DEPARTMENT OF WATER AFFAIRS AND FORESTRY
LIMPOPO PROVINCE
WATER RESOURCE INFORMATION

STATUS ON MONITORING & SURFACE WATER LEVEL TRENDS
October 2010 to March 2011

D VILJOEN
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GH4322

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1. EXECUTIVE SUMMARY

The majority of dams used in this report have more water than during the corresponding period last year.
In the Luvuvhu / Letaba Water Management Area the Middle Letaba Dam is at 15.5% and the Albasini Dam with a storage level of 48.5% give reason for concern.

The average storage volume for the Limpopo WMA is 282.3 million cubic meters (100.7%) and is 2.16 million cubic meters more than the corresponding period last year (99.9%).
The average storage volume for the Luvuvhu / Letaba WMA is 497.88 million cubic meters (75.47%) and is 30.68 million cubic meters more than the corresponding period last year (70.8%).
The average storage volume for the Olifants WMA is 1078.4 million cubic meters (100.4%) and is 15.9 million cubic meters less than the corresponding period last year (101.9%). Numerous smaller dams (0.7 – 3.5 million cubic meter capacity) exist in this WMA but only two are equipped with Data Loggers namely Piet Gouws and Molepo Dams. No Real Time data is available from these dams and the obtaining of updated dam status observations are hampered by the remoteness thereof. Although provision has been made at some dams for the installation of Data logging equipment, funds for the purchasing thereof are lacking. The following dams falls within the Olifants WMA, but no status information is available: 1. Piet Gouws (3.94 million Cubic meters), Lola Montes (1.2 million Cubic meters), Makotswane (3.48 million Cubic meters), Spitskop (0.54million Cubic meters), Vergelegen (1.34million Cubic meters) Dr. Esselen (0.73million Cubic meters), Chunnies Poort (2.47million Cubic meters meters), Der Broggen, Lepellane and Mahlangu dams.
The average storage volume for the Inkomati WMA is 1054.2 million cubic meters (100.4%) and is 3.7 million cubic meters less than the corresponding period last year (100.8%).

The challenge in all the WMAs discussed in this report is the fact that there are smaller dams, which supply water to communities that still need to be monitored. Owing to the lack of data these dams could not be included. Infrastructure at these dams are also a major concern and will have to be put in place before any form of water level monitoring can be considered.

Gauge plates have been installed at some of the smaller dams, but there are no observers to relay gauge plate readings to the Tzaneen Office. Hout River Dam has been equipped with near real-time data acquisitioning equipment.

The information presented in this report is based on the status of all the major dams in the province up to the end of March 2011.

2. MONITORING NETWORK

The hydrological monitoring network for the Limpopo Province consists of the following amount of gauging stations:
81 river flow gauging stations (excluding canals and pipelines)
21 dam gauging stations
16 evaporation stations

It is important to take cognizance of the fact that the hydrological gauging stations in the Crocodile-West and Olifants Water Management Areas (shared boundaries) are being managed by the hydrological offices of Gauteng and Mpumalanga respectively.
For the purpose of this report and owing to the strategic location and importance of certain dams in the Olifants and Nkomati Water Management Areas, information regarding their status is also attached.

3. OVERVIEW

No river flow gauging stations graphs have been attached but a few peak flows worth mentioning is listed below:

2.1 Peak flows measured at gauging stations during the past rainy season up to the end of March 2011.

RIVER AND PLACE	DATE AND TIME HEIGHT	FLOW (m^3/s)
Limpopo at Beit Bridge	2011/01/09 21h48 2.279	1402
Mokolo at Dwaalhoek (just upstream of Mokolo Dam	2011/01/17 14H42 1.371	116
Great Letaba at Tzaneen Dam b8r005	2011/01/22 15H00 30.000	75.4
Great Letaba at Black Heron (11 km downstream of the confluence with the Klein-Letaba River)	2011/01/15 18H24 3.436	1867
Great Letaba at Engelhardt Dam (before confluence with Olifants River at Letaba Camp in the KNP)	2011/01/16 00H17 2.419	2113
Olifants at Mamba (Approximately 8 km inside the western border of the Kruger National Park at Phalaborwa)	2011/01/15 18h29 3.785	1730
Mutale @ Mutale Pump station	2011/01/22 07h32 3.150	288 +

2.2 Rainfall figures for the Limpopo WMA based on daily readings indicated on monthly returns.

DAM	OCT'10 (mm)	NOV'10 (mm)	DEC'10 (mm)	JAN'11 (mm)	FEB'11 (mm)	MAR'11 (mm)	TOTAL (mm)
Mokolo	37.2	55.8	90.6	235	75.5	30.00	524.1
Doorndraai	65.0	106.8	203.8	217.6	24.7	38.6	656.5
Glen Alpine	19.7	64.1	84	93.8	15.3	0	276.9
Nwanedzi	1.0	68.5	95.5	104.70	5.6	51.9	327.2

2.3 Rainfall figures for the Levhuvhu / Letaba WMA based on daily readings indicated on monthly returns.

DAM	OCT'10 (mm)	NOV'10 (mm)	DEC'10 (mm)	JAN'11 (mm)	FEB'11 (mm)	MAR'11 (mm)	TOTAL (mm)
Albasini	32.3	171.3	431.8	242.1	23.9	25.9	927.3
Ebenezer	91.6	236.6	359.5	565.2	97.3	123.4	1473.0
Magoebaskloof	19.4	237.1	568.0	725.9	13.7	104.00	1668.0
Tzaneen	10.4	188.8	342.8	390.8	35.2	65.1	1033.0
Middle-Letaba	10.5	101.9	159.0	228.7	22.8	8.7	531.6
Nandoni	0	92.4	195.6	159.5	10.2	34.6	492.3

2.4 Rainfall figures for the Olifants WMA based on daily readings indicated on monthly returns.

DAM	OCT'10 (mm)	NOV'10 (mm)	DEC'10 (mm)	JAN'11 (mm)	FEB'11 (mm)	MAR'11 (mm)	TOTAL (mm)
Loskop	42.0	110.0	257.5	125.5	78.0	37.0	650.0
Flag Boshielo	13.5	152.8	100.1	125.5	58.7	97.3	547.9

2.5 Rainfall figures for the Inkomati WMA based on daily readings indicated on monthly returns

DAM	OCT'10 (mm)	NOV'10 (mm)	DEC'10 (mm)	JAN'11 (mm)	FEB'11 (mm)	MAR'11 (mm)	TOTAL (mm)
Kwena	18.0	147.0	184.5	188.2	53.6	51.2	642.5
Inyaka	49.6	181.6	250.6	389.8	87.0	246.0	1204.6

To give an indication of what the percentage of normal rainfall was for the period July 2010 up to March 2011, see attached map (page 11). For information purposes a graph depicting provincial rainfall for the current hydrological year is attached (page 12). Rainfall forecasts for April 2011 up to July 2011 are also attached see page 17. This information was obtained from the South African Weather Service.

The National dam storage graph (page 13) has been attached to the report for additional information. The dam storage graphs of the two WMAs (page 14-15), indicates the current situation clearly.
This information was obtained from Mr Mantaneng Phaladi from Hydrological services, National Office.

For information purposes a table indicating the comparison of water storage percentage for the different WMA's is attached on page 16.

The purpose for attaching graphs of individual dams is to give a broader picture of water storage and status in the sub drainage catchments.

4. LIMPOPO WATER MANAGEMENT AREA

The catchment consists of secondary drainage areas A4, A5, A6, A7 and A8.

A4 Drainage Area (Matlabas, Mokolo Rivers)

The Mokolo Dam (A4R001) was used as no other dam exists in the A4 hydrological monitoring network. The dam is at a storage level of 100.9% (146.69 $x10^6m^3$) and 3.6% lower than the previous year, which means that the storage volume is 5.22 million cubic meters less than the corresponding period last year. See attached graph!

4.2 A5 Drainage Area (Lephalala River)

Two small dams exists in the A5 hydrological network namely the Susandale Dam (A5R001) and the Vischgat Dam (A5R002). Owing to their relatively small storage volumes of approximately 0.6 million cubic meters in total, these dams have not been included in this report!

4.3 A6 Drainage Area (Nile, Sterk, Mogalakwena and Dorps Rivers)

The Doorndraai Dam (A6R001) and Glen Alpine Dam (A6R002) were used as no other dams exist in the A6 hydrological monitoring network. The Doorndraai Dam is at a storage level of 100.3% (43.87 x 10^6m^3) and 0.2% higher than the previous year. See attached graph!
Glen Alpine Dam is at a storage level of 100% (18.889 x 10^6m^3) and 0.5% lower than the previous year.
It must be noted that the full capacity storage of Glen Alpine Dam is only 18.889 million cubic and therefore the dam fills and empties much faster than Doorndraai Dam! The graph of Glen Alpine clearly indicates this!

4.4 A7 Drainage Area (Sand, Blood, Diep, Hout, Dwars and Brak Rivers)

There are no existing dam monitoring stations in the hydrological network for this drainage area!
The Tzaneen Area Office in conjunction with the Hydrometry office is currently busy with the installation of gauge plates at dams in both of the Water Management Areas. Hout River Dam has been equipped with gauge plates, but a futile exercise at Mashashane Dam just iterated the point that gauge plates should be installed once water levels are below lowest outlet levels! Data capturing and real-time equipment has been installed at Hout River Dam.

Seshego and Rietfontein Dams will be investigated, but due to high water levels and the lack of infrastructure, the installation of gauge plates remains a huge challenge. According to preliminary investigations it seems obvious that the installation of gauge plates will only be feasible when water levels at these dams are on or below lowest outlet levels!

4.5 A8 Drainage Area (Nwanedzi and Nzhelele Rivers)

The Nzhelele Dam (A8R001), Luphephe (A8R002), Nwanedzi (A8R003) and Mutshedzi (A8R004) Dams were used as indicators! The Nzhelele Dam is at a storage level of 101.0% (51.724 x 10^6m^3) and 7.2% higher than the previous year, which means that the storage volume is 3.67 million cubic meters more than the corresponding period last year. See attached graph!

Luphephe and Nwanedzi Dams are at storage levels of 100.8% and 100.2% respectively. Their combined storage is at 19.25 x 10^6m^3. The combined storage for the corresponding period the previous year was 16.05 x 10^6m^3. (84% of storage volume) See attached graphs!

Mutshedzi Dam, is at a storage level of 90.2% (1.838 x 10^6m^3) and 0.2% lower than the previous year.

