH09MH0375	Ungated	07/05/2021 17/11/2021	3.5,3.9,3.13,3.19	04
2	**Mordham**	1979	78°48'20" 21°13'20"	15.19	5.44	564.00	MH09MH0788	Ungated	07/05/2021 17/11/2021	3.1,3.7,3.20,3.22	04
3	**Umari (Nag)**	1971	78°47'00" 21°25'45"	21.51	5.90	516.00	MH09MH0261	Ungated	03/05/2021 30/11/2021	3.1,3.2,3.5,3.9,3.17,3.20	06
4	**Nanda (Nagpur)**	1976	78° 44'00" 21°26'00"	17.31	1.105	97	MH09MH0545	Ungated	03/05/2021 30/11/2021	3.2,3.5,3.16,3.19,3.20,3.21,3.10,3.28	08
5	**Kesarnalla**	1974	78° 15'00 21° 22'20"	18.82	5.142	325	MH09MH0424	Ungated	03/05/2021 30/11/2021	3.1,3.2,3.9,3.28,3.20	05
6	**Chikhali nalla**	2002	78°38'16 " 21°05'21 "	17.68	7.2029	992	MH09MH1611	Ungated	11/05/2021 10/11/2021	3.10,3.13,3.16,3.19,3.20,3.34	06
7	**Jam**	1996	78°38'19 " 21°13'23 "	24.00	28.25	1956	MH09MH1411	Ungated	11/05/2021 10/11/2021	3.20.3.28	02
8	**Khumari (Ramtek)**	1986	79°17'00" 21°28'30"	15.24	2.12	92.80	MH09MH1109	Ungated	06/05/2021 16/11/2021	3.1,3.9,3.17,3.19,3.20,3.28	06
9	**Nagalwadi**	1978	79° 02' 0" 21° 34' 0"	16.37	2.679	208.84	MH09MH0688	Ungated	30/05/2021 30/11/2021	3.2,3.5,3.9,3.16	03
10	**Kumari nala**	1993	78° 15' 0" 21° 18'45"	15.60	5.1058	478.90	MH09MH1312	Ungated	03/05/2021 30/11/2021	3.2,3.5,3.16,3.20,3.21	05
11	**Kotwalbordi**	1974	78°46'00" 21°13'00"	15.23	1.418	98.00	MH09MH0396	Ungated	06/05/2021 17/11/2021	3.1,3.13,3.17,3.20,3.28,3.34	06

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude / Latitude	Heig ht in m	Gross Capacity Mm³	Design Spillway Capacity m³ / sec	Sr. No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
12	**Sawangi nalla**	1974	78°54'54" 21° 00'24"	17.30	17.30	137.00	MH09LH0399	Ungated	06/05/2021 17/11/2021	3.1, 3.20	02
13	**Madhuganga**	-	-	17.30	4.86	-	-	Ungated	07/05/2021 17/11/2021	3.1,3.2,3.9,3.13,3.20,3.21,3.22	07
14	**Pimpalgaon (Wakhaji)**	-	78°33'00" 21°27'00"	15.57	7.221	652.71	-	Ungated	11/05/2021 11/10/2020	3.1,3.2,3.10,3.13,3.20	05
2) Executive Engineer, Nagpur Irrigation Division (South), Nagpur											
15	**Kanolibara**	1976	78°51'30" 20°56'30"	21.05	22.213	1141.00	MH09MH0590	Ungated	14/04/2021 29/11/2021	3.7,3.9,3.20,3.22	04
16	**Nandora**	1988	78°51'45" 21°05'50"	18.80	2.573	230.8	MH09MH1192	Ungated	13/04/2021 02/12/2021	3.1,3.5,3.6,3.9,3.13,3.16, 3.19,3.21,3.22	09
17	**Makardhokda**	1978	78° 56'45" 20° 32'12"	18.80	21.35	929	MH09MH0718	Ungated	11/04/2021 13/11/2021	3.5,3.7,3.9,3.13,3.20	05
18	**Niashanghat**	1985	79° 06'26" 20°48' 20"	16.16	2.471	159.10	MH09MH1074	Ungated	11/04/2021 13/11/2021	3.2,3.5,3.7,3.9,3.13,3.20	06
19	**Pandharbodi**	1967	79°17' 0" 20° 49' 5"	15.24	13.86	432	MH09MH0147	Ungated	11/04/2021 13/11/2021	3.2,3.5,3.7,3.9,3.20,3.16, 3.21,3.22	09
20	**Saikinalla**	1994	79° 12'00" 20° 51'00"	14.65	8.990	728	MH09LH1334	Ungated	11/04/2021 13/11/2021	3.1,3.2,3.7,3.9,3.13,3.9,3.20,3.21, 3.22	09
21	**Salaimendha**	1972	78°52'00" 20°02'00"	20.57	2.23	200	MH09MH0277	Ungated	14/04/2021 02/12/2021	3.2,3.9,3.16,3.20,3.22	05
22	**Wunna**	1966	78°52'00" 20° 08'00"	18.18	23.56	1326.64	MH09MH0129	Ungated	13/04/2021 02/12/2021	3.2,3.5,3.7,3.9,3.20,3.22	06
23	**Zilpi**	1974	78°52'00" 21°04'00"	18.95	1.559	80.00	MH09MH0394	Ungated	14/04/2021 02/12/2021	3.2,3.9,3.16,3.20	04
II) Superintending Engineer , Bhandrra Irrigation Project Circle , Bhandrra											
1) Executive Engineer, Gondia Irrigation Division, Gondia											
24	**Nawegaon bandh**	1967	80°15'00 " 20°31'00 "	11.58	45.94	124.20	MH09LH0138	Ungated	28/05/2021 12/10/2021	3.20, 3.28	02

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude / Latitude	Heig ht in m	Gross Capacity Mm³	Design Spillway Capacity m³ / sec	Sr. No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
25	**Bodalkasa**	1917	80° 01'00" 21°21'15"	19.20	17 .393	206. 687	MH09MH0039	Ungated	02/06/2021 15/10/2021	3.1,3.5,3.9,3.19,3.20,3.28	06
26	**Risala**	1967	79°53'30 " 21°15'00 "	16.62	6.575	137.48	MH09MH0142	Ungated	02/06/2021 15/10/2021	3.1,3.7,3.9,3.20	04
27	**Khairbandh**	1915	80° 00' 45" 21° 28' 30"	18 16	16.798	363.30	MH09MH0023	Ungated	02/06/2021 30/10/2021	3.1,3.5,3.9	03
28	**Managad**	1970	80° 31'30" 21°13' 30"	15 70	7 .825	302 . 50	MH09MH0208	Ungated	11/06/2021` 12/10/2021	3.19	01
29	**Rengepar**	1978	88°07'30" 21° 16'30"	17.17	3.965	410.88	MH09MH0716	Ungated	28/05/2021 14/11/2021	3.20,3.28	02
30	**Pipriya**	1977	82°08' 00" 21°20' 00"	15.43	1 .389	62.01	MH09MH0464	Ungated	11/06/2021 12/10/2021	3.16	01
31	**Chorakhamara**	1923	79° 57'00" 21° 18' 0"	21.05	21.051	264.94	MH09MH0044	Ungated	02/06/2021 10/11/2021	3.1,3.5,3.13,3.20	04
32	**Chulband**	1977	80° 13'00" 21° 13'00"	22.08	24.018	846.12	MH09MH0445	Ungated	08/06/2021 10/11/2021	3.20,3.22	02
33	**Salegaon**	1964	80°20'45 " 21°10'35 "	17.27	3. 395	86.93	MH09MH0093	Ungated	11/06/2021 15/10/2021	3.10,3.20	02
34	**Umarzari**	1996	80°0 3' 45" 21° 28' 30"	18.50	17.33	450	MH09MH1472	Ungated	08/06/2021 12/10/2021	3.1,3.5 3.20	03
2) Executive Engineer, Bhandara Irrigation Division, Bhandara											
35	**Betekar Bothali**	1978	79°33'05 " 21°25'30 "	20.70	4.150	483.60	MH09MH0722	Ungated	19/05/2021 20/12/2021	3.1,3.5,3.6,3.16,3.19,3.20,3.21	07
36	**Nagthana**	1975	79°37'00 " 20°23'00 "	11.30	3.11	440.35	MH09LH0506	Ungated	19/05/2021 19/05/2021	3.1,3.5,3.6,3.16,3.19,3.20,3.21	06
37	**Chandpur**	1915	79° 49'00" 21°32' 00"	19.00	29.03	339 .25	MH09MH0034	Ungated	19/05/2021 24/12/2021	3.1,3.5,3.7,3.6,3.9,3.18,3.16,3.20,3.34	09
III) Superintending Engineer , Chandrapur Irrigation Project Circle , Chandrapur											
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur											

Sr. No	Name of Dam	Year of Compl-etion	Location Longitude / Latitude	Heig ht in m	Gross Capacity Mm³	Design Spillway Capacity m³ / sec	Sr. No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
38	**Amalnala**	1985	79°10'00" 19°45'05"	26.57	22.70	1067.12	MH09LH0403	Ungated	26/05/2021 30/11/2021	3.1,3.5,3.6,3.16,3.18,3.19,3.20,3.26,3.34	10
39	**Ghorazari**	1923	79° 30'07" 20°30' 10"	20.04	45.08	320	MH09MH0045	Ungated	10/05/2021 05/12/2021	3.1,3.5,3.16,3.18,3.19,3.20,3.26,3.22	07
40	**Teliya (C'pur)**	1972	79° 21' 00" 20° 10' 0"	16.10	1.152	130.55	MH09MH0271	Ungated	27/05/2021 03/12/2021	3.1,3.5,3.6,3.19,3.16,3.20,3.22,3.34	08
41	**Pakadiguddam**	1993	79° 02'00" 20° 02'00"	18.90	13.31	803	MH09MH1703	Ungated	26/05/2021 05/02/2022	3.1,3.5,3.6,3.16,3.19,3.20,3.34	06
42	**Sondo**	1975	79° 16'00" 19° 39'09"	16.49	2.15	174	MH09MH0478	Ungated	26/05/2021 30/12/2021	3.1,3.5,3.6,3.12,3.16,3.19,3.20,3.35	08
43	**Nalleshwar**	1922	79°35' 00" 20°14' 00"	12. 80	8.88	308 .43	MH09MH0042	Ungated	21/05/2021 26/11/2021	3.1,3.6,3.7,3.19,3.20,3.34	06
44	**Chargaon**	1983	79° 10'10" 20° 25'40"	14.40	21.70	1450	MH09LH1007	Ungated	07/04/2021 17/12/2021	3.1,3.5,3.7,3.9,3.13,3.18 3.33,3.34	08
45	**Dongargaon**	2000	79° 34' 0" 19° 36' 0"	19.88	14.178	840	MH09MH1549	Ungated	24/05/2021 10/02/2022	3.2	01
B) Chief Engineer, GosiKhurd Project, Nagpur											
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur											
1) Executive Engineer, Medium Project Division, Gondia											
46	**Katangi**	2001	80°11'00 " 21°21'00 "	13.65	11.12	845	MH09LH1675	Ungated	04/05/2021 27/11/2021	3.5,3.9,3.16,3.20, 3.22	05
47	**Owara**	2007	-	16.14	10.76	399.06	-	Ungated	04/05/2021 21/10/2021	3.1,3.6,3.13,3.20	04
48	**Bewatola**	2015	19.30	19.30	7.96	575	-	Ungated	27/05/2021 21/10/2021	3.1,3.13,3.20,3.34	04
2) Executive Engineer , Minor Irrigation Division, Wardha											
49	**Kar**	2000	78°27'14" 21°13'39"	25.13	25.96	2315.00	MH09MH1556	Ungated	29/05/2021 07/12/2021	3.1,3.2,3.9,3.16,3.22	05

Table 3.16

Class-I Dams with Category-1 Deficiency (Private Owned)

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
---------- NIL ----------						

Table 3.17

Class-I Dams with Category-2 Deficiency (Private Owned)

Sr. No	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Significant Deficiencies Noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
CE, General (O&M) Super Thermal power station Urjanagar, Chandrapur						
SE, Civil Maintains Unit, Chandrapur						
1	**Erai (Dist:Chandrapur)** Year of Completion: 1985 Location Longitude: 79 º 15′30 ″ Latitude: 20º 06′ 00″ Height: 26.93 **m** Gross capacity: 226 **Mm^3** Spillway capacity: 2610 **m^3/sec** (Gated) Sr. No. in National Register of Large Dams (July 2002) : MH09HH1010	30/03/2022	Shri. M.S.Amale, SE, DSO, Nashik	Masonry Dam	1) Sweating & minor leakages are observed on right side of masonry wall at Ch.202.0 m & left side of masonry wall at Ch. 100.0 m on D/s of the masonry. (A11)	1. Source of leakage should be identified chainage wise along the length of masonry dam and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Necessary repairs should be carried out with prior approval from competent technical authority 4. Location, type, and extent of the damages of the End weir should be identified and photographed. 5. Necessary repairs should be

Sr. No	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Significant Deficiencies Noticed	Remedial Measures Suggested
				End weir	2)Cracks & pot holes on end weir Surface are observed at many places.(A17)	carried out in accordance with approved drawing with prior approval from competent technical authority.
				Gallery	3) Uplift pressure cell, plumb bob,Pizometer are not in working condition. (B9)	1. Necessary repairs should be carried out in accordance with prior approval from competent technical authority. 2. Instrumentation Research Division under DSO, Nashikmay be contacted for repairs.
					4) Leaching material observed in gallery at many places. (Ch.214.30,227.60,239.50,250.0, 260.60,274.0,344.80,360.0, 364.0 etc). (A12)	1. Side drains should be cleared peroidically to drain out the seepage water effectively. 2. A discharge measuring device should be properly provided in accordance with provisions given in the IS code 14750 (2000) : Code of practice for installation, maintenance and observation of seepage measurement device for Concrete/ Masonry and Earthen/Rock fill dams to measure the seepage. 3. Monolith wise Record of quantity of leaching material should be maintained.