5. LUVUVHU / LETABA WATER MANAGEMENT AREA

The catchment consists of secondary drainage areas A9, B8 and B9.

5.1 A9 Drainage Area (Mutale, Luvuvhu Rivers)

The Albasini Dam (A9R001), Vondo Dam (A9R002) and Nandoni (A9R004) Dams were used as monitoring points in this report.

Albasini Dam is at a storage level of 48.5% (13.674 x 10^6m^3) and 20.6% higher than the previous year, which means that the storage volume is 5.81 million cubic meters more than the corresponding period last year. See attached graph!

Vondo Dam is at a storage level of 100.7% (30.644 x 10^6m^3) and 0.2% lower than the previous year. See attached graph!

Nandoni Dam is at a storage level of 101.6% (168.74 x 10^6m^3) and on the same level as the previous year. See attached graph!

5.2 B8 Drainage Area (Groot, Middle and Klein Letaba Rivers)

The Ebenezer Dam (B8R001), Magoebaskloof Dam (B8R003), Tzaneen Dam (B8R005), Middle-Letaba Dam (B8R007), Nsami Dam (B8R009) and Modjadji Dam (B8R011) were used as monitoring points in this report. The Dap Naudé Dam (B8R006) and Hans Merensky Dam (B8R002) are also being monitored, but were not included in this report!

Thapane Dam has been investigated but due to high water levels and the lack of infrastructure, the installation of gauge plates remains a huge challenge. According to preliminary investigations it seems obvious that the installation of gauge plates will only be feasible when the water level at this dam is on or below lowest outlet level!

The Ebenezer Dam is at a storage level of 100.5% (69.487 x $10^6 m^3$) and 6.4% higher than the previous year, which means that the storage volume is 4.43 million cubic meters more than the corresponding period last year. See attached graph!

Magoebaskloof Dam is at a storage level of 101.2% (4.897 x $10^6 m^3$) and 0.2% higher than the previous year. See attached graph!

Tzaneen Dam is at a storage level of 101.2% (158.33 x $10^6 m^3$) and 5.1% higher than the previous year, which means that the storage volume is 7.9 million cubic meters more than the corresponding period last year. See attached graph!

Middle-Letaba Dam is at a storage level of 15.5% (26.576 x $10^6 m^3$) and 8.7% higher than the previous year, which means that the storage volume is 14.88 million cubic meters more than the corresponding period last year. See attached graph!

The Nsami Dam is at a storage level of 67.8% (14.83 x $10^6 m^3$) and 2.3% higher than the previous year, which means that the storage volume is 0.5 million cubic meters more than the corresponding period last year.

The Modjadji Dam is at a storage level of 100% (7.18 x $10^6 m^3$) and 9.05% higher than the previous year, which means that the storage volume is 0.65 million cubic meters more than the corresponding period last year.

5.3 B9 Drainage Area (Shingwedzi, Phugwane and Mphongolo Rivers)

Only a limited part of this drainage area falls outside the Kruger National Park!
There are no existing dam monitoring stations in the hydrological network for this drainage area!

6. OLIFANTS WATER MANAGEMENT AREA

Monitoring points in the B3, B5, B6 and, B7 sub drainage areas were also included in this report owing to their strategic location and importance to operational matters in the Limpopo Province.

6.1 B3 Drainage Area (Olifants, Elands, Bloed and Selons Rivers)

For information as well as operational matters the status of Rust de Winter Dam (B3R001) and Loskop Dam (B3R002) has been included in this report.

Rust de Winter Dam is at a storage level of 100.3% (28.284 x $10^6 m^3$) and 3.8% lower than the previous year. See attached graph!

Loskop Dam is at a storage level of 100.7% (364.18 x $10^6 m^3$) and 2.9% lower than the previous year. See attached graph!

6.2 B5 Drainage Area (Olifants River)

For information as well as operational matters the status of Flag Boshielo Dam (B5R002) has been included in this report.

Flag Boshielo Dam is at a storage level of 103.2% (190.99 x $10^6 m^3$) and 0.6% lower than the previous year. See attached graph!

6.3 B6 Drainage Area (Blyde and Ohrigstad Rivers)

For information as well as operational matters the status of Ohrigstad Dam (B6R001) and Blyde Rivierspoort Dam (B6R003) has been included in this report.

Ohrigstad Dam is at a storage level of 100.2% (13.47 x $10^6 m^3$) and 46.6% higher than the previous year, which means that the storage volume is 6.26 million cubic meters more than the corresponding period last year. See attached graph!

Blyde Dam is at a storage level of 101.0% (54.913 x $10^6 m^3$) and at the same level as the previous year. See attached graph!

6.4 B7 Drainage Area (Klaserie and Olifants Rivers)

For information as well as operational matters the status of Klaserie Dam (B7R001) and Tours Dam (B7R003) has been included in this report.

Klaserie Dam is at a storage level of 103.2% (5.783 x $10^6 m^3$) and 2% higher than the previous year. See attached graph!

Tours Dam is at a storage level of 100.3% (6.102 x $10^6 m^3$) and 3.4% higher than the previous year, which means that the storage volume is 0.03 million cubic meters more than the corresponding period last year. See attached graph!

7. INKOMATI WATER MANAGEMENT AREA

7.1 X2 Drainage Area (Crocodile River)

For information as well as operational matters the status of Kwena Dam (X2R005) has been included in this report.

Kwena Dam is at a storage level of 100.6% (159.77 x $10^6 m^3$) and 0.5% lower than the previous year. See attached graph!

7.2 X3 Drainage Area (Mariti River)

For information as well as operational matters the status of Inyaka Dam (X3R002) has been included in this report.

Inyaka Dam is at a storage level of 100.7% (124.55 x $10^6 m^3$) and at the same level as the previous year. See attached graph!