Table 3.18

Class-I Dams with Category-3 Deficiency (Private Owned)

Sr. No	Name of Dam	Date of Compl-etion	Location Longitude/ Latitude	Height in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	Sr.No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
CE, General (O&M) Super Thermal power station Urjanagar, Chandrapur											
SE, Civil Maintains Unit, Chandrapur											
1	**Erai (Dist:Chandrapur)**	1985	79°15′30″ 20° 06′ 00″	26.93	226	2610	MH09HH1010	Gated	30/03/2022	3.1,3.9,3.12,3.18,3.25,3.27,3.33,3.35,3.36	09

Table 3.19

Class-II Dams with Category-1 Deficiency (Private Owned)

Sr. No.	Dam Features	Date of Inspection	Inspecting Officer	Main Component of Dam	Significant Deficiencies noticed	Remedial Measures Suggested
1	2	3	4	5	6	7
---------- NIL ----------						

Table 3.20

Class-II Dams with Category-2 Deficiency (Private Owned)

Sr. No.	Dam Features	Date Of Inspection	Inspecting Officer	Main Component Of Dam	Significant Deficiencies Noticed.	Remedial Measures Suggested
NMC Nagpur						
1	Name:**- Gorewada (Nagpur)** Date of completion :- **1911** Location : - Longitude :- **79° 03' 00"** Latitude :- **20° 15' 00"** Height :- **17 .42 m.** Gross capacity :-**8.84 Mm³** Design Spillway capacity : **685.76 cumecs (Gated)** Sr. No. in National register oflarge Dams July 2009 :- **MH09MH0029**	10/02/2022	Smt. S.Y. Kurhade EE, DSD2 Nashik	Earthen dam	1) Dam seems to be under section at some places. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not.
					2) There is seepage of water observed near D/S toe of dam between chainage 540m.- 570m. & in the gorge portion.. (A11)	1. Source of leakage should be identified chainage wise along the length of masonry dam and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Necessary repairs should be carried out with prior approval from competent technical authority.
2	Name:- **Ambazari (Nagpur)** Date of completion :- **1870** Location : - Longitude :- Latitude :- Height :- **15.60 m.** Gross capacity :- **8.37 Mm³**	10/02/2022	Smt. S.Y. Kurhade EE, DSD2 Nashik	Earthen Dam	1) Being a Century old dam existing earthen dam section should be checked for stability & strengthing. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not.

Sr. No.	Dam Features	Date Of Inspection	Inspecting Officer	Main Component Of Dam	Significant Deficiencies Noticed.	Remedial Measures Suggested
	Design Spillway capacity :- **cumecs (Ungated)** Sr. No. in National register oflarge Dams July 2009 **:-MH09LH0006**				2) At some places, dam seems to be under section. The existing cross section of dam should superimposed on design cross section of earth dam to ascertained the concavity/ settlement/ undulation of earth work. (B1)	1. Detailed survey of the dam and dam section should be carried out. 2. Dam section (Top width, side slopes, and drains) should be checked. Surveyed section should be superimposed on design section to ascertain whether earthen embankment is under section or not.
					3) Big Trees observed on U/S & D/S slope of Dam. (B13)	1. Vegetation and bushes must be uprooted before they will grow into trees, without disturbing section of the dam. 2. Girth & species wise numerical classification of trees should be prepared.
				W.W. bar & Tail channel	4) Leakages were observed through the walls of waste weir bar at various places. Field officers reported that heavy leakages were noticed through right side portion of waste weir during mansoon 2020, temporary repairs were carried out to minimize the leakages.	1. Source of leakage should be identified chainage wise along the length of waste weir bar and leakages should be quantified with respect to reservoir water level. 2. Investigations for seepage should be carried out as per relevant provisions mentioned in para5.2.2.2 Investigations for seepage of Manual for Rehabilitation of Large Dams (Page 47 of 112) published by Central Water Commission 3. Location, type, and extent of the damages of the spillway bar should be identified and photographed .

Sr. No.	Dam Features	Date Of Inspection	Inspecting Officer	Main Component Of Dam	Significant Deficiencies Noticed.	Remedial Measures Suggested
					5) Monumental structure and beautification work is constructed immediately downstream of spillway in the tail channel portion. This structure & beautification works has obstructed the free waterway. Length of spillway is 140 m. & available waterway remained after the construction works seems to be very less. Also there is a small bridge across tail channel, D/s of the structure which has very small free waterway.	1. Construction of any structure in tail channel is most hazardous for the safety of dam, as it obstructs the free flood passage. Now the available water way must be kept clean & clear.

Table 3.21

Class-II Dams with Category-3 or No Deficiency (Private Owned)

Sr. No	Name of Dam	Date of Compl-etion	Location Longitude/ Latitude	Height in m	Gross Capacity Mm^3	Design Spillway Capacity m^3 / sec	Sr.No. in NRLD Register of Large Dams 2009	Gated / Ungated	Date of Inspection	Deficiencies noticed	Total Deficiencies
1	2	3	4	5	6	7	8	9	10	11	12
NMC Nagpur											
1	**Gorewada (Nagpur)**	1911	79° 03' 00" 20° 15' 00"	17.42	8.84	685.76	MH09MH0029	Gated	10/02/2022	3.1,3.24,3.29	03
2	**Ambazari (Nagpur)**	1870	-	15.60	8.37	-	MH09LH0006	Ungated	10/02/2022	3.1,3.24,3.29	03

Table 3.22

Category-1 Deficiency in Class-I Dams

Sr. No	Deficiency	Names of dams	Total No. of dams
1	2	3	4
---------- NIL ----------			

Table 3.23

Category-2 Deficiency in Class-I Dams

Sr. No	Deficiency	Names of dams	Total No. of dams
1	**A 2**: Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam	Kolar,Lal Nalla,Erai,Lower Wardha,Itiadoh	5
2	**A 4** : Major leakages through outlet conduit/pipe joints/Gates.	Ramtek	1
3	**A 5** ; Relief wells not functioning properly./ Abnormal rise in water level in wells.	Lower Wenna (Wadgaon) , Kamthi khairy, Pujaritola	3
4	**A6:** Seepage noticed around the conduit.	Ramtek	1
5	**A 7 :** Retrogression /scouring in tail channel.	Lower Wenna (Nand), Lower Wenna (Wadgaon),Bor, Shirpur.	4
6	**A 8 :** Drainage gallery inaccessible/No adequate lighting./ No dewatering arrangement or failure.	Erai	1
7	**A 9 :** Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes.	Kamthikhairy, Totaladoh, Itiadoh , Shirpur.Goshikhurd	5
8	**A 11** : Sweating / seepages through D/S of masonry dam	Totaladoh,Erai	2
9	**A 12** : Excesssive considerable leaching from seepage water.	Kolar, Sirpur, Kamthikhairy, Lower Wenna (Wadgaon) , Totaladoh ,Pujaritola ,Erai	7
10	**A 14** : EDA / Stilling basin damaged/Hydraulic performance not good.	Kalisarar, Eari, Sirpur	3
11	**A 15** : Leakages through spillway /piers//junction of flank wall.	Lower Wenna (Wadgaon),Lower wardha , Kamthikhairy	3
12	**A16** : Damages / foundation erosion/ scour/undermining observed in vicinity of flank walls/ guide walls/ junction walls/return walls.	Lower Wenna (Nand), Ramtek, Goshikhurd,Khekranala,Erai.	5
13	**A 17** :End weir not in good condition / scouring noticed on immediate D/S.	Sirpur, Pujaritola	2
14	**A 18** :Wire ropes of hoist not in good condition/hoisting structure damaged/cracked.	Kolar	1
15	**B 5 :** Outlet gates not functioning properly. Stem rod is bent(Service gate/Emergency gate/Stop log gate/sluice gate)	Kamthikhairy,Bor	2
16	**B 7:** Waste weir/waste weir bar not in good condition/coping damaged/leakage through waste weir.	Kolar	1

Sr. No	Deficiency	Names of dams	Total No. of dams
17	**B 10**: Leakages through River sluice.	Kamthikhairy, Totaladoh,	2
18	**B 9:** Instruments not in working condition.	Erai, Kamthikhairy, Totaladoh, Kolar, Bor, Sirpur, Itiadoh .	7
19	**B 11**: Surface paint/steel surface of spillway gates deteriorated.	Ramtek,Dina	2
20	**B 12**: Damage to Rubber seals/ considerable Leakages through gates.	Pujaritola	1

Table 3.24

Category-1 Deficiency in Class-II Dams

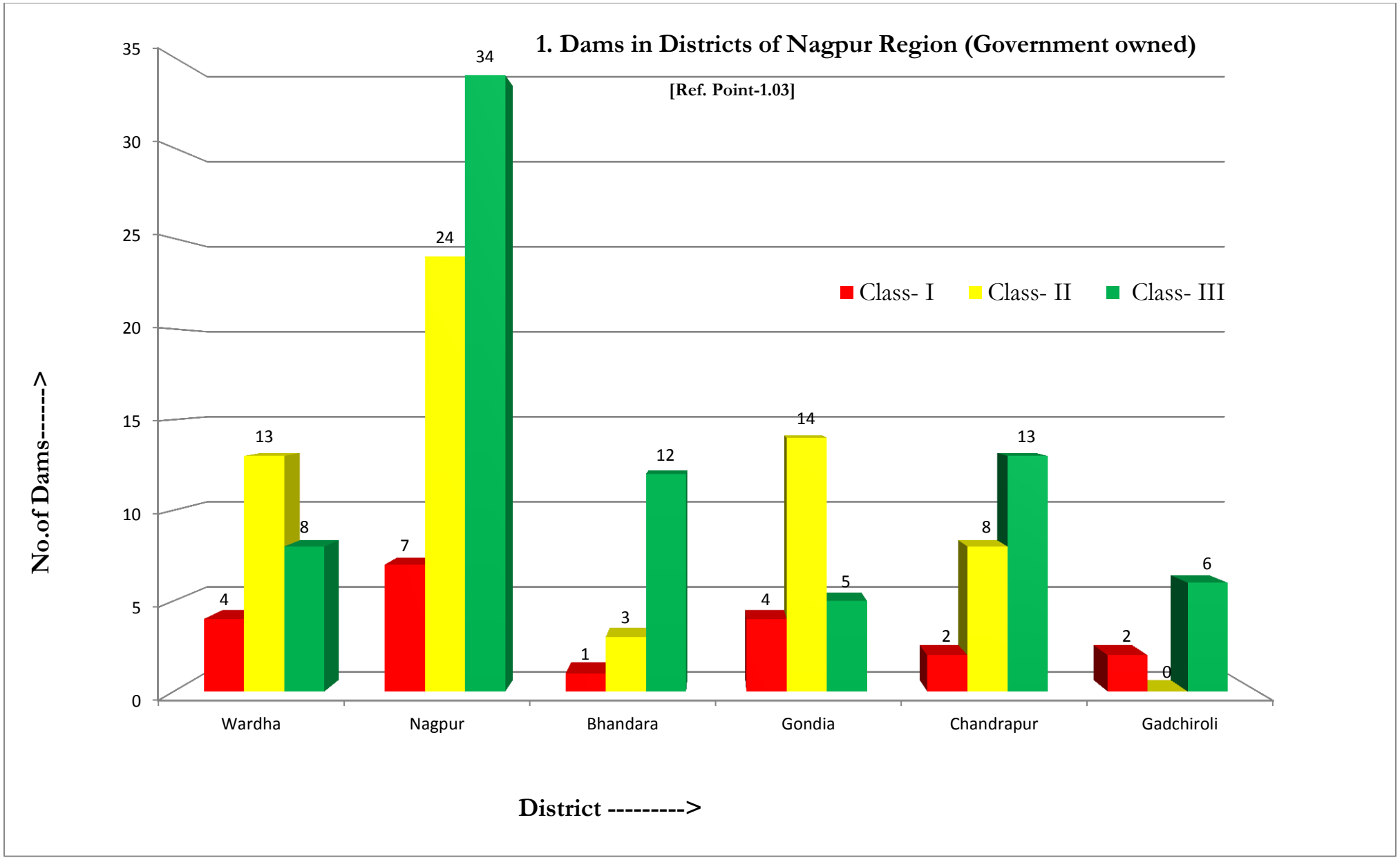
Sr. No	Deficiency	Names of dams	Total No. of dams
1	2	3	4
---------- NIL ----------			

Table 3.25

Category-2 Deficiency in Class-II Dams

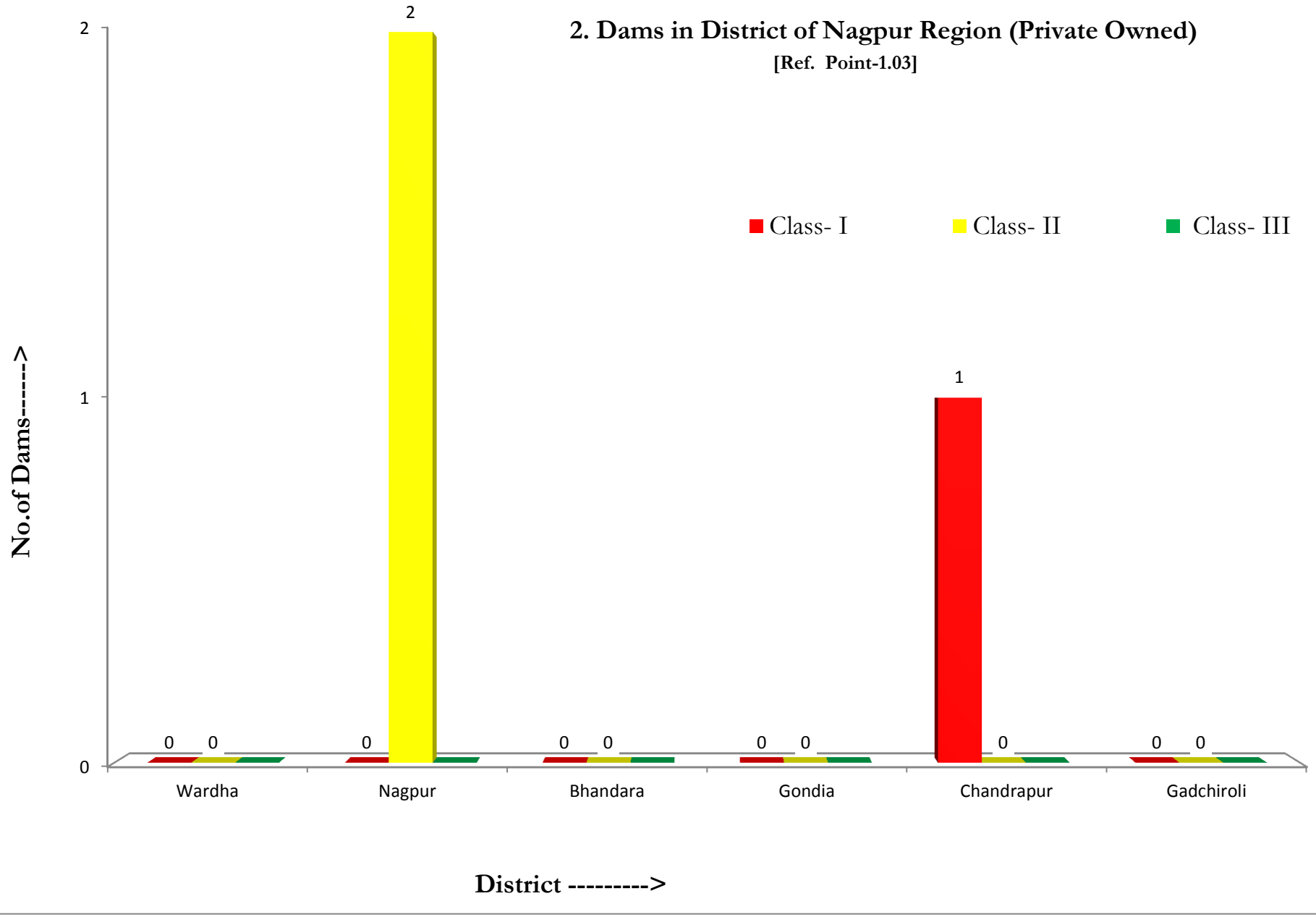
Sr. No	Deficiency	Names of dams	Total No. of dams
1	**A.1: Boil/leakage/ seepage/ wet patches/ slushiness in Earthen Dam.**	Chorkhamara, Umarzari, Kar	3
2	**A 2: Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam**	Nishanghat, Makardhokada, Saikinalla, Pandharbordi, Kanolibara	5
3	**A4: Major leakages through outlet conduit/pipe joints/Gates.**	Risala, Chargaon	1
4	**A 6 : Outlet well is damaged/not in good condition /cracks observed/jets of water in well.**	Kar	1
5	**A 7 : Retrogression /scouring in tail channel.**	Nishanghat, Pandharbodi, Nagalwadi, Makardhokada, Mangad, Bodalkasa	6
6	**A 9 : Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes.**	Kar	1
7	**A 11 : Sweating / seepages through D/S of masonry dam**	Gorewada	1
8	**A 14 : EDA / Stilling basin damaged/Hydraulic performance not good.**	Makardhokada, Nagalwadi, Gorewada	3
9	**B 1 Dam section is not as per design**	Nishanghat, Nagalwadi, Gorewada, Ambazari, Khumarinalla (Kalmeshwar) , Chorkhamara, Chargaon	7
10	**B3 : Considerable settlement of embankment / Rock toe/Pitching/ U/S & D/S slops, bulging/concavity of slopes.**	Ambazari	1
11	**B 5 : Outlet gates not functioning properly. Stem rod is bent(Service gate/Emergency gate/Stop log gate/sluice gate)**	Khumarinalla (Kalmeshwar), Makardhokada, Saikinalla, Khairbhand, Kanolibara, Nishanghat, Pandharbordi, Bodalkasa	8
12	**B 7: Waste weir/waste weir bar not in good condition/coping damaged/leakage through waste weir.**	Wenna	1
13	**B 11: Surface paint/steel surface of spillway gates deteriorated.**	Nagalwadi	1
14	**B 12: Damage to Rubber seals/ considerable Leakages through gates.**	Pandharbodi, Bodalkasa, Saikinalla,	3
15	**B 13 : Heavy vegetation/big trees on embankment top/slope making dam portion not accessible**	Ambazari	1

Sr. No	Deficiency	Names of dams	Total No. of dams
16	**B 14 : Deck bridge slab/ pier / damaged cracked/ alignment disturbed.**	Bodalkasa, Risala	2
17	**A 16: Damages / foundation erosion/ scour/undermining observed in vicinity of flank walls/ guide walls/ junction walls/return walls.**	Makardhokada	1

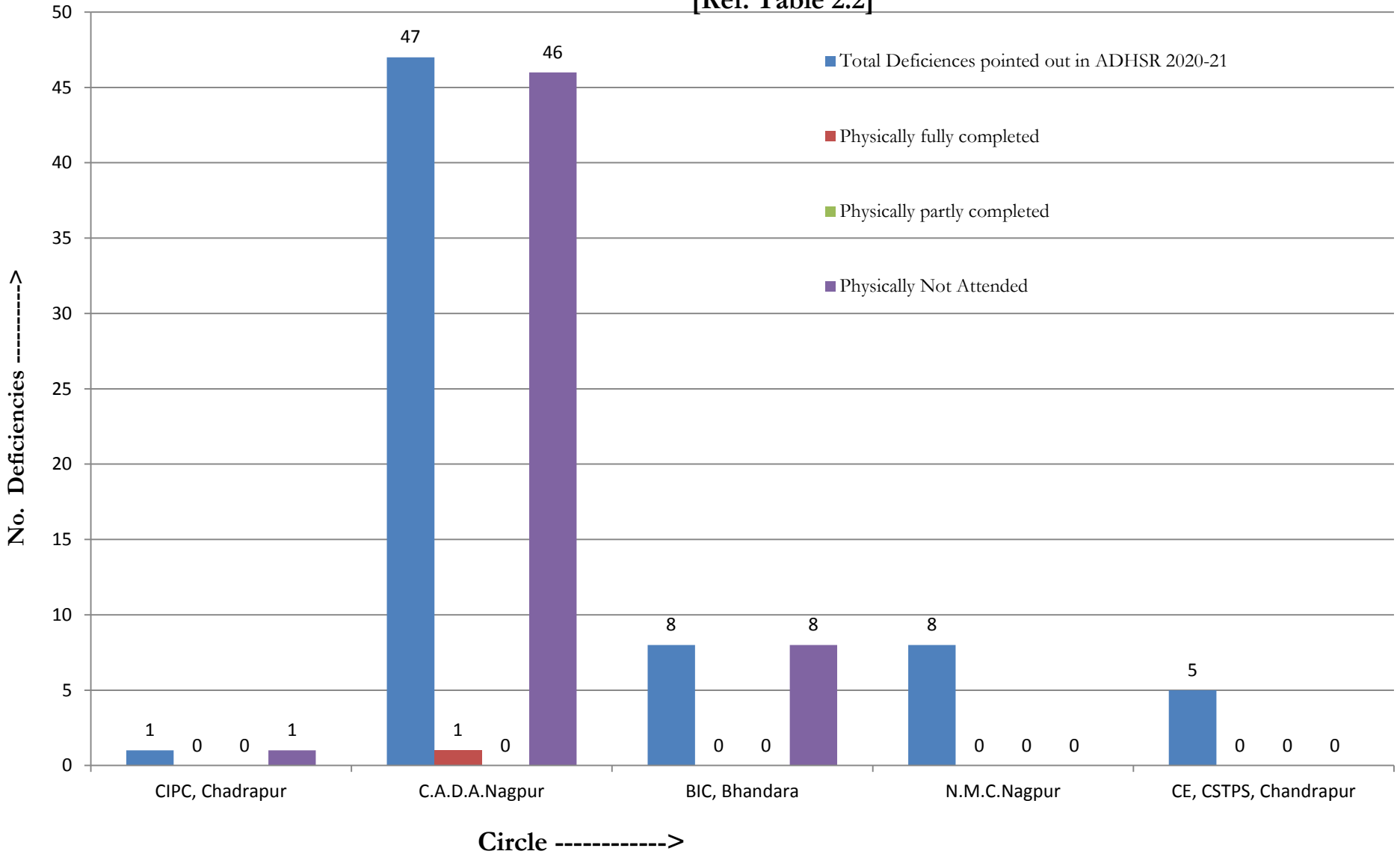

1. Dams in Districts of Nagpur Region (Government owned)
[Ref. Point-1.03]
No.of Dams----->
District --------->
Class- I
Class- II
Class- III
0
5
10
15
20
25
30
35
Wardha
Nagpur
Bhandara
Gondia
Chandrapur
Gadchiroli
4
13
8
7
24
34
1
3
12
4
14
5
2
8
13
2
0
6