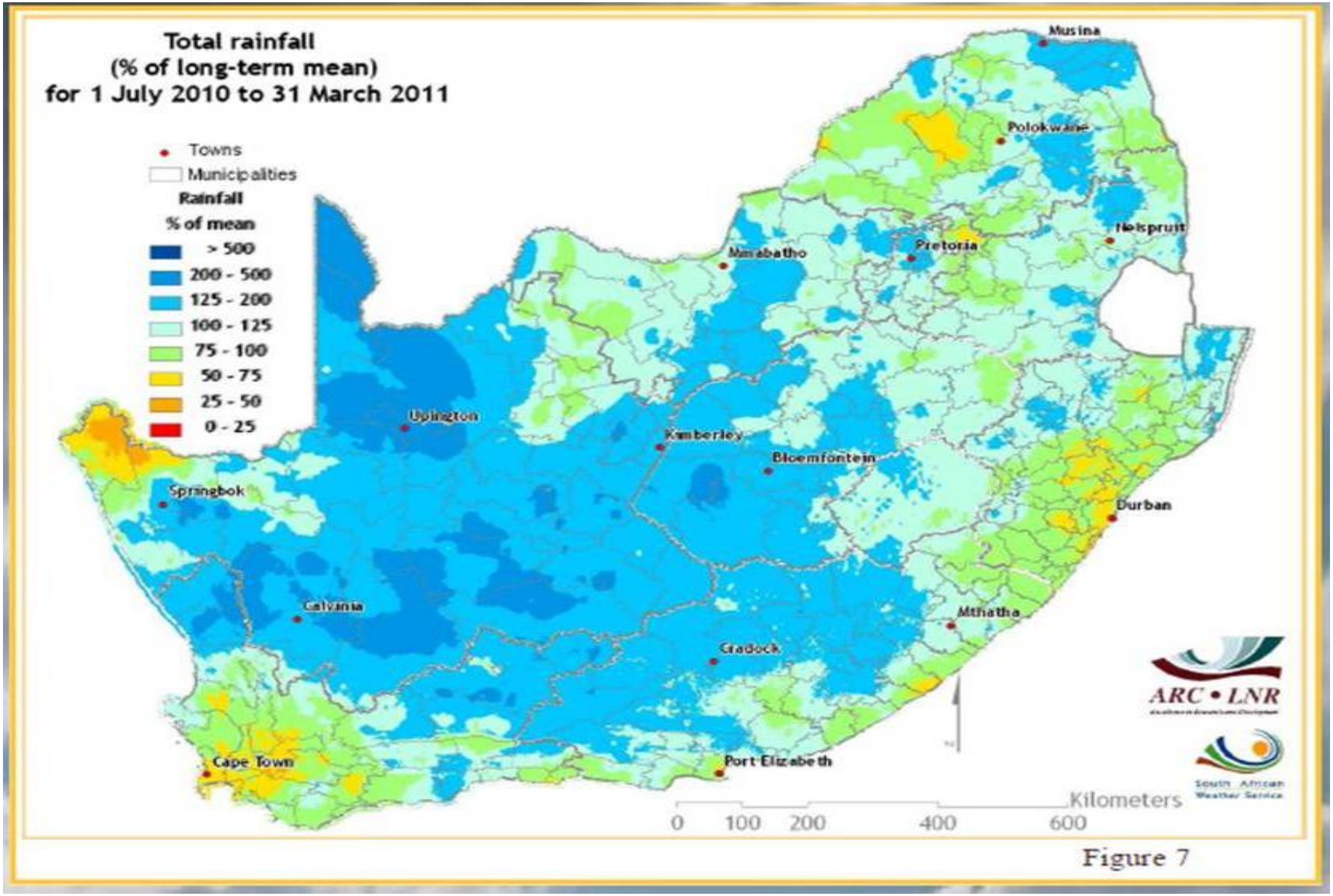
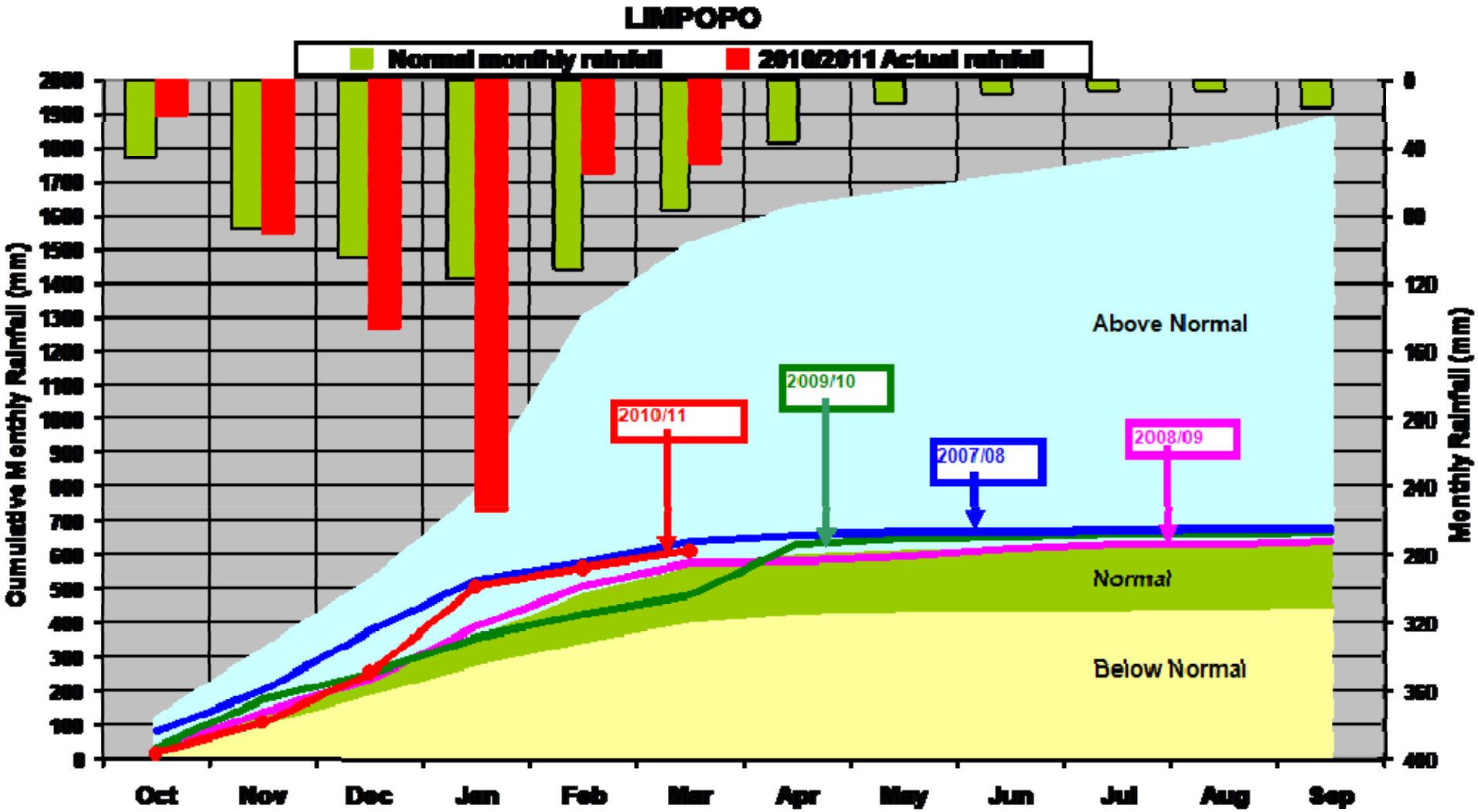
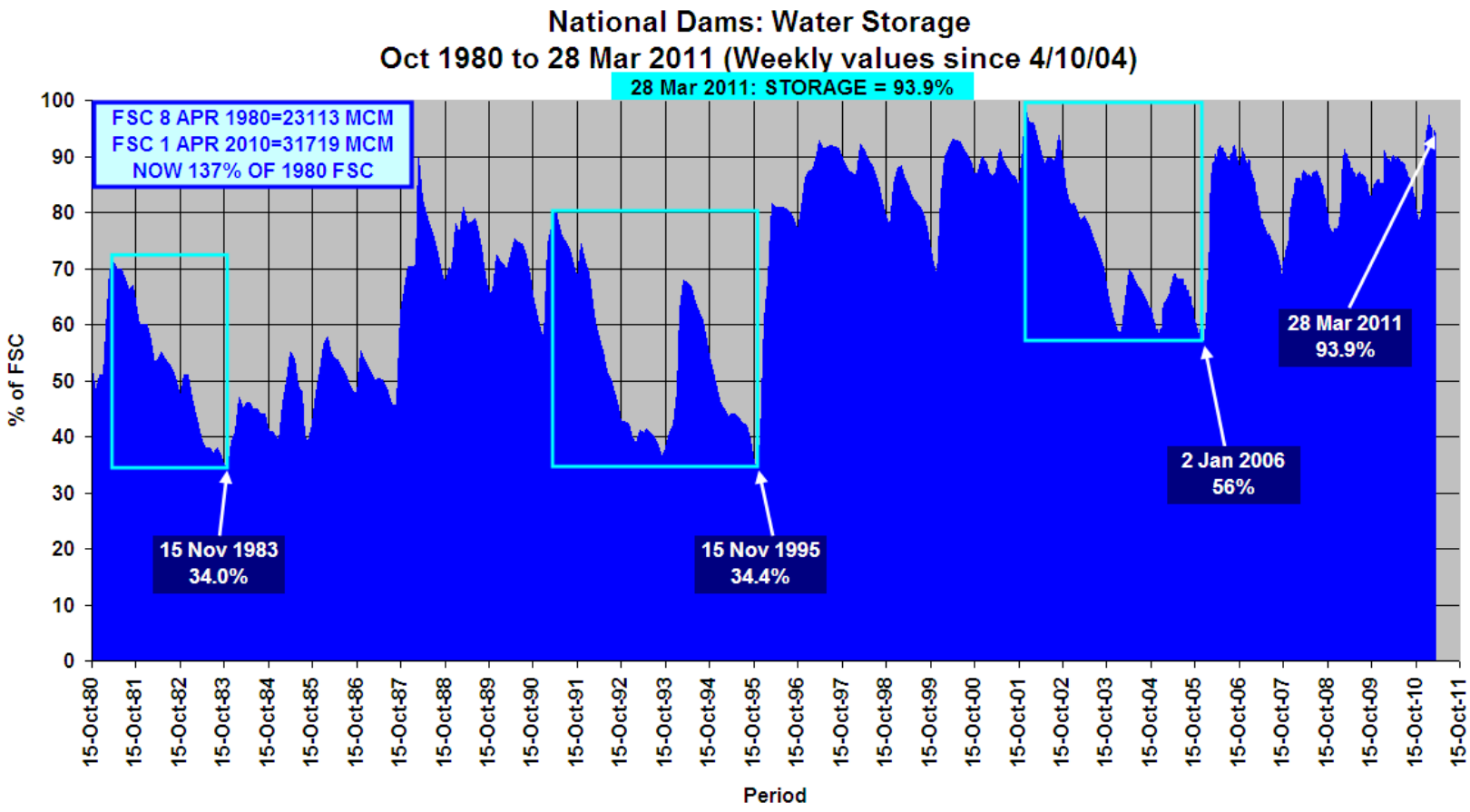
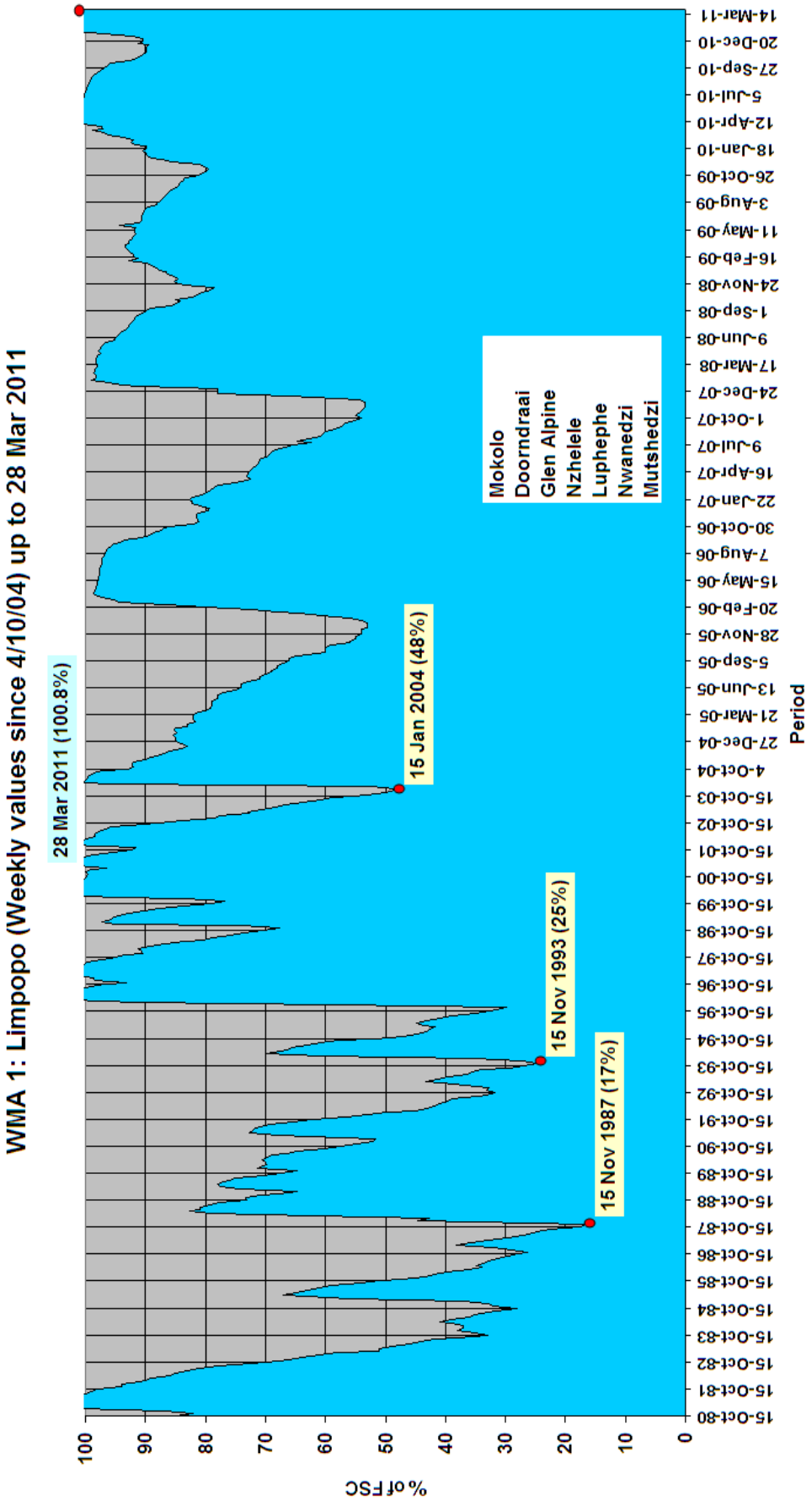