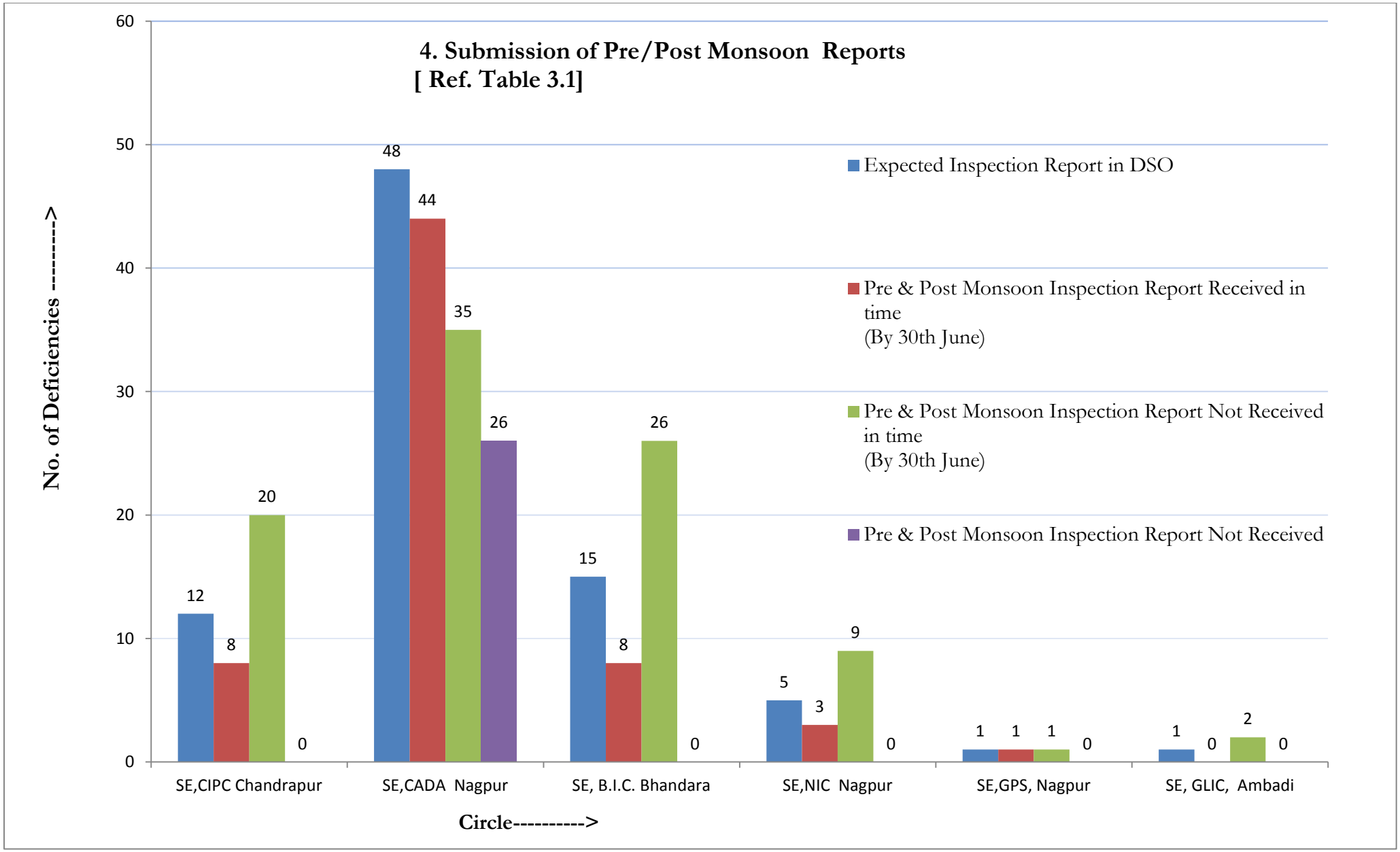
2. Dams in District of Nagpur Region (Private Owned)

[Ref. Point-1.03]



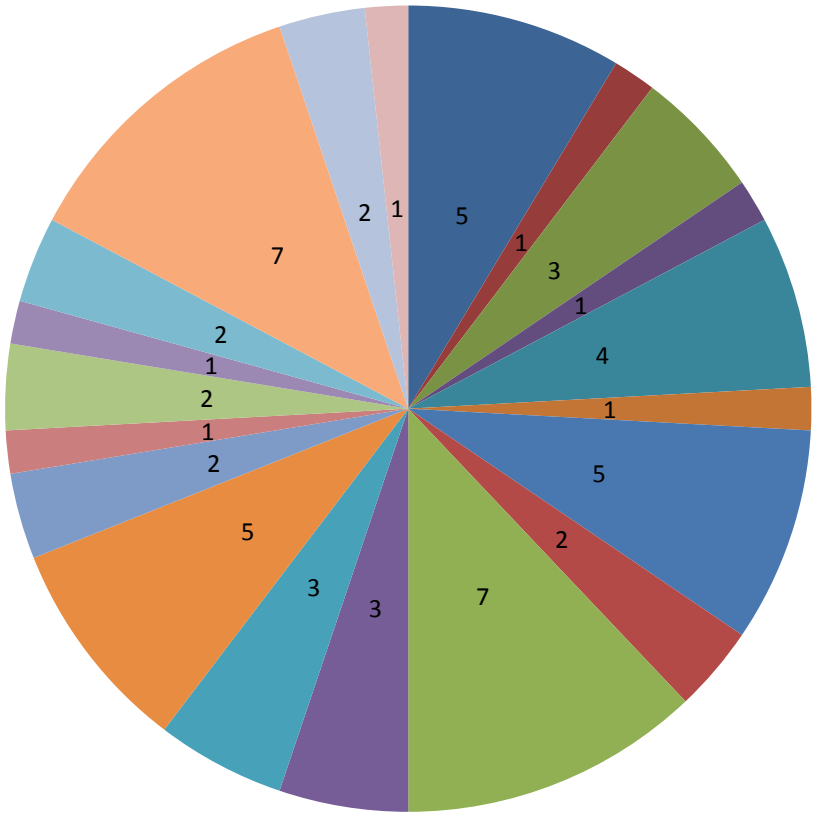
3.Deficiencies Attended by Field Offices (ATR for ADHSR-2020-21) [Ref. Table 2.2]




4. Submission of Pre/Post Monsoon Reports
[Ref. Table 3.1]
No. of Deficiencies -------->
Circle---------->
Expected Inspection Report in DSO
Pre & Post Monsoon Inspection Report Received in time (By 30th June)
Pre & Post Monsoon Inspection Report Not Received in time (By 30th June)
Pre & Post Monsoon Inspection Report Not Received
SE,CIPC Chandrapur
SE,CADA Nagpur
SE, B.I.C. Bhandara
SE,NIC Nagpur
SE,GPS, Nagpur
SE, GLIC, Ambadi
12 8 20 0
48 44 35 26
15 8 26 0
5 3 9 0
1 1 1 0
1 0 2 0

5.Category wise Deficiencies Class-I Dams

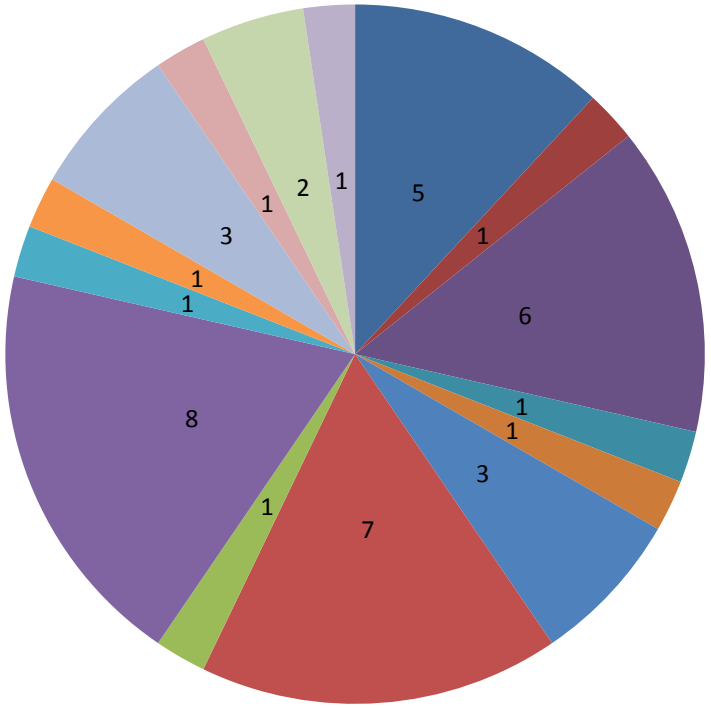
[Ref. Table 3.23]



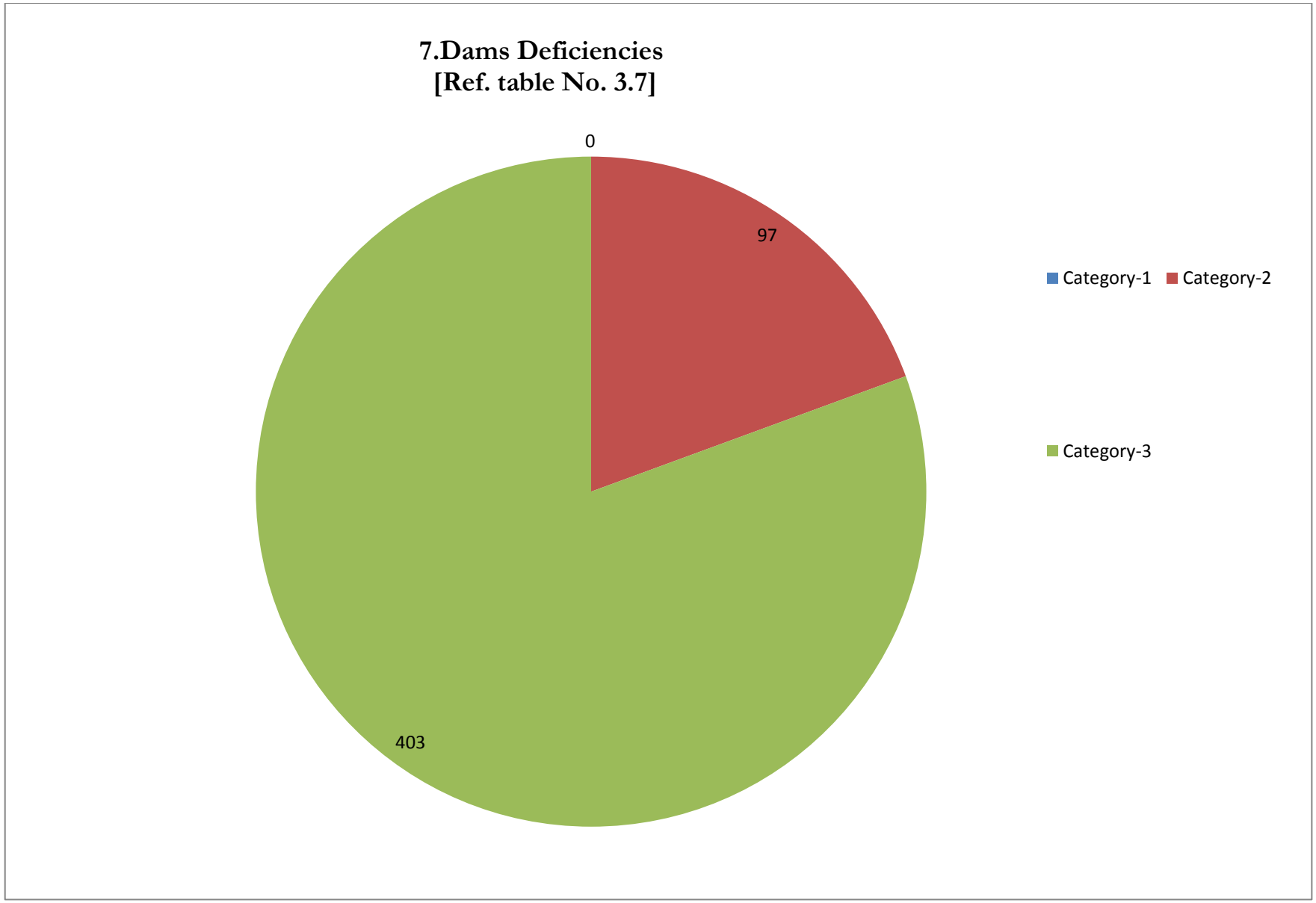
- A 2: Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam
- A 4 : Major leakages through outlet conduit/pipe joints/Gates.
- A 5 ; Relief wells not functioning properly./ Abnormal rise in water level in wells.
- A6: Seepage noticed around the conduit.
- A 7 : Retrogression /scouring in tail channel.
- A 8 : Drainage gallery inaccessible/No adequate lighting./ No dewatering arrangement or failure.
- A 9 : Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes.
- A 11 : Sweating / seepages through D/S of masonry dam
- A 12 : Excesssive considerable leaching from seepage water.
- A 14 : EDA / Stilling basin damaged/Hydraulic performance not good.
- A 15 : Leakages through spillway /piers//junction of flank wall.
- A16 : Damages / foundation erosion/ scour/undermining observed in vicinity of flank walls/ guide walls/ junction walls/return walls.
- A 17 :End weir not in good condition / scouring noticed on immediate D/S.
- A 18 :Wire ropes of hoist not in good condition/hoisting structure damaged/cracked.
- B 5 : Outlet gates not functioning properly. Stem rod is bent(Service gate/Emergency gate/Stop log gate/sluice gate)
- B 7: Waste weir/waste weir bar not in good condition/coping damaged/leakage through waste weir.
- B 10: Leakages through River sluice.
- B 9: Instruments not in working condition.
- B 11: Surface paint/steel surface of spillway gates deteriorated.
- B 12: Damage to Rubber seals/ considerable Leakages through gates.

6.Category wise Deficiencies of Class-II Dams

[Ref. Table 3.23]

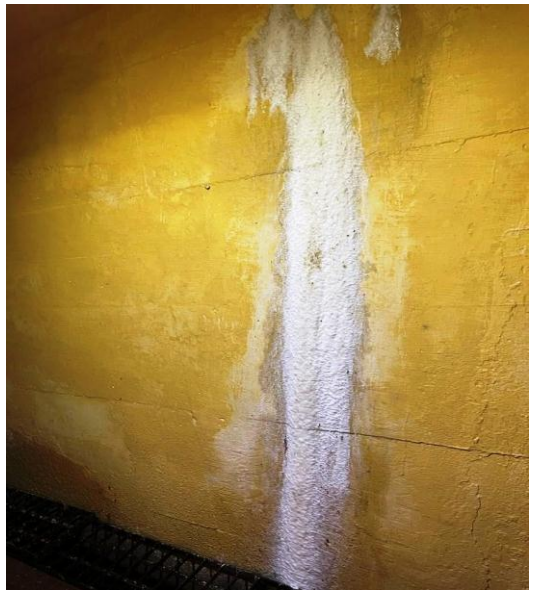


- A 2: Standing pool / Ponding / Water Logging / Slushy condition on D/S of Dam
- A4: Major leakages through outlet conduit/pipe joints/Gates.
- A 6 : Outlet well is damaged/not in good condition /cracks observed/jets of water in well.
- A 7 : Retrogression /scouring in tail channel.
- A 9 : Foundation drains / holes/ porous pipes/chocked/ no seepage through foundation drain holes.
- A 11 : Sweating / seepages through D/S of masonry dam
- A 14 : EDA / Stilling basin damaged/Hydraulic performance not good.
- B 1 Dam section is not as per design
- B3 : Considerable settlement of embankment / Rock toe/Pitching/ U/S & D/S slops, bulging/concavity of slopes.
- B 5 : Outlet gates not functioning properly. Stem rod is bent(Service gate/Emergency gate/Stop log gate/sluice gate)
- B 7: Waste weir/waste weir bar not in good condition/coping damaged/leakage through waste weir.
- B 11: Surface paint/steel surface of spillway gates deteriorated.
- B 12: Damage to Rubber seals/ considerable Leakages through gates.
- B 13 : Heavy vegetation/big trees on embankment top/slope making dam portion not accessible
- B 14 : Deck bridge slab/ pier / damaged cracked/ alignment disturbed.
- A 16: Damages / foundation erosion/ scour/undermining observed in vicinity of flank walls/ guide walls/ junction walls/return walls.


7.Dams Deficiencies
[Ref. table No. 3.7]
0
97
403
Category-1
Category-2
Category-3

Annexure-2

Snapshots of Dams inspected by DSO



Snapshot-1
Totaladoh Dam (Class-I, National Important dam)
Taluka – Ramtek Dist - Nagpur
Date of Inspection – 28-03-2022
White leaching material is observed on upstream face of gallery at many places.

Snapshot -2
Erai Dam (Private Dam) (Class-I)
Taluka & Dist – Chandrapur
Date of Inspection – 39/03/2022
Scouring is observed near right side guide wall d/s of end sill wall. Standing pools of water on downstream side of overflow section was observed. This may be through foundation.

Part-4

Annual Performance Report of Dam Instruments

Part-4 : Annual Performance Report of Dam Instruments

4.1 General :

The main purpose of instrumentation in dam is to warn of any changes that could in danger the safety of a dam, as well as to provide a confirmatory check in design assumptions and methods of computation.

Instruments embedded in or installed at the surface of the dam keeps a constant watch over the performance and indicate the distress spots for which remedial measures may be taken. Thus, instruments play an important role in monitoring and evaluating the performance of the dams during the construction as well as operation.

In general it is observed that Dam Instrumentation is somewhat neglected part in Dam maintenance. Instruments are installed in or on the Dam Body. However due to poor Maintenance they are not functioning. It is must for field officers to recognize importance of data derived from instruments and its analysis to upkeep of Dams in safe condition.

4.2 Instrumentation in Earthen Dams :

1. Pore Pressure Meter :

They are installed in bore holes drilled below the foundation or through already completed embankment. Hence cannot be repaired or replaced.

2. Casagrande /Standpipe Piezometers :

These are used for measuring pore water pressure in soil. These instruments can be installed at any time at desired location after completion of construction of the dam.

1. Twin Tube Piezometers :

These are also used for measuring pore water pressure in earthen dam. These are installed in foundation and embankment during construction of dam. If PVC pipes are found chocked due to leached material then it can be cleaned with CuSo4. If pipes are cut / broken then it cannot be replaced as those are in body of dam. Outside measuring assembly can be repaired. Periodical maintenance, reading and calibration are of utmost important.

4. Earth Pressure Cells :

These are installed in the foundation. The cables which are outside the body can be replaced if damaged. The sensor cannot be repaired or replaced.

5. Settlement Gauges (Surface Settlement Gauges/Vertical Cross Arms) :

These are used for measuring settlement in earth fill dam, rock fill dam and high embankment. Initially when the dam is under construction these instruments are installed.

Settlement of dam is more in initial period, which gradually decreases and it is almost nil after certain period. As such these gauges also do not show settlement after few years.

6. Slope Indicator :

This is installed in foundation with one end at bottom and other at top of the dam. It measures horizontal and vertical movement of the dam. This can be replaced.

4.3 Instrumentation in Concrete / Masonry Dams :

1. Stress meters :

The stress meters measure stresses inside the dam body. These instruments are embedded in concrete/masonry during construction stage hence cannot be repaired or replaced.

2. Strain Meter/ No Stress Strain Meter :

The strain meters measures the deformation in the structure at the particular location due to strain, creep, temperature etc. The main purpose is to determine the stress distribution in the concrete dam during and after construction of dam. Since instrument is installed in the body of the dam it cannot be repaired or replaced.

3. Uplift pressure cells

The bowl type uplift pressure cells are provided in the foundation of dam. Uplift pressure cell is used for monitoring uplift pressure of water in the foundation of dam and concrete structure. The pressure cell pipes can be cleaned if choked. The pressure gauges can be repaired or replaced.

4. Plumb Bob /Co-Ordimeter :

Conventional / Inverted Plumb Bob is used to measure deflection of the dam body. It measures the horizontal displacement in dam's foundation and abutment. Plumb bob can be repaired or replaced.

5. Thermocouples/ Thermometers :

These are used to measure the temperature variations in the body of concrete dam. These are installed in layers at various levels and can not be replaced or repaired after construction.

6. Long Gauge Extensometer :

It is used to measure the deformation/displacement in the foundation of the concrete dam. Once it fails to function can not be repaired.

7. Joint meters :

The joint meters measure the opening of the joints across which they are embedded. As such they are located near the joints.

4.4 Status Of Dam Instrumentation In The Region :

Considering the fact that most of the instruments were non-functional from many years, Govt. of Maharashtra appointed a committee to study these instruments. The recommendations of the committee were accepted and incorporated in G.R. धसुसं २०१४(६२१/१४)/ सिं.व्य. (कामे) Dated. 31/12/2015. Accordingly to every dam owner, it is informed by Dam Safety Organization to update the list of instruments at the dam site. In this report the updated details of instruments are considered.

The status of dam instrumentation in the nagpur region is given in table No.4.1. Similarly the details of mortality of instruments is given in table No.4.2 and comparison of mortality rate with respect to previous year is given in table no. 4.3

4.5 Observations

1) Various instruments numbering 117 have been installed on these 9 dams. Out of which 5 were working and 112 were not working i.e. 95.73 % instruments are in non working condition.
2) As for no dam instrument data reading are available so No Instrumentation data analysis report have been prepared for Nagpur region.
3) The observations of the instruments should be taken regularly and need to be sent to D.S.O. Nashik for analysis.
4) Comparison of mortality rate of instrument as compared to last year is given as per table No.3.3.

Table No. 4.1

Dam wise Status of Dam Instruments Installed on Large Dams

Sr. No.	Dam Name	Instrument Name	Date of Installation	Total	Functional Status (F/N.F)		Remark from field as per pre-post Monsoon report 2021
					Functional	Non Functional	
1	2	3	4	5	6	7	8
Chief Engineer,(W.R) Nagpur							
1	Totaladoh	Uplift pressure cell	--	14	0	14	
		Plumb bob	--	1	0	1	
2	Sirpur	Twin Tube Piezometers	--	2	0	2	
3	Itiadoh	Twin Tube Piezometers	--	2	0	2	
4	Kamti Khairy	Cassagrande piezometers	--	10	0	10	No Data
		Uplift Pressure cell	--	13	0	13	
5	Lower Wunna (Nand)	Stand pipe Piezometer	--	17	0	17	
6	Lower Wunna(Wadgaon)	Stand pipe Piezometer	--	29	0	29	As per post monsoon report 2021
7	Bor	Stand pipe Piezometer	--	1	0	1	
8	Erai	Stand pipe Piezometer	--	10	4	6	No Data
		Uplift Pressure cell	--	7	0	7	
		Strain meter	--	1	0	1	
		Plumb bob	--	1	0	1	
9	Gosi Khurd	Plumb bob(conventional)	10/10/2017	2	0	2	# As per IRD's report dated 30.11.2018
		Plumb bob(Inverted)	10/10/2017	1	1	0	
		Uplift Pressure cell		6 #	0 #	6 #	
CE Wise Total for 9 Dams				**82**	**5**	**77**	
NAGPUR Region Total for 9 Dams				**82**	**5**	**77**	

As per IRD's inspection note dated 30.11.2018 forwarded vide letter No. 746 dated 15.12.2018

TABLE NO 4.2

Mortality Status of Instruments installed on Large Dams

Sr. No.	Type of Instruments	Numbers of Instruments			
		Total	Working	Non-Working	Mortality (%)
1	2	3	4	5	6
(A) Earth Dams					
1	Casagrande / Stand pipe /Vibrating wire Piezometers	67	4	63	94.03
2	Twin tube Piezometers	4	0	4	100
3	Horizontal/Vertical device / Cross arm surface settlement plug	0	N.A	N.A	N.A
4	Earth pressure cells	0	N.A	N.A	N.A
5	Slope indicator	0	N.A	N.A	N.A
Total		71	4	67	94.37
(B) Masonry Dams					
1	Pore pressure meters	0	N.A	N.A	N.A
2	Stress meter	0	N.A	N.A	N.A
3	Strain meter/ No stress-strain meter	1	0	1	100
4	Uplift pressure cells	40	0	40	100
5	Plumb bob/ Inverted Plumb Bob / co-ordimeter	5	1	4	80
6	Long Gauge extensometer, Multiple Bore hole extensometer	0	N.A	N.A	N.A
7	Thermometers	0	N.A	N.A	N.A
8	Joint meters /Dial Gauge	0	N.A	N.A	N.A
9	Tilt meter	0	N.A	N.A	N.A
Total		46	1	45	97.83

Sr. No.	Type of Instruments	Numbers of Instruments			
		Total	Working	Non-Working	Mortality (%)
	Instruments in	**Total**	**Working**	**Non Working**	**Mortality**
A)	Earth Dams	71	4	67	94.37
B)	Masonry Dams	46	1	45	98
	Grand Total	117	5	112	95.73

Table No. 4.3

Comparative Statement For Status of Instruments in Dams

Year		HSR 2020					HSR 2021				
Sr.No	Name of Chief Engineer	Total Dams	Total Instruments	Functioning	Not-Functioning	% functioning	Total Dams	Total Instruments	Functioning	Not-Functioning	% functioning
1	Chief Engineer (WR) Nagpur	9	112	5	107	4.46	9	117	5	112	4.27
	Total	9	112	5	107	4.46	9	117	5	112	4.27

Part-5

Annual Performance Report of Meteorological Instruments

5.1 General

Hazard potential of dam depends upon the possible hazard it poses to population on the downstream during flood. In case of gated spillways, generally flood is considered to impinge when reservoir is at F.R.L. If flood forecasting and warning systems are in place, flood impingement can be considered at lower when F.R.L. considering prior depletion.

The establishment of hydro-meteorological stations in the vicinity of every Class-I dam and rain gauge network in its catchments assumes vital importance due to its role in flood forecasting and warning. The hydro-meteorological station shall be capable of recording data relating to, among other parameters, rainfall, atmospheric pressure, maximum & minimum temperature and humidty,wind speed, wind direction, height of waves and reservoir water temperature. It is important that a representative proportion of the rain gauge network is linked to flood forecasting and warning control centre by telemetry.

5.2 Observations

From Pre/Post Monsoon Reports it is seen that the ANNEXURE-IV which is "**Checklist of Various Meteorological Instruments installed on Dams**" is not filled properly and quantity of number of instruments varies from year to year. As this status of instruments is submitted to C.W.C., New Delhi. Field authorities need to make sure that correct information is filled. Table 4.1 gives the damwise status of the meteorological instruments, and Table 4.2 gives the status of mortality of meteorological instruments installed in the region.