Total rainfall
(% of long-term mean)
for 1 July 2010 to 31 March 2011
Towns
Municipalities
Rainfall
% of mean
> 500
200 - 500
125 - 200
100 - 125
75 - 100
50 - 75
25 - 50
0 - 25
Musina
Polokwane
Nelspruit
Pretoria
Mmabatho
Upington
Kimberley
Bloemfontein
Springbok
Durban
Calvinia
Mthatha
Cradock
Cape Town
Port Elizabeth
ARC • LNR
South African Weather Service
Kilometers
0 100 200 400 600

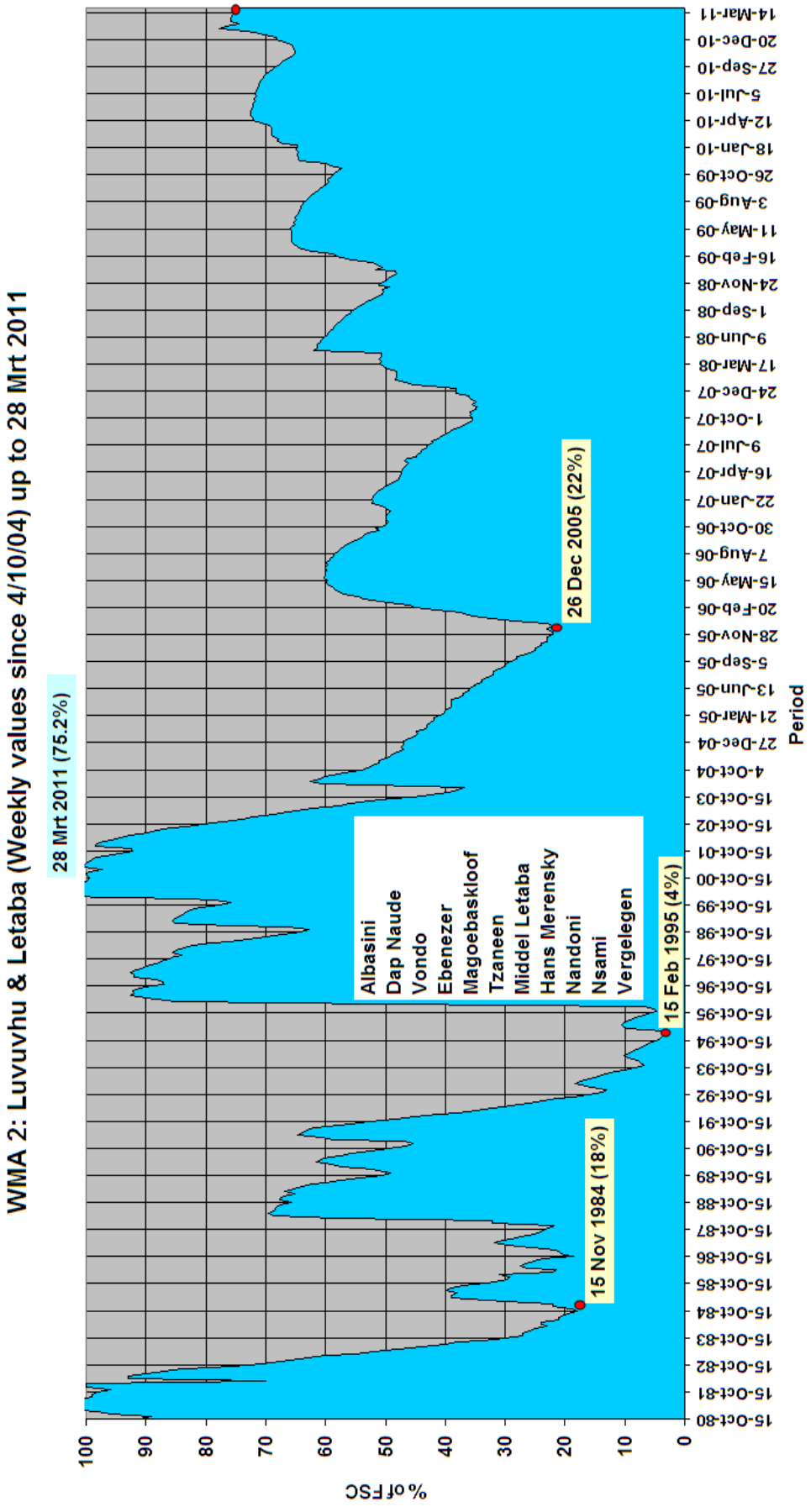
Figure 7


LIMPOPO
Normal monthly rainfall
2010/2011 Actual rainfall
Cumulative Monthly Rainfall (mm)
Monthly Rainfall (mm)
Above Normal
Normal
Below Normal
2010/11
2009/10
2007/08
2008/09
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep



Prepared by E A Nel


WMA 1: Limpopo (Weekly values since 4/10/04) up to 28 Mar 2011
28 Mar 2011 (100.8%)
15 Jan 2004 (48%)
15 Nov 1993 (25%)
15 Nov 1987 (17%)
Mokolo
Doorndraai
Glen Alpine
Nzhelele
Luphephe
Nwanedzi
Mutshedzi
% of FSC
Period

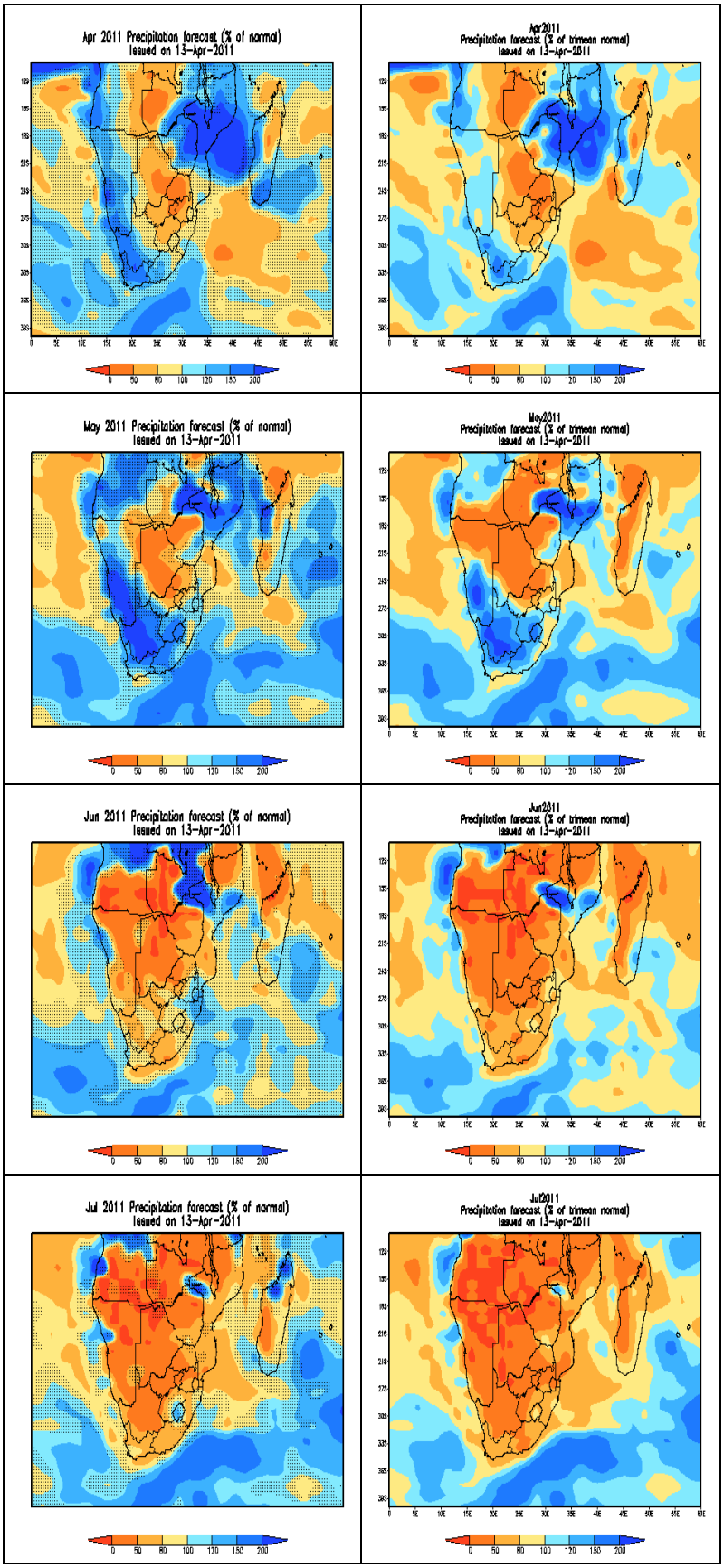

WMA 2: Luvuvhu & Letaba (Weekly values since 4/10/04) up to 28 Mrt 2011
28 Mrt 2011 (75.2%)
26 Dec 2005 (22%)
15 Feb 1995 (4%)
15 Nov 1984 (18%)
Albasini
Dap Naude
Vondo
Ebenezer
Magoebaskloof
Tzaneen
Middel Letaba
Hans Merensky
Nandoni
Nsami
Vergelegen
% of FSC
Period