1. As per Pre/Post Monsoon reports of Nagpur region it is seen that 85 various meteorological instruments installed on dams out of which 61 are functioning and 24 are non functioning. The non-functioning should be repaired/replaced on priority.
2. As per the government circular CDA-1013/(207/13)/CAD(works)/ August-2013. It is mandatory to install **Pan Evaporimeter** to measure evaporation on all major and medium projects.

Efforts should be taken by field officers to establish automatic flood warning systems which will help in saving lives, livestock and property and will invariantly contribute to lessening of the overall impact of floods.

Table- 5.1

DAMWISE STATUS OF METEOROLOGICAL INSTRUMENTS INSTALLED ON DAMS IN NAGPUR REGION

Sr. No.	Name of dam with location	Name of Instruments	No. of Instruments	Performance		Status of Data Analysis
				Working	Not working	
1	2	3	4	5	6	7
1	Kolar Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	Data collection is done at field level
2	Itiadoh Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	7	-	7	-do-
		3)Pan evaporimeter	1	-	1	-do-
		4) Thermometer for reservoir water temp.	1	-	1	-do-
3	Kalisarar Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
4	Pujaritola Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Pan evaporimeter	1	1	-	-do-
		3) Thermometer for reservoir water temp.	1	-	1	-do-
5	Sirpur Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	1	-	1	-do-
		3)Pan evaporimeter	1	-	1	-do-
		4)Thermometer for air jump	1	1	-	-do-
		5)Posta Corder Earth Quake Recorder	1	-	1	-do-

6	Totladoh Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Pan evaporimeter	1	1	-	-do-
		3) ThermometerforReservoir water temp.	1	-	1	-do-
7	Bor Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	4	4	-	-do-
		3) Digital Automatic Water level recorder	1	-	1	-do-
8	Asolamendha	1)Raingauge on dam(ordinary)	1	1	-	-do-
9	Dina Dist-Gadchiroli	1)Raingauge on dam(ordinary)	1	1	-	-do-
10	LowerWenna (Nand) Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	1	1	-	-do-
		3) Pan evaporimeter	1	-	1	-do-
11	LowerWenna (Wadgaon) Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	1	-	1	-do-
12	Dham Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge on dam(self records)	1	-	1	-do-
13	Navegaonbandh Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
14	Ashti Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge on dam(self	1	-	1	-do-

		records)				
15	Dongargaon Dist-Wardha	1)Raingauge in the catchment self recorder	1	1	-	-do-
16	Kannamwargram	1)Raingauge on dam(ordinary)	1	1	-	-do-
17	Panchadhara Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	
18	Harashi Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	--do--
19	Khindsi(Ramtek) Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
20	Khekarnalla Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
21	Bodalkasa Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
22	Chorkhamara Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
23	Wunna Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
24	Jam Dist-Nagpur	1)Raingauge on dam(ordinary)	1	_	1	-do-
25	Kar Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
26	Takaliborkhedi Dist-Wardha	1)Raingauge on dam(ordinary)	1	-	1	-do-
27	Pothara Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
28	Khairbandh	1)Raingauge on	1	-	1	-do-

	Dist- Gondia	dam(ordinary)				
29	Risola Dist-Gondia	1)Raingauge on dam(ordinary)	1	-	1	-do-
30	Chulbandha Dist-Gondia	1)Raingauge on dam(ordinary)	1	-	1	-do-
31	Madan Tank Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
32	Mangad Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
33	Salegaon Dist-Gondia	1)Raingauge on dam(ordinary)	1	-	1	-do-
34	Pipriya dist-Gondia	1)Raingauge on dam(ordinary)	1	-	1	-do-
35	Rengepar Dist-Gondia	1)Raingauge on dam(ordinary)	1	1	-	-do-
36	Mordham Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
37	Kesarnalla Dist-Nagpur	1)Raingauge on dam(ordinary)	1	-	1	-do-
38	Kanolibara Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
39	Chandrabhaga Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
40	Kamthi-khairy Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	--do--
		3)Pan evaporimeter	1	1	-	--do--
41	Khumari Nalla Dist-Nagpur	1)Raingauge on dam(ordinary)	1	-	1	-do-

42	Umari Dist-Nagpur	1)Raingauge on dam(ordinary)	1	-	1	-do-
43	Erai Dist-Chandrapur	1)Raingauge on dam(ordinary)	1	1	-	--do--
		2)Pan evaporimeter	1	1	-	--do--
44	Lal Nalla Dist-Wardha	1)Raingauge on dam(ordinary)	1	1	-	-do-
45	Lower Wardha Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
46	Wenna Medium Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
47	Zilpi Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
48	Katangi Dist.-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
49	Gosikhurd Dist – Bhandara	1)Raingauge on dam(ordinary)	1	1	-	-do-
		2)Raingauge in catchment(ordinary)	1	1	-	-do-
		3)Pan evaporimeter	1	1	-	-do-
		4)Wind velocity recorder	1	1	-	-do-
		5) Wind direction recorder	1	1	-	-do-
		6) Thermometer for water temperature	1	1	-	-do-
50	Nanda Dist-Nagpur	1)Raingauge on dam(ordinary)	1	-	1	-do-
50	Nagalwadi Dist-Nagpur	1)Raingauge on dam(ordinary)	1	1	-	-do-
51	Naleshwar	1)Raingauge on	1	1	-	-do-

	Dist-Chandrapur	dam(ordinary)				
52	Chargaon Dist-Chandrepur	1)Raingauge on dam(ordinary)	1	1	-	-do-
53	Chichdoh barrage Dist-Gadchiroli	1)Raingauge on dam(ordinary)	1	1	-	-do-
		Total	**88**	**58**	**30**	

Table No. 5.2

Mortality status of Meteorological Instruments Installed on Dams In Nagpur Region

Sr. No.	Type of Instruments	Number Of Instruments			
		Total	Working	Non-Working	Mortality (%)
1	2	3	4	5	6
1	Rain gauge on dam (ordinary)	53	42	11	20.75
2	Rain gauge on dam (Self recorder)	2	1	1	50.00
3	Rain gauge in catchment (ordinary)	15	6	9	60.00
4	Rain gauge in catchment (Self recorder)	1	1	0	0.00
5	Pan Evapometer	8	4	4	50.00
6	Wind Velocity recorder	1	1	0	50.00
7	Wind direction recorder	1	1	0	0.00
8	Thermometer for air jump	1	0	1	100.00
9	Thermometer for reservoir water temp.	3	1	2	66.66
10	Automatic level recorder	1	1	0	0.00
11	Digital Automatic Water level recorder	1	0	1	100.00
12	Posta Corder earth quack recorder	1	0	1	100.00
Total		**88**	**58**	**30**	

Part-6

National Committee on Dam Safety (NCDS) Documents

Part- 6 National Committee on Dam Safety (NCDS) Documents

Importance of National Committee on Dam Safety (NCDS) Documents:

Central Water Commission (CWC) has laid down various guidelines covering the standardized dam safety practices-essentially guiding the dam owners in preparation o f Emergency Action Plans, Periodical Dam Safety inspections, comprehensive dam Safety evaluation and appropriate institutional framework for dam safety. Their implementation is emphasized during the meetings of National Committee on Dam Safety (NCDS) and through the communications sent in this regard.

During the 34th meeting held at Chennai in March 2015 it was requested to all the Dam owners to take necessary steps for preparation of EAPs & other documents & report to NCDS Secretariat about the number of Dams for which EAPs & other documents have been prepared, along with the target dates for the preparation of EAPs & other documents for the remaining Dams.

The documents to be prepared as per National Committee on Dam Safety are as under & these shall be properly maintained and kept up to date by including latest information available.

1. EAP
2. R.O.S & G.O.S.
3. Data Book
4. O & M manual
5. Record Drawing & Completion Report,

1. EAP : Emergency Action Plan:

An Emergency action plan is a formal plan that identifies potential emergency conditions at a dam prescribes the procedures to be followed to minimize property damage and loss of life. The EAP contains procedures and information to assist the dam owner in taking necessary actions in time to moderate or alleviate the problems, in addition to issuing early warning & notification messages to responsible emergency management authorities, viz., District Magistrate/Collector, Armed Forces, Paramilitary forces, Project Authorities & other Central/State Agencies. It also contains inundation maps to show the emergency management authorities of the critical areas for necessary relief and rescue actions in case of an emergency. In a nutshell, it outlines "who does, what, where, when and how" in an emergency situation or unusual occurrence affecting the Dams. The Emergency Action Plan has to be prepared as per CWC Guidelines are available on official website-
https://damsafety.in/ecm-includes/PDFs/Guidelines_Developing_EAP_Dam.pdf

2. R.O.S. (Reservoir operation schedule) & G.O.S. (Gate operation schedule) :

It is very necessary to lay down operating procedures of all storage reservoirs with the objective to limit the flood stages in the river downstream and with maximum feasible utilization of the flood capacity of the river channel downstream of reservoirs, consistent with the safety of the dam. A proper reservoir operation schedule should be in place.

For this purpose a schedule of opening and closing the gates to limit the reservoir levels to preset gauges should be laid down. Schedule for the dam as per operation & maintenance manual should be strictly adhered. The entire capacity of reservoir is used for active conservation. When the reservoir rises above active conservation, operation will be in accordance with the standing operation procedures. Inflow forecasting arrangement should be made for easy operation of gates. The Engineer in charge should inform immediately to the flood maintenance engineer downstream and flood –fighting center of the releases from the reservoir.

3. Data book:

Proper assessment of dam safety involves a thorough review of design, construction and performance records prior to conducting a field examination. The Data Book is an unpublished document which is prepared before the initial safety inspection of each dam. This book is abbreviated, convenient source of information, summarizing all pertinent records and history related to the safety of a dam and is a reference for the evaluation team. This Data Book should answer most questions about the dam. A list of reference is included if additional information is needed. Continual updating of the Data Book will be required as future inspections are made, new problems arise, new investigations are undertaken and remedial treatments performed. Documentation of all projects may be done in the Data Book format which is the primary data base for the team evaluating the safety of a dam. (Guidelines on standardized Data Book format are available at http://www.cwc.gov.in/ Dam_safety.html)

4. O & M Manual:

It is desirable that a separate manual is available with the officers .The officers Incharge of such works are requested to personally go through the manual and maintain the records from time to time in such a manner as to give their successors complete and correct idea of the state of each of the several storage works in their charge and the different standing orders on all matters concerning the works. This will enable them to tackle problems as they arise, by quickly referring to the manual as far as possible without having to depend on the office to give information. The complete set of manual for each of the storage works should be personally handed over to successor by each concerned officer.

Copies of the maintenance manual shall be maintained at all offices right from sectional office to Circle office.

It is also necessary that the manuals are inspected at the time of inspection by the superior officers. Record of handing over and inspection should be maintained.

5. Record Drawing & Completion Report :

The importance of record drawings & completion report as an archival data need not be emphasized. All efforts should be made by field engineers to prepare Record Drawing & Completion Report and store them for future reference.

Table-6.1 Status of Emergency Action Plan (EAP)

Sr. No.	Name of CE	Total	Received	Not Received	Remarks
1	CE (WR) Nagpur	16	9	7	All EAP must be updated as per CWC guide lines 2016 & copy of EAP should be made available to DSO.
2	CE Gosikhurd Nagpur	4	3	1	
3	Private Dam	1	1	0	
	Total	**21**	**13**	**08**	

Table-6.2 Status of Reservoir Operation Schedule (ROS)

Sr. No.	Name of CE	Total	Received	Not Received	Remarks
1	CE (WR) Nagpur	10	10	0	Updated copy of ROS should be made available to DSO.
2	CE Gosikhurd Nagpur	3	2	1	
3	Private Dam	1	1	0	
	Total	**14**	**13**	**1**	

Table-6.3 Status of Gate Operation Schedule (GOS))

Sr. No.	Name of CE	Total	Received	Not Received	Remarks
1	CE (WR) Nagpur	10	7	3	Updated copy of ROS should be made available to DSO.
2	CE Gosikhurd Nagpur	3	2	1	
3	Private Dam	1	1	0	
	Total	**14**	**10**	**4**	

Table-6.4 Dam Wise Status of GOS & ROS, EAP (Class-I Dams)

Sr. No.	Name of dam	GOS	ROS	EAP
1	2	3	4	5
Nagpur Region				
A) Chief Engineer, Water Resources Department, Nagpur				
I) Superintending Engineer & Adm., C.A.D.A., Nagpur				
1) Executive Engineer, Nagpur Irrigation Division (North), Nagpur				
1	Khekara Nalla	R	R(2014)	NR
2	Kolar (UG)	Not Applicable	Not Applicable	NR
2) Executive Engineer, Nagpur Irrigation Division (South), Nagpur				
3	Lower Wenna (Nand)	R	R(2014}	R(2009)
4	Lower Wenna (Wadgaon)	NR	R(2008)	R
3) Executive Engineer, Pench Irrigation Division, Nagpur				
5	Totladoh	R(1990)	R(2014)	R
6	Kamthi Khairy	R	R(2008)	R
7	Ramtek (UG)	Not Applicable	Not Applicable	NR
4) Executive Engineer, Wardha Irrigation Division, Wardha				
8	Bor	R(2007)	R(2014)	R(2009)
9	Dham (UG)	Not Applicable	Not Applicable	R(2002)
II) Superintending Engineer Bhandara Irrigation Circle, Bhandara				
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia				
10	Itiadoh (UG)	Not Applicable	Not Applicable	NR
11	Sirpur	NR	R(2014)	NR
12	Kalisarar	R(1990)	R(2014)	R(2008)
13	Pujaritola	NR	R(2014)	NR
III) Superintending Engineer, Chandrapur Irrigation Circle, Chandrapur				
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur				
14	Dina (AG)	Not Applicable	Not Applicable	R(1998)
15	Lal Nalla	R(2006)	R	R(2006)
16	Chinchdoh Barrage	Not Applicable	Not Applicable	NR
	Total	**10**	**10**	**16**
	(R) Received	**7**	**10**	**9**
	(NR) Not Received	**3**	**0**	**7**

Sr. No.	Name of dam	GOS	ROS	EAP
1	2	3	4	5
B) Chief Engineer, Gosikhurd Project, Nagpur				
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur				
1) Executive Engineer, Lower Wardha Project Division, Wardha				
1	Lower Wardha	R(2009)	R(2009)	R(2009)
II) Superintending Engineer, Gosikhurd Project Circle, Nagpur				
1) Executive Engineer, Gosikhurd Dam Division, Pavani				
2	Gosikhurd	R(2009)	R(2009)	R(2009)
2) Executive Engineer, Asolamendha Project Rehabilitation Division No. 2				
3	Asola Mendha (UG)	Not Applicable	Not Applicable	R(2008)
III) Superintending Engineer, Gosikhurd Lift Irrigation Circle, Ambadi				
1) Executive Engineer, Lift Irrigation Project Division,Tirora				
4	Dhapewada Barrage	NR	NR	NR
	Total	**3**	**3**	**4**
	(R) Received	**2**	**2**	**3**
	(NR) Not Received	**1**	**1**	**1**
Private Dam				
CE General (O&M) Super Thermal power station Urjanagar, Chandrapur				
SE, Civil Maintains Unit ,Chandrapur				
1	Erai	R	R	R
	Total	**1**	**1**	**1**
	(R) Received	**1**	**1**	**1**
	(NR) Not Received	**0**	**0**	**0**

Table-6.5 Status of Other NCDS Documents (Class-I Dams)

Sr. No.	Name of CE	Total no. Of dams	Completion Report		Record Drawing		Data Book		O&M Manual	
			Received	Not Received	Received	Not Received	Received	Not Received	Received	Not Received
1	CE, WR Nagpur	16	2	14	3	13	2	14	1	15
2	CE, Gosikhurd Nagpur	4	2	2	3	1	2	2	3	1
	Private Dam	1	0	1	0	1	0	1	0	1
	Total	**21**	**4**	**17**	**6**	**15**	**4**	**17**	**4**	**17**

Table-6.6 Dam Wise Status of Other NCDS Documents

Sr. No.	Name of dam	Completion Report	Record Drawing	Data Book	O& M Manual
1	2	3	4	5	6
Nagpur Region					
A) Chief Engineer, Water Resources Department, Nagpur					
I) Superintending Engineer & Adm., C.A.D.A., Nagpur					
1) Executive Engineer, Nagpur Irrigation Division (North), Nagpur					
1	Khekara Nalla	NR	NR	R	NR
2	Kolar (UG)	NR	NR	NR	NR
2) Executive Engineer, Nagpur Irrigation Division (South), Nagpur					
3	Lower Wenna (Nand)	NR	NR	NR	NR
4	Lower Wenna (Wadgaon)	NR	NR	NR	NR
3) Executive Engineer, Pench Irrigation Division, Nagpur					
5	Totladoh	NR	NR	NR	NR
6	Kamthi Khairy	R	R	R	R
7	Ramtek (UG)	R	NR	NR	NR
4) Executive Engineer, Wardha Irrigation Division, Wardha					
8	Bor	NR	NR	NR	NR
9	Dham (UG)	NR	R	NR	NR
II) Superintending Engineer Bhandara Irrigation Circle, Bhandara					
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia					
10	Itiadoh (UG)	NR	R	NR	NR
11	Sirpur	NR	NR	NR	NR
12	Kalisarar	NR	NR	NR	NR
13	Pujaritola	NR	NR	NR	NR
III) Superintending Engineer, Chandrapur Irrigation Circle, Chandrapur					
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur					
14	Dina (AG)	NR	NR	NR	NR
15	Lal Nalla	NR	NR	NR	NR
16	Chinchdoh Barrage	NR	NR	NR	NR

Sr. No.	Name of dam	Completion Report	Record Drawing	Data Book	O& M Manual
1	2	3	4	5	6
	Total	**16**	**16**	**16**	**16**
	(R) Received	**2**	**3**	**2**	**1**
	(NR) Not Received	**14**	**13**	**14**	**15**
B) Chief Engineer, Gosikhurd Project, Nagpur					
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur					
1) Executive Engineer, Lower Wardha Project Division, Wardha					
17	Lower Wardha	NR	R	NR	R
II) Superintending Engineer, Gosikhurd Project Circle, Nagpur					
1) Executive Engineer, Gosikhurd Dam Division, Pavani					
18	Gosikhurd	R	R	R	R
2) Executive Engineer, Asolamendha Project Rehabilitation Division No. 2					
19	Asola Mendha (UG)	R	R	R	R
III) Superintending Engineer, Gosikhurd Lift Irrigation Circle, Ambadi					
1) Executive Engineer, Lift Irrigation Project Division,Tirora					
20	Dhapewada Barrage	NR	NR	NR	NR
	Total	**4**	**4**	**4**	**4**
	(R) Received	**2**	**3**	**2**	**3**
	(NR) Not Received	**2**	**1**	**2**	**1**
Private Dam					
CE, General (O&M) Super Thermal power station Urjanagar, Chandrapur					
SE, Civil Maintains Unit, Chandrapur					
1	Erai	NR	NR	NR	NR
	Total	**1**	**1**	**1**	**1**
	(R) Received	**0**	**0**	**0**	**0**
	(NR) Not Received	**1**	**1**	**1**	**1**

Part-7

Dam Health & Rehabilitation Monitoring Application (DHARMA)

Part-7 DHARMA: Dam Health and Rehabilitation monitoring application

Introduction :

Dam health & Rehabilitation Monitoring application (DHARMA) is a web based asset management software to support the effective collection and management of authentic asset and health data for all large dams in India and address key dam safety challenges of

i)Insuring Completeness of information.

ii) Bring stake holders together

iii) Effectively managing asset inventory.

iv) Assess soundness of Dam health.

Design and Development :

DHARMA software consist of seven modules.

i) Project features

ii) Project portfolio

iii) Engineering features.

iv) Asset health.

v) Asset rehabilitation.

vi) Stake holders and

vii) Document library.

The first three modules (i to iii consist of mostly static data, to be enter once and rarely undergo a change where as modules iv) and v) will be dynamic and requires regular updating with information associated with inspections investigations, instrumentation and rehabilitation works. Modules vi) and vii)contain information useful for reference.

All field EE's are required to fillup attached two forms (Dam Data Manager & Dam Health Engineer) for each Dam in their jurisdiction by 15th July 2022 & its review will be taken by Hon. DG, MERI, Nashik by 15th Aug 2022.

Dam Data Manager

1.	Date of Application:	< dd/mm/yyyy>		
2.	Type of User:	Dam Data Manager		
3.	Name of the Applicant:	<Title>. <Name>		
4.	Designation:			
5.	Name of the Organization:			
6.	Complete Postal Address:			
7.	Email ID:			
8.	Mobile Number:		Office Tel. Number:	
9.	Current Responsibilities:	☐ Coordinating Dam Safety ☐ Water Resource Management ☐ Dam Design ☐ Dam Construction / Rehabilitation ☐ Dam Operations ☐ Academic / Research ☐ Other: <please specify>		
10.	Viewing Permission Required for:	☐ Project Features ☐ Project Portfolio ☐ Engineering Features		
11.	Editing Permission Required for:	☐ Project Features ☐ Project Portfolio ☐ Engineering Features		
12.	Provide List of Dams			

Please select out of the choice provided; add separate sheets for providing additional information.

Declaration: I, hereby declare that the information provided in the application is true. I further declare that I will not use the information collected from DHARMA software for any unlawful activities and / or to the detriment of the Central or State Governments.

Signature and Seal / stamp of the Applicant:	Signature:	
	Name:	
	Designation:	
	Seal / Stamp:	

Please send the completed Application Form to the concerned Licensee.

DHARMA Application User Registration F

Dam Health Engineer

1.	Date of Application:	< dd/mm/yyyy>		
2.	Type of User:	Dam Health Engineer		
3.	Name of the Applicant:	<Title>. <Name>		
4.	Designation:			
5.	Name of the Organization:			
6.	Complete Postal Address:			
7.	Email ID:			
8.	Mobile Number:		Office Tel. Number:	
9.	Current Responsibilities:	☐ Coordinating Dam Safety ☐ Water Resource Management ☐ Dam Design ☐ Dam Construction / Rehabilitation ☐ Dam Operations ☐ Academic / Research ☐ Other: <please specify>		
10.	Viewing Permission Required for:	☐ Project Features ☐ Project Portfolio ☐ Engineering Features		
11.	Editing Permission Required for:	☐ Project Features ☐ Project Portfolio ☐ Engineering Features		
12.	Provide List of Dams			

Please select out of the choice provided; add separate sheets for providing additional information .

Declaration: I, hereby declare that the information provided in the application is true. I further declare that I will not use the information collected from DHARMA software for any unlawful activities and / or to the detriment of the Central or State Governments.

Signature and Seal / stamp of the Applicant:	Signature:	
	Name:	
	Designation:	
	Seal / Stamp:	

Please send the completed Application Form to the concerned Licensee.

Table 7.1 Status of DHARMA Information updation

Sr. No	Name of Dam	NRLD registration number	Dharma data filling status (%)
A) Chief Engineer, Water Resources Department, Nagpur			
I) Superintending Engineer & Adm., C.A.D.A., Nagpur			
1) Executive Engineer, Wardha Irrigation Division, Wardha			
1	Bor	MH09HH0115	15%
2	Dham	MH09HH1143	11%
2) Executive Engineer, Nagpur Irrigation Division (North), Nagpur			
3	Khekaranalla	MH09MH1197	11%
4	Kolar	MH09HH1061	18%
3) Executive Engineer, Nagpur Irrigation Division (South), Nagpur			
5	Lower Wenna (Nand)	MH09MH1253	10%
6	Lower Wenna (Wadgaon)	MH09MH1446	11%
4) Executive Engineer, Pench Irrigation Division, Nagpur			
7	Totaladoh	MH09HH1229	12%
8	Kamti khairy	MH09HH0596	14%
9	Ramtek	MH09MH0033	11%
II) Superintending Engineer, Chandrapur Irrigation Circle, Chandrapur			
1) Executive Engineer, Chandrapur Irrigation Division, Chandrapur			
10	Dina	MH09MH0451	16%
11	Lalnalla	MH09LH1663	11%
12	Chinchdoh Barrage	-	-
III) Superintending Engineer Bhandara Irrigation Circle, Bhandara			
1) Executive Engineer, Bagh Itiadoh Irrigation Division, Gondia			
13	Itiadoh	MH09MH0227	10%
14	Sirpur	MH09MH0228	16%
15	Kalisarar	MH09MH1198	11%
16	Pujaritola	MH09MH0229	25%
B) Chief Engineer, Gosikhurd Project, Water Resources Department, Nagpur			
I) Superintending Engineer, Nagpur Irrigation Circle, Nagpur			
1) Executive Engineer, Lower Wardha Project Division, Wardha			

Sr. No	Name of Dam	NRLD registration number	Dharma data filling status (%)
17	Lower Wardha	MH09MH1811	11%
II) Superintending Engineer, Gosikhurd Project Circle, Nagpur			
1) Executive Engineer, Gosikhurd Dam Division, Pavani			
18	Gosikhurd	MH09MH1817	36%
2) Executive Engineer, Asolamendha Project Rehabilitation Division No. 2			
19	Asolamendha	MH09MH0040	11%
III) Superintending Engineer, Gosikhurd Lift Irrigation Circle, Ambadi			
1) Executive Engineer, Lift Irrigation Project Division,Tirora			
20	Dhapewada Barrage	MH09HH2251	9%
CE, General (O&M) Super Thermal power station Urjanagar, Chandrapur			
SE, Civil Maintains Unit, Chandrapur			
21	Erai (Private)	MH09HH1010	10%

Part-8

Health Status of Gated Dam (As per Mechanical Organisation)

Part- 8 Health Status of Gated Dam (As per Mechanical Organisation)

8.1 General

As per GR.NO.ID/1078/23/8/IMP/2 Dtd.10/09/1980, Dam Safety Organization has been established by Government of Maharashtra for effective monitoring the safety aspects of dam.