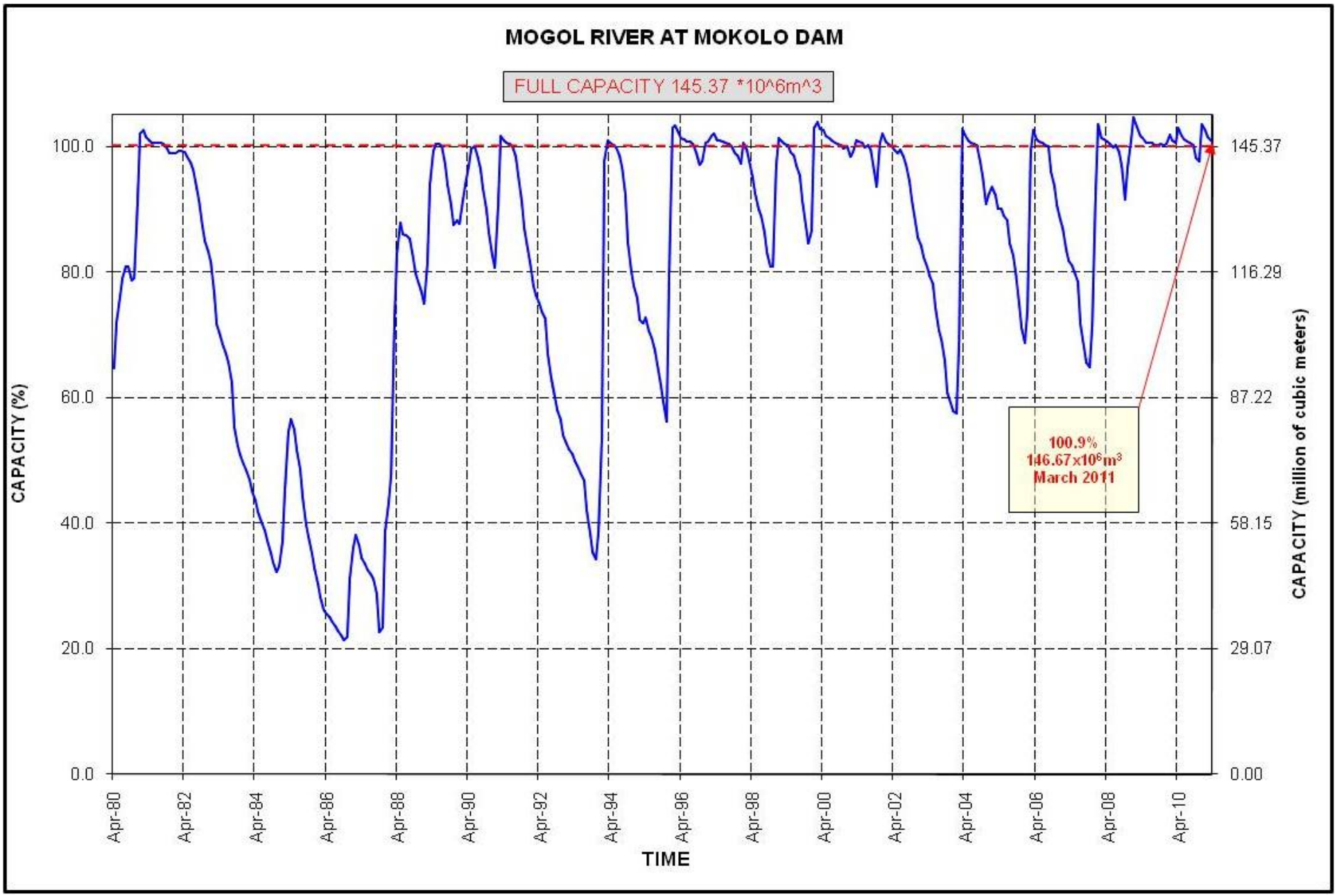
2011-03-28

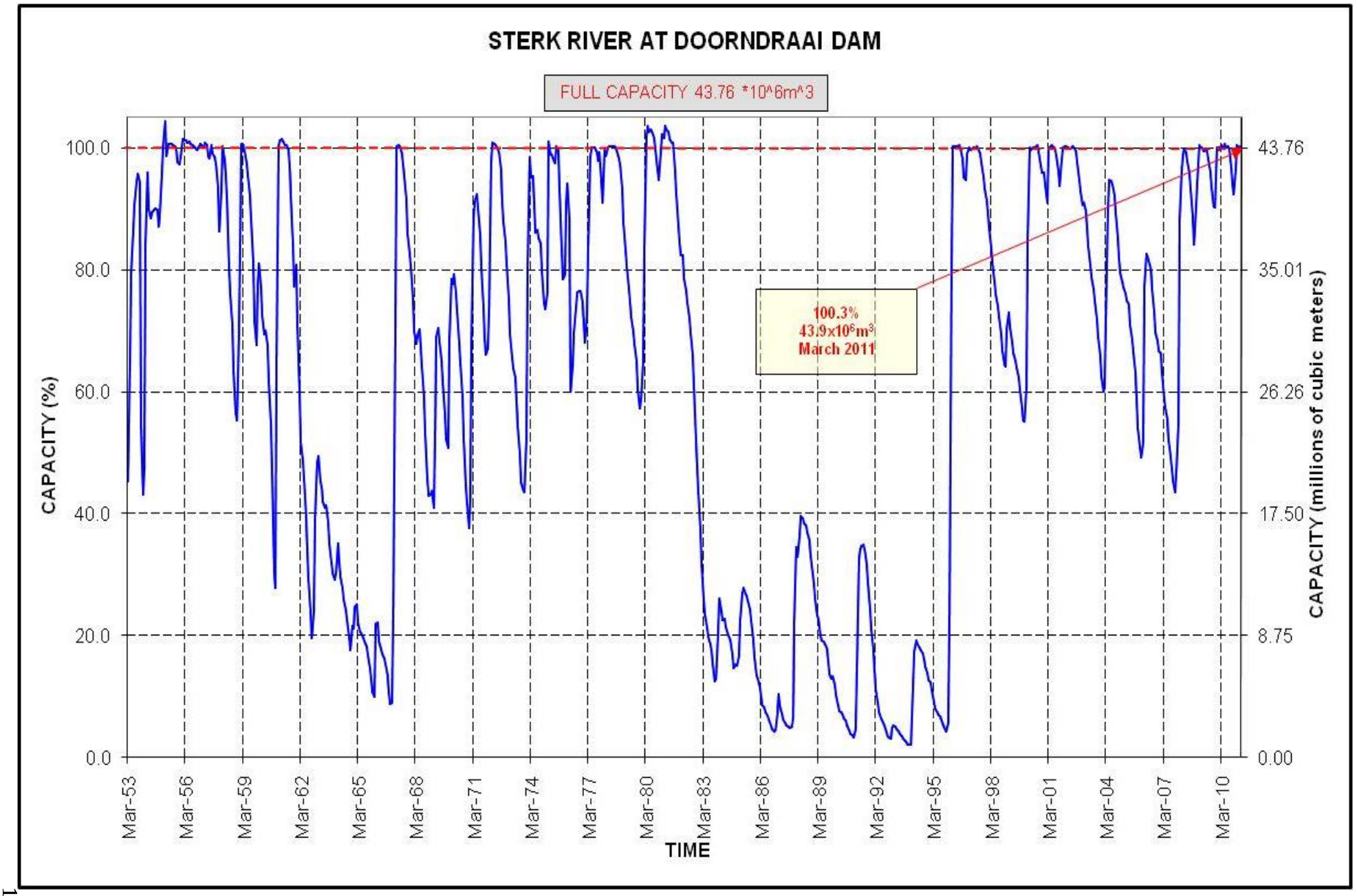
	Summary WMA	Full Supply Capacity 10^6M^3	Water in Storage 10^6M^3	Last Year %Full	Last Week %Full	This Week %Full
1	Limpopo	280.4	282.5	97.2	100.7	100.8
2	Luvubu/Letaba	652.5	490.8	69.3	75.5	75.2
3	Crocodile (West) Marico	813.8	743.2	76.7	90.6	91.3
4	Olifants	1073.9	1079.8	99.3	100.3	100.5
5	Inkomati	1049.5	1042.8	100.1	100.3	99.4
6	Usutu/Mhlatuze	3282.6	2747.7	81.5	83.9	83.7
7	Thukela	1115.3	1101.3	97.6	98.6	98.7
8	Upper Vaal	5629.8	5590.3	99.6	99.7	99.3
9	Middle Vaal	1671.6	1662.0	97.5	97.5	99.4
10	Lower Vaal	106.5	108.5	98.8	95.4	101.9
11	Mvoti/Umzimkulu	802.1	695.7	99.9	86.8	86.7
12	Mzimvubu/Keiskamma	1066.3	1011.8	85.2	95.9	94.9
13	Upper Orange	11416.1	11772.1	90.9	104.6	103.1
14	Lower Orange	36.1	49.4	111.3	137.2	137.0
15	Fish/Tsitsikamma	726.0	325.6	37.0	47.1	44.8
16	Gouritz	260.8	112.3	40.7	46.4	43.1
17	Olifants/Doorn	127.5	40.2	41.9	35.3	31.5
18	Breede	1038.9	502.3	60.1	50.1	48.3
19	Berg	416.5	257.2	68.6	63.6	61.8
	GRAND TOTAL	31566.1	29615.5	88.9	94.5	93.8

Please note that these summaries are not representative of all dams within any of the Provinces or Water Management Areas.
The summaries only reflect the storages for those dams listed in the Weekly State of Reservoirs Report.

MONTHLY FORECAST
APRIL 2011 – JULY 2011




MOGOL RIVER AT MOKOLO DAM
FULL CAPACITY 145.37 *10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
145.37
116.29
87.22
58.15
29.07
0.00
CAPACITY (million of cubic meters)
100.9%
146.67x10^6m^3
March 2011
Apr-80
Apr-82
Apr-84
Apr-86
Apr-88
Apr-90
Apr-92
Apr-94
Apr-96
Apr-98
Apr-00
Apr-02
Apr-04
Apr-06
Apr-08
Apr-10
TIME


STERK RIVER AT DOORNDRAAI DAM
FULL CAPACITY 43.76 *10^6m^3
100.3%
43.9x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
43.76
35.01
26.26
17.50
8.75
0.00
Mar-53
Mar-56
Mar-59
Mar-62
Mar-65
Mar-68
Mar-71
Mar-74
Mar-77
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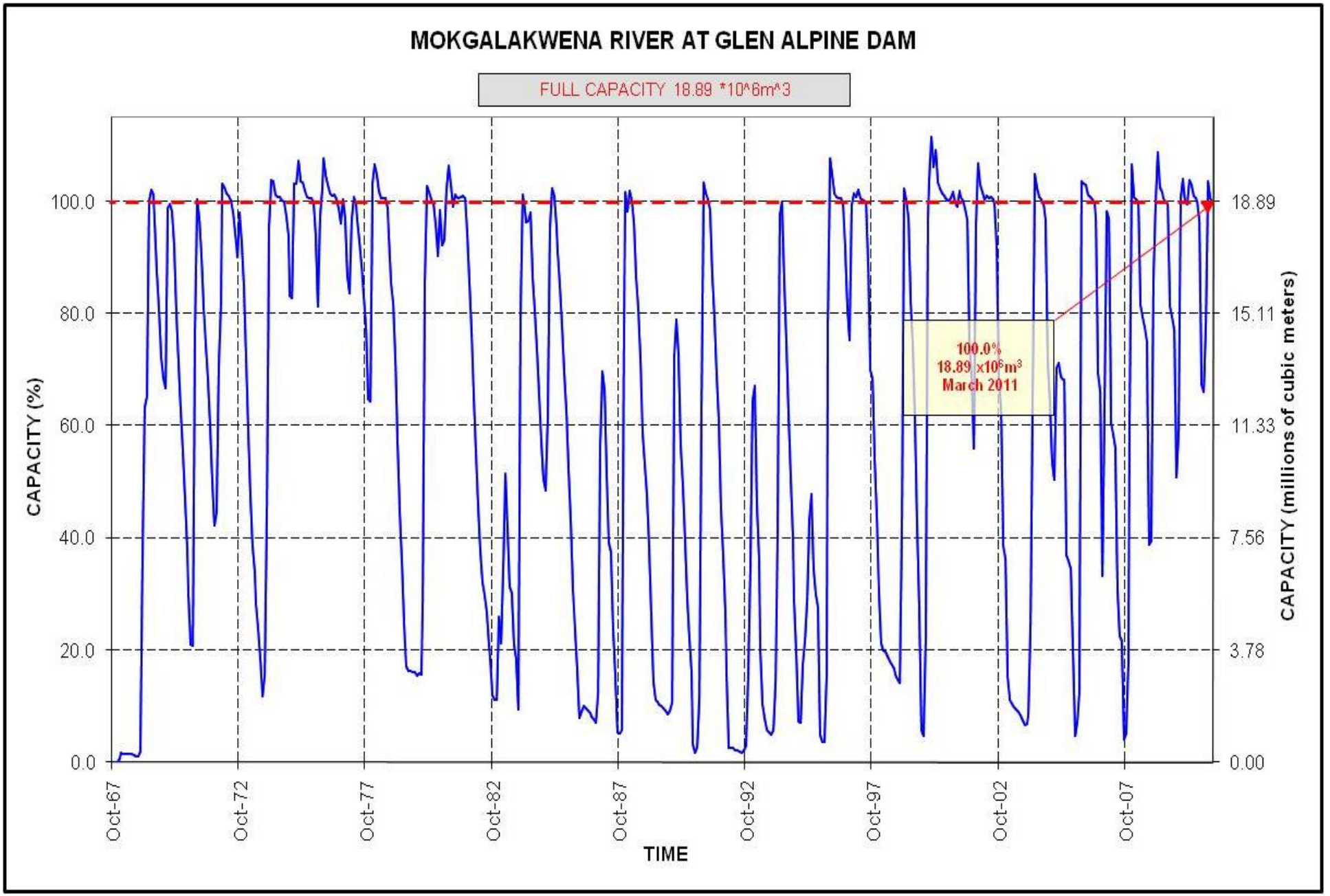
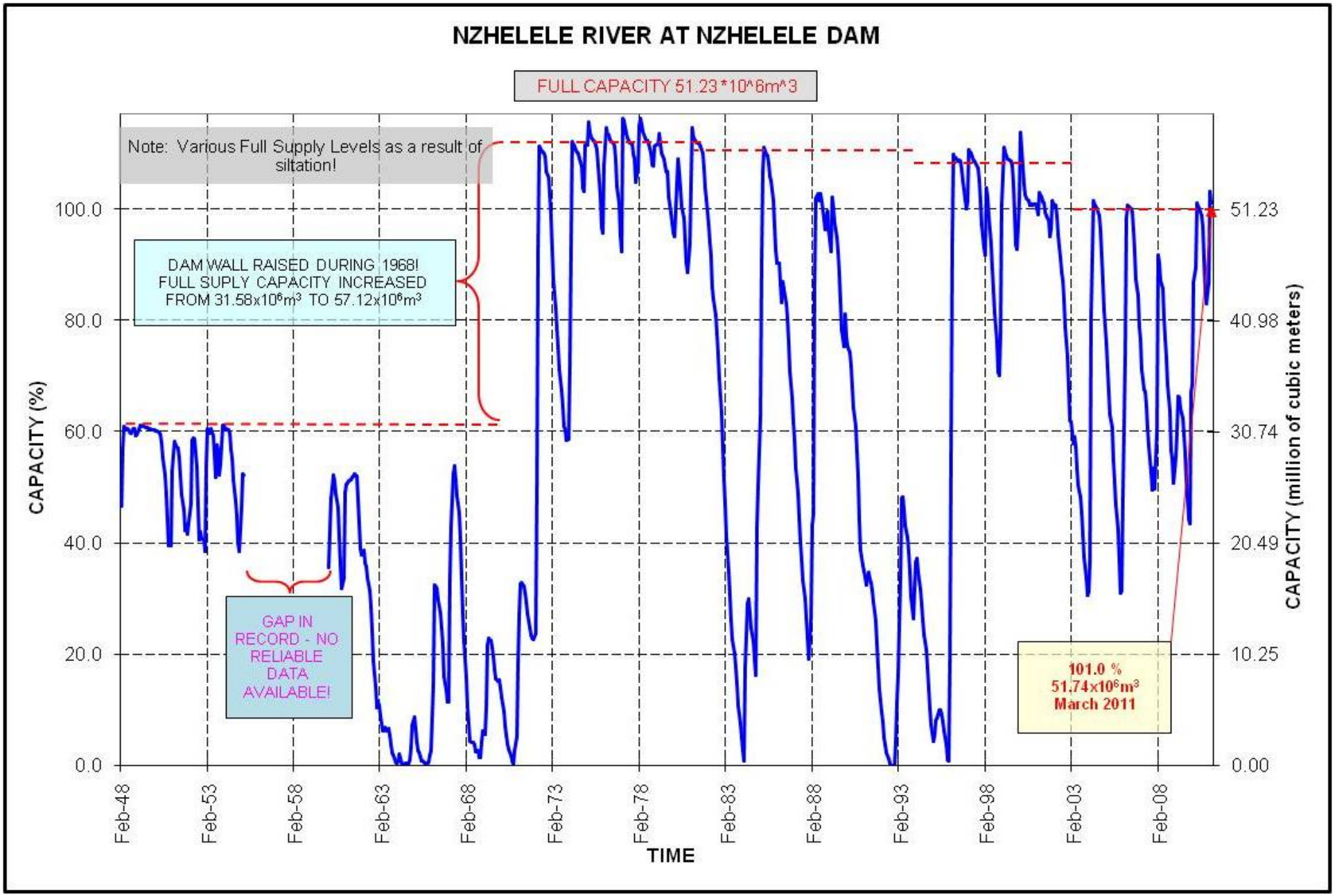
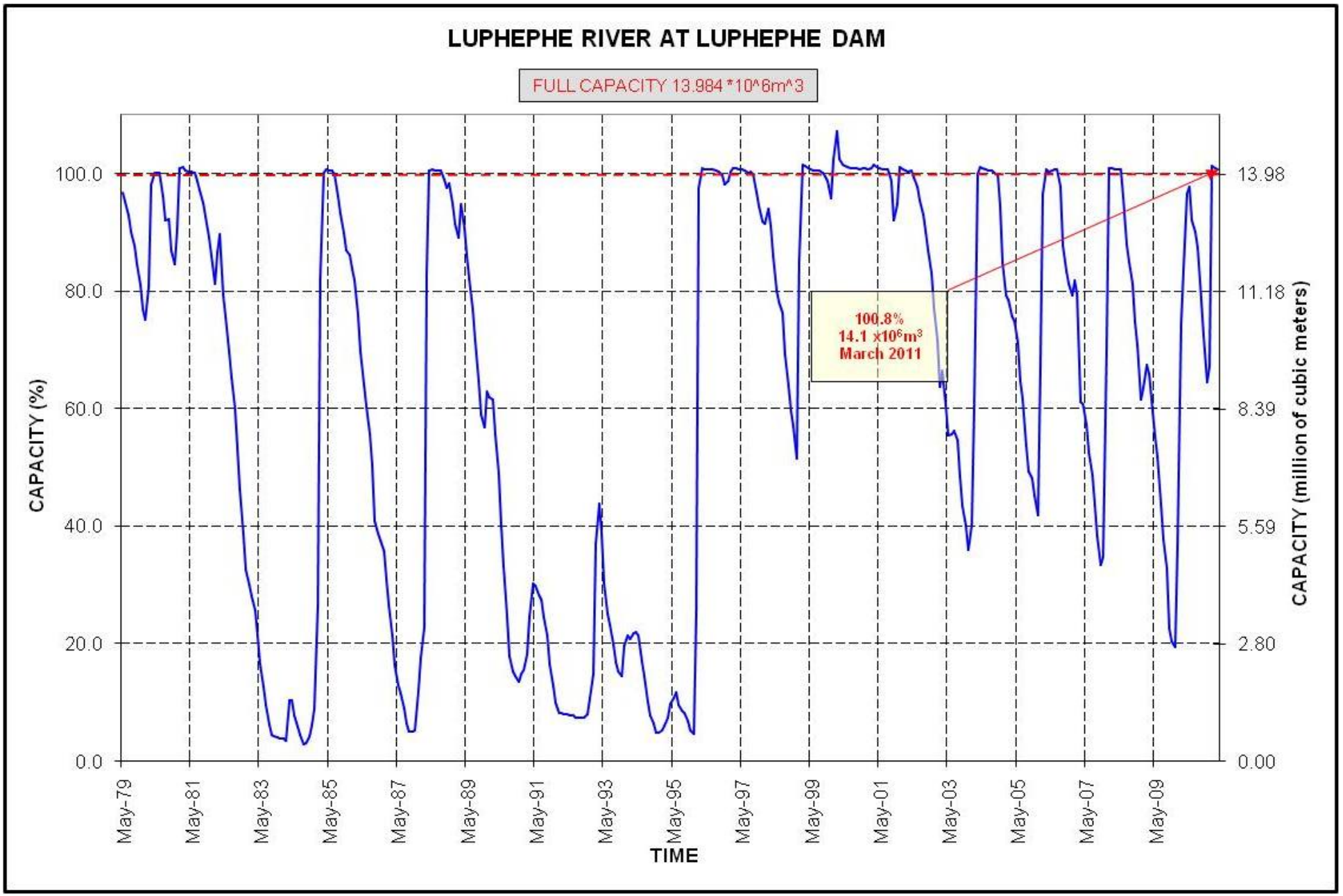
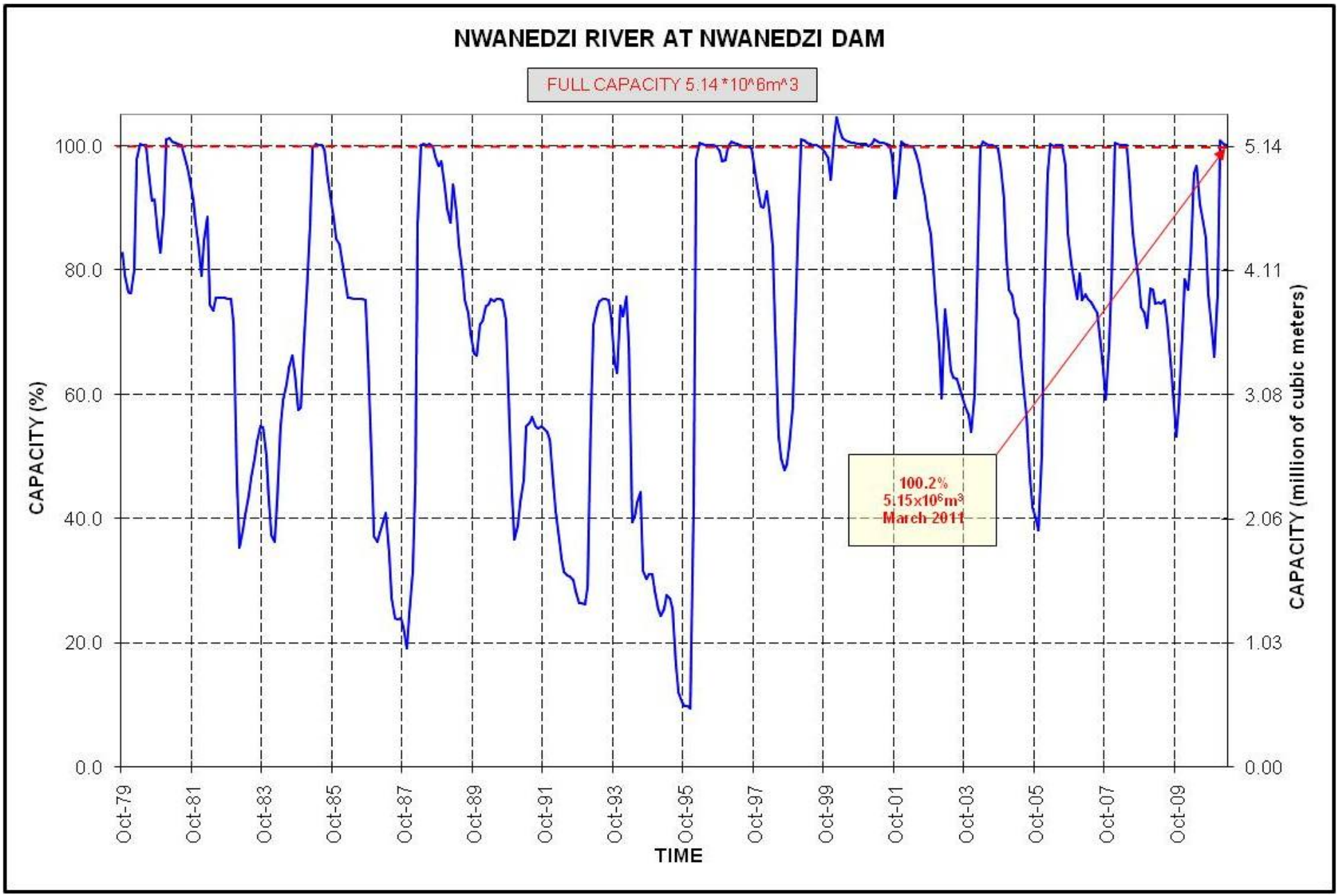
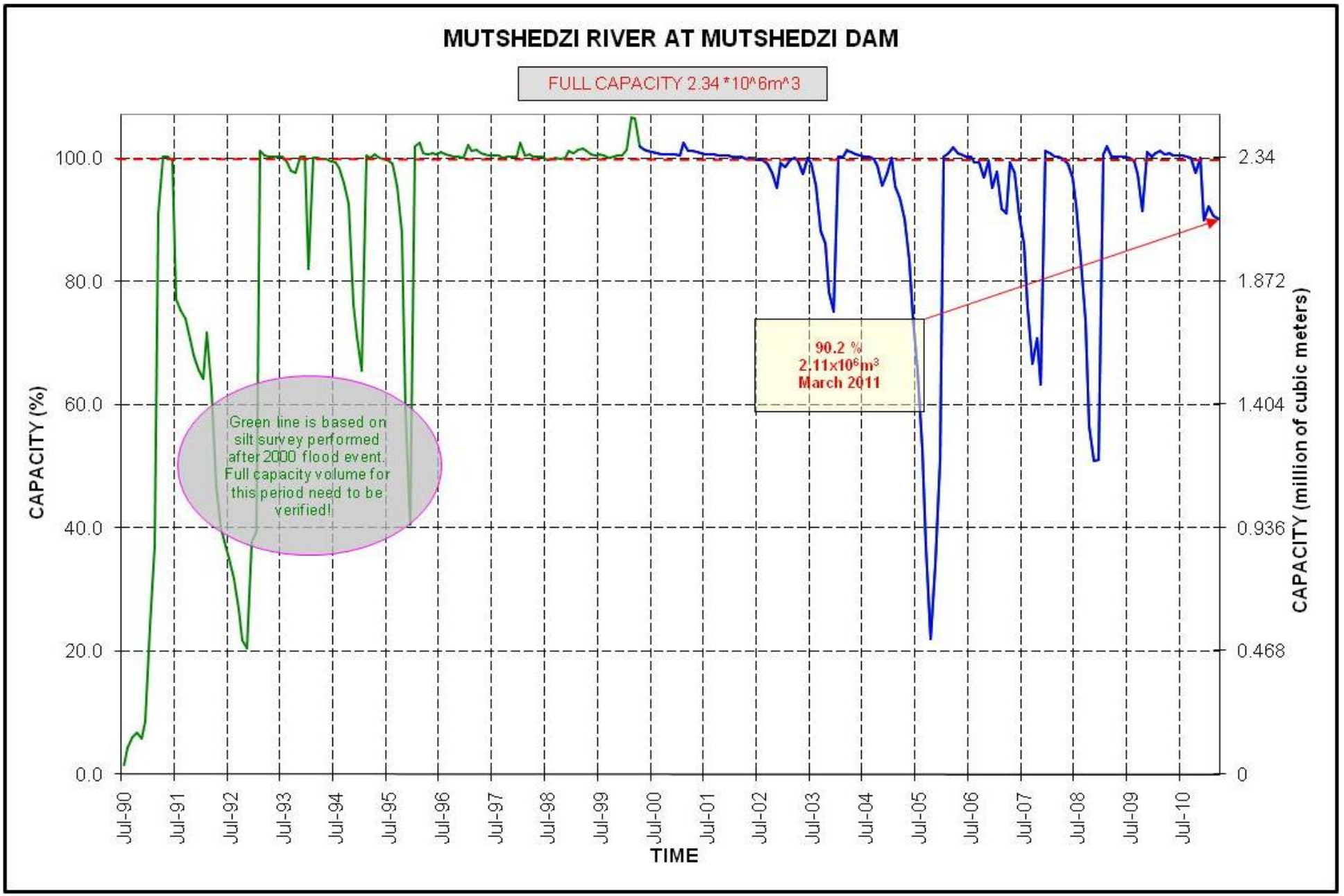
Mar-95
Mar-98
Mar-01
Mar-04
Mar-07
Mar-10