As per Maharashtra Government Guidelines and regulation, Chief Engineer (Mechanical), Water Resources Dept. Nashik assigned Dams gate Inspection work to Superintending Engineer, Mechanical Circle, Nashik to assure proper operation and maintenance of Dam gates

Under Superintending Engineer, Mechanical Circle, Nashik Executive Engineer, Inspection unit, Aurangabad and Executive Engineer, Sluice Gate Mfg. Division, Dapodi , Pune are looking after all the inspection works.

Division offices Conduct all pre monsoon & Post Monsoon Gate Inspection work of Government, Semi Government, & Private Dams and send Reports to related authorities for same.

After Inspection work the observed points or deficiencies are classified into various categories as given below.

Def. Category-1	Dams with Major Deficiencies which may lead to dam failure	Very Serious Defects
Def. Category-2 (2 A)& (2B)	Dams with rectifiable Deficiencies needs immediate attention	Serious Defects (2A)
		Require immediate attention (2B)
Def. Category-3	General Defects	General Defects

In the year of 2021 pre and post mansoon inspection of total 14 gated dams have been carried out by Mechanical Organization. It is to be noted that Chief engineer (Mechanical) W.R.D Nashik, prepares independently the detail Health status Report of all the gated dams inspected by mechanical Organization. This report is published and submitted to WRD and circulated to all Concern Chief Engineers.

In this Health Status Report, only the damwise number of deficiencies noted by mechanical Organization are given in this part of ADHSR. For details regarding the actual deficiencies Health Status Report circulated by Mechanical Organization shall be referred.

8.2 Overall Health Statues of Gated Dams

14 Class-I gated dams in the Nagpur region are inspected by Mechanical Organization. Category -1 deficiency is not observed on any dam. Category -2 & 3 deficiencies are observed on all the 14 dams. Total 163 Category -2 deficiencies and total 985 Category -3 deficiencies are observed on the dams in the region.

Table 8.1

Status of Deficiencies

Sr. No.	Region & Name of Dam	Number of Gated Dams as per dam Category			Report Taken Into Account	Dam category - I Difficiencies			Dam category - II Difficiencies		
		Cat-I	Cat-II	Total		Cat-I	Cat-II	Cat-III	Cat-I	Cat-II	Cat-III
1	Lalnala	1	0	1	Yes	0	9	79	0	0	0
2	Shirpur	1	0	1	Yes	0	22	56	0	0	0
3	Kalisarar	1	0	1	Yes	0	18	52	0	0	0
4	Pujaritola	1	0	1	Yes	0	14	51	0	0	0
5	Khekranala	1	0	1	Yes	0	2	52	0	0	0
6	Nand	1	0	1	Yes	0	6	75	0	0	0
7	Wadgaon	1	0	1	Yes	0	9	89	0	0	0
8	Totladoh	1	0	1	Yes	0	5	92	0	0	0
9	Pench	1	0	1	Yes	0	26	137	0	0	0
10	Bor	1	0	1	Yes	0	14	65	0	0	0
11	Gosikhurd	1	0	1	Yes	0	9	65	0	0	0
12	Lower Wardha	1	0	1	Yes	0	16	92	0	0	0
13	Dhapewada	1	0	1	Yes	0	2	47	0	0	0

Sr. No.	Region & Name of Dam	Number of Gated Dams as per dam Category			Report Taken Into Account	Dam category - I Difficiencies			Dam category - II Difficiencies		
		Cat-I	Cat-II	Total		Cat-I	Cat-II	Cat-III	Cat-I	Cat-II	Cat-III
14	Irai	1	0	1	Yes	0	11	33	0	0	0
	Total	**14**	**0**	**14**	**0**	**0**	**163**	**985**	**0**	**0**	**0**

मुख्य अभियंता,			Chief Engineer,
जलविज्ञान व धरण सुरक्षितता			Hydrology & Dam Safety
सीडीओ बिल्डींगच्या मागे,			Behind C.D.O. Building,
दिंडोरी रोड , नाशिक - ४२२००४	महाराष्ट्र शासन	स्वातंत्र्याचा अमृत महोत्सव	Dindori Road,
दूरध्वनी :०२५३-२५३०२२७	जलसंपदा विभाग		Nashik – ४२२००४
			Ph.No. : ०२५३-२५३०२२७

Web: www.mahahp.gov.in Email: cehpswnasik@gmail.com / cehp.nashikwrd@maharashtra.gov.in

फक्त ई-मेलद्वारे

जा.क्र.मुअ/जवधसु/धसुसं/धसुविक्र.२/9263 /सन २०२२ दिनांक: २८/०९/२०२२

अति महत्वाचे

प्रति,

मुख्य अभियंता

जलसंपदा विभाग,नागपुर

विषय – चोरखमारा मध्यम प्रकल्प (संवर्ग-२) धरणाच्या पाळीतुन गळती होत असल्याबाबत ....

संदर्भ- १) कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया यांचे पत्र जा.क्र.१३३६/प्रशा-२ चोरखमारा म.प्र/२०२० दिनांक ६/९/२०२०

२) या कार्यालयाचे पत्र जा.क्र.धसुसं/धसुविक्र.२/चोरखमारा प्रकल्प गळती/३२२/ सन २०२० दि. ५/१०/२०२०

३) कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया यांचा मान्सुन पुर्व (२०२१) तपासणी अहवाल.

४) या कार्यालयाचे पत्र जा.क्र.धसुसं/प्रशा/१४९१/२०१४, दिनांक २५/११/२०१४

५) कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया यांचे पत्र जा.क्र.२४३३/चिशा/मान्सुन उत्तर ध त.अह./२०२१ दि. १४/१२/२०२१

६) या कार्यालयाचे पत्र जा.क्र.धसुसं/धसुविक्र.२/२१२/२०२२ दिनांक ४/७/२०२२

७) महासंचालक, मेरी, नाशिक यांची दि. ५/९/२०२२ रोजीची मंजुर टिपण्णी.

वरील संदर्भिय प्रत्र क्र.५ नुसार आपल्या कार्यक्षेत्रातील चोरखमारा मध्यम प्रकल्पाचा पावसाळा उत्तर २०२१ अहवाल या कार्यालयास प्राप्त झाला आहे. सदर अहवालाची तांत्रिक छाननी केली असता खालील प्रमाणे गंभीर त्रुटी निदर्शनास आली आहे.

पावसाळा उत्तर २०२१ अहवालातील मुद्या क्र.२.० Earthen Embankement मधील २.९ मध्ये "There is leakage noticed on D/S slope of bund @210 m at junction of berm , clear water comes out like boiling water " असे दर्शविण्यात आले आहे. तरी सदर त्रुटीचे वर्गीकरण केले असता सदर त्रुटी ही संवर्ग - १ या प्रकारात येते. संवर्ग-१ ची त्रुटी म्हणजे **"Dam with major deficiency which may lead to Dam failure ".**

संदर्भिय पत्र क्र. १ अन्वये क्षेत्रिय कार्यकारी अभियंता यांनी प्रत्यक्ष धरण स्थळी पाहणी करुन सदर गंभीर त्रुटी बाबत निरीक्षण टिपणीसह या कार्यालयास अवगत करण्यात आले होते. त्यानुसार सदर गळती ही D/S भागातुन साखळी क्र. २१० मी. वर धरणांच्या Rock-Toe च्या खालील बाजुस असुन Boiling व्दारे पाणी वरच्या दिशेने बाहेर पडतांना दिसते. गळतीतून बाहेर पडणारे पाणी हे स्वच्छ असल्याचे कळविण्यात आले आहे.

धरणाची पूर्ण संच पातळी ३०२.२५ मी असुन पाणी पातळी ३०१.११ मी .आल्यावर म्हणजे १.१४ मी ने पाणी पातळी खाली गेल्यास गळती थांबली असल्याचे क्षेत्रिय उपविभागीय अभियंता यांनी दुरध्वनी संदेशाव्दारे कळविले होते.

अधीक्षक अभियंता धरण सुरक्षितता संघटना नाशिक कार्यालयाचे संदर्भिय पत्र क्र. २ अन्वये प्रस्तुत प्रकरणी अधीक्षक अभियंता, भंडारा पाटबंधारे प्रकल्प मंडळ, भंडारा यांना सविस्तर सुचना केल्याचे दिसुन येतात त्या दृष्टीने मध्यवर्ती संकल्पचित्र संघटना, नाशिक यांचेशी संपर्क साधुन पुढील कार्यवाही करणे गरजेचे होते. तथापी अशी कार्यवाही केल्याचे दिसुन येत नाही. संदर्भ ३ व ५ चे अहवाल पाहता परिस्थिती जैसे थे तशी दिसुन येते ही बाब गंभीर असल्याने आपले निदर्शनास आणुन देण्यात आले होते.

सदर धरण सन १९२३ साली बांधण्यात आले असुन जवळपास १०० वर्षे पुर्ण होणार आहेत. त्याकरीता माती धरणाची स्थैर्यता तपासणी व सुधारीत काटछेद संकल्पन अत्यावश्यक आहे.

अहवालात दर्शविण्यात आलेल्या सदर त्रुटीचे गांभिर्य लक्षात घेता आपण समक्ष अथवा अधीक्षक अभियंता यांनी प्रत्यक्ष क्षेत्रिय स्तरावर जावून सदर बाबी विषयी खात्री करण्यात यावी व तसे या कार्यालयास त्वरीत अवगत करावे व निरीक्षण टिपण्णी या कार्यालयास पाठविण्यात यावी. सदर संवर्ग-१ गंभीर त्रुटी बाबत त्वरीत आवश्यक उपाय योजना हाती घेण्यात याव्यात, की जेणेकरुन पुढील अनर्थ टाळणे शक्य होईल.

संदर्भीय पत्र क्र.५ अन्वये सदर धरणाची पाहणी स्वत: क्षेत्रिय मुख्य अभियंता/ अधीक्षक अभियंता यांनी तपासणी करुन टिप्पणीत नमूद वर्ग-१ त्रुटींचे वर्गीकरण बरोबर आहे याची खात्री करावी व असे दृढीकरण करावे वा वर्गीकरण बदलणे गरजेचे असल्यास त्याबाबत धरण सुरक्षितता संघटनेस लगेचच कळवावे अशा आशयाच्या सूचना सर्व क्षेत्रिय मुख्य अभियंता/ अधीक्षक अभियंता यांना देण्याचे शासनाचे निर्देश असल्याचे अधीक्षक अभियंता धरण सुरक्षितता संघटना नाशिक यांनी या पुर्वी कळविले आहे.

नागपुर प्रदेशाचा सन २०२१-२२ वार्षिक धरण स्थिती अहवाल मा. महासंचालक, मेरी,नाशिक यांच्या मान्यतेसाठी पाठविण्यात आले होते. संदर्भ क्र.७ अन्वये मा.महासंचालक यांनी त्रुटींच्या संवर्गाबाबत त्वरीत निर्णय घेण्याचे निर्देश देण्यात आले आहेत. सदर त्रुटींचा (संवर्ग-१) अंर्तभाव धरणस्थिती अहवालात करायचे असल्याने त्रुटी दृढीकरणा बाबतची माहिती या कार्यालयास त्वरित पाठविण्यात यावी जेणेकरून धरणस्थिती अहवाल अंतिम करणे शक्य होईल.

हे आपले माहिती व त्वरीत कार्यवाहीसाठी सस्नेह अग्रेषित.

स्थळ प्रत मा. मुख्य अभियंता यांना मान्य.

सोबत- १) संदर्भीय पत्र क्रमांक १ व ५
२) छाननी अहवाल (तीन)
३) संवर्ग-१ त्रुटी वर्गीकरण तक्ता

(म. श. आमले)
अधीक्षक अभियंता
धरण सुरक्षितता संघटना
नाशिक

BOC
EE.

प्रत- अधीक्षक अभियंता, भंडारा पाटबंधारे मंडळ, भंडारा यांना माहितीसाठी व त्वरीत कार्यवाहीसाठी रवाना.

प्रत- कार्यकारी अभियंता, गोंदिया पाटबंधारे विभाग, गोंदिया यांना माहिती व त्वरीत कार्यवाहीसाठी रवाना.

प्रत- कार्यकारी अभियंता, धरण सुरक्षा विभाग क्र.२, नाशिक यांना माहिती व कार्यवाहीसाठी रवाना.

Sirpur Dam (Gondia)