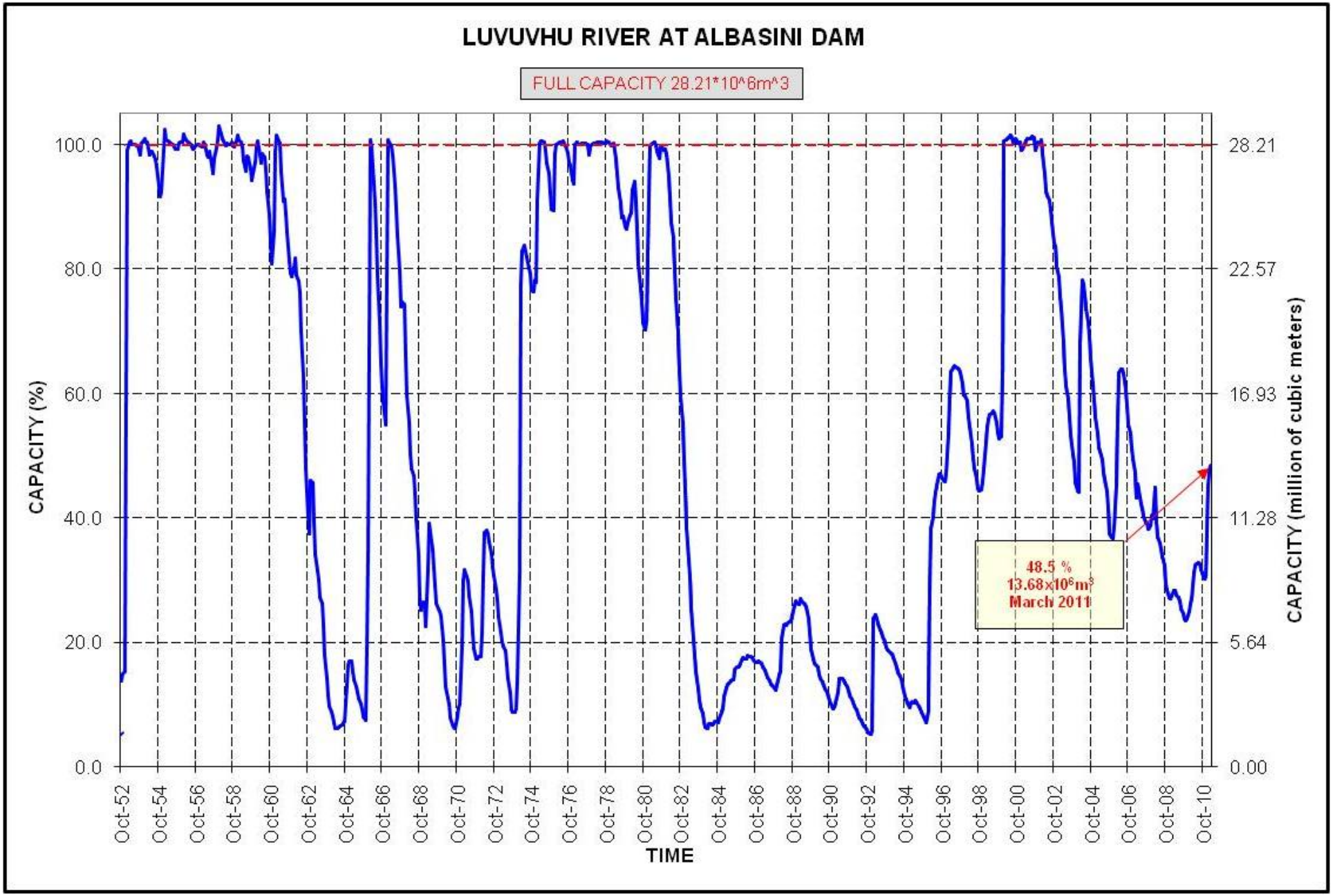

MOKGALAKWENA RIVER AT GLEN ALPINE DAM
FULL CAPACITY 18.89 *10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
18.89
15.11
11.33
7.56
3.78
0.00
CAPACITY (millions of cubic meters)
100.0%
18.89 x10^6m^3
March 2011
Oct-67
Oct-72
Oct-77
Oct-82
Oct-87
Oct-92
Oct-97
Oct-02
Oct-07
TIME

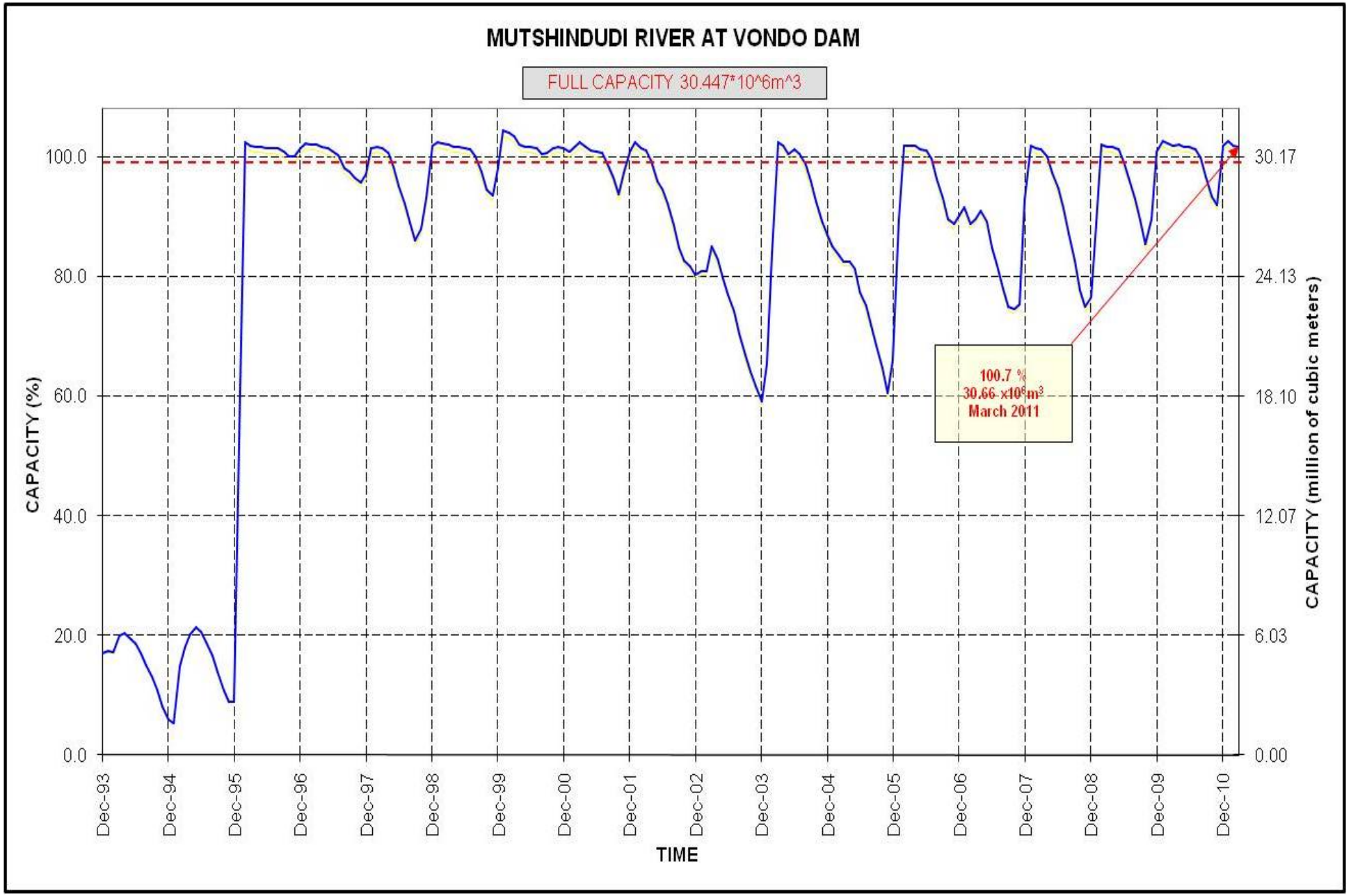

NZHELELE RIVER AT NZHELELE DAM
FULL CAPACITY 51.23*10^6m^3
Note: Various Full Supply Levels as a result of siltation!
DAM WALL RAISED DURING 1968!
FULL SUPLY CAPACITY INCREASED
FROM 31.58x10⁶m³ TO 57.12x10⁶m³
GAP IN RECORD - NO RELIABLE DATA AVAILABLE!
101.0 %
51.74x10⁶m³
March 2011
CAPACITY (%)
CAPACITY (million of cubic meters)
100.0
80.0
60.0
40.0
20.0
0.0
51.23
40.98
30.74
20.49
10.25
0.00
Feb-48
Feb-53
Feb-58
Feb-63
Feb-68
Feb-73
Feb-78
Feb-83
Feb-88
Feb-93
Feb-98
Feb-03
Feb-08
TIME

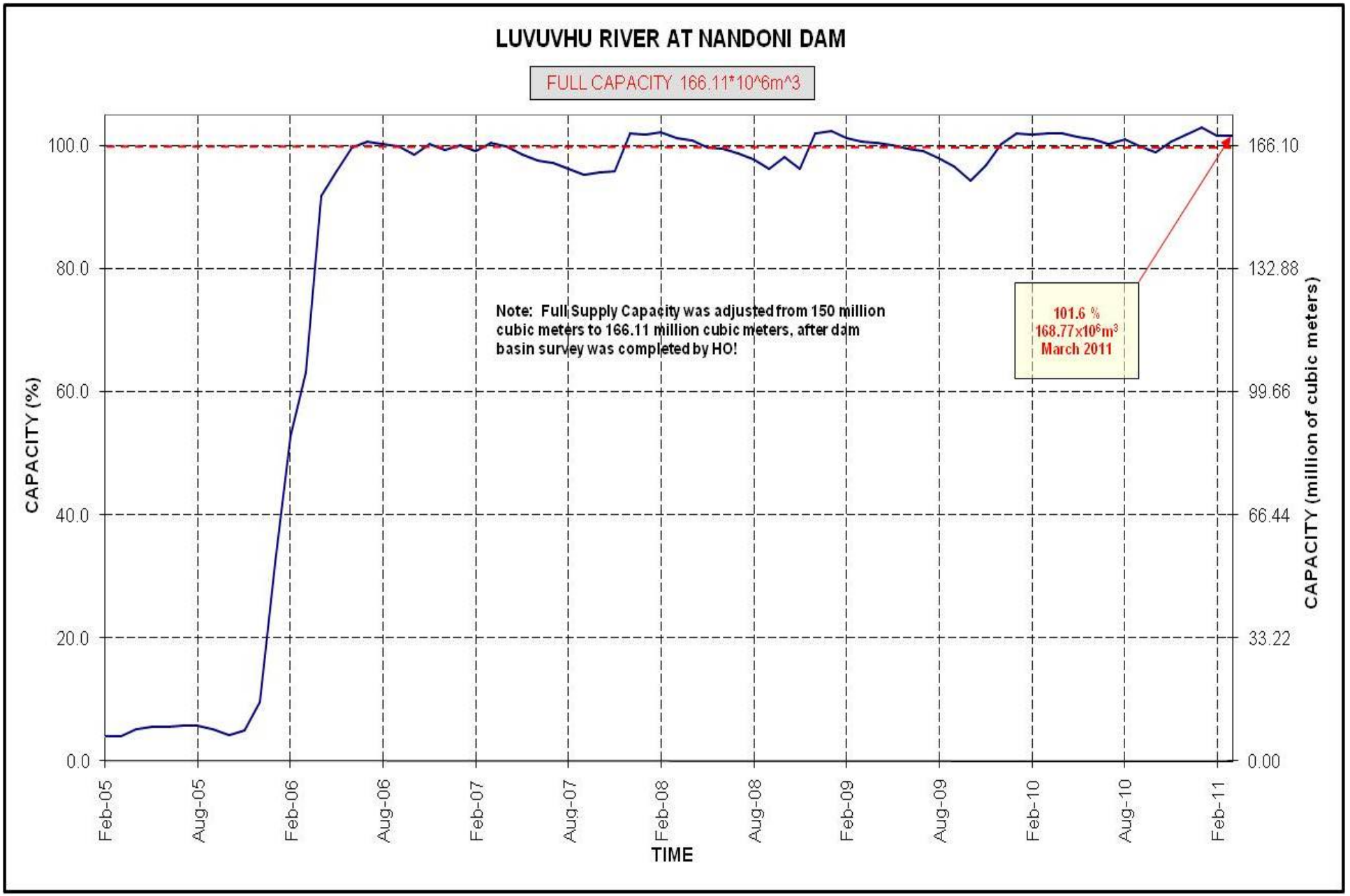

LUPHEPHE RIVER AT LUPHEPHE DAM
FULL CAPACITY 13.984 *10^6m^3
100.8%
14.1 x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (million of cubic meters)
100.0
80.0
60.0
40.0
20.0
0.0
13.98
11.18
8.39
5.59
2.80
0.00
May-79
May-81
May-83
May-85
May-87
May-89
May-91
May-93
May-95
May-97
May-99
May-01
May-03
May-05
May-07
May-09
TIME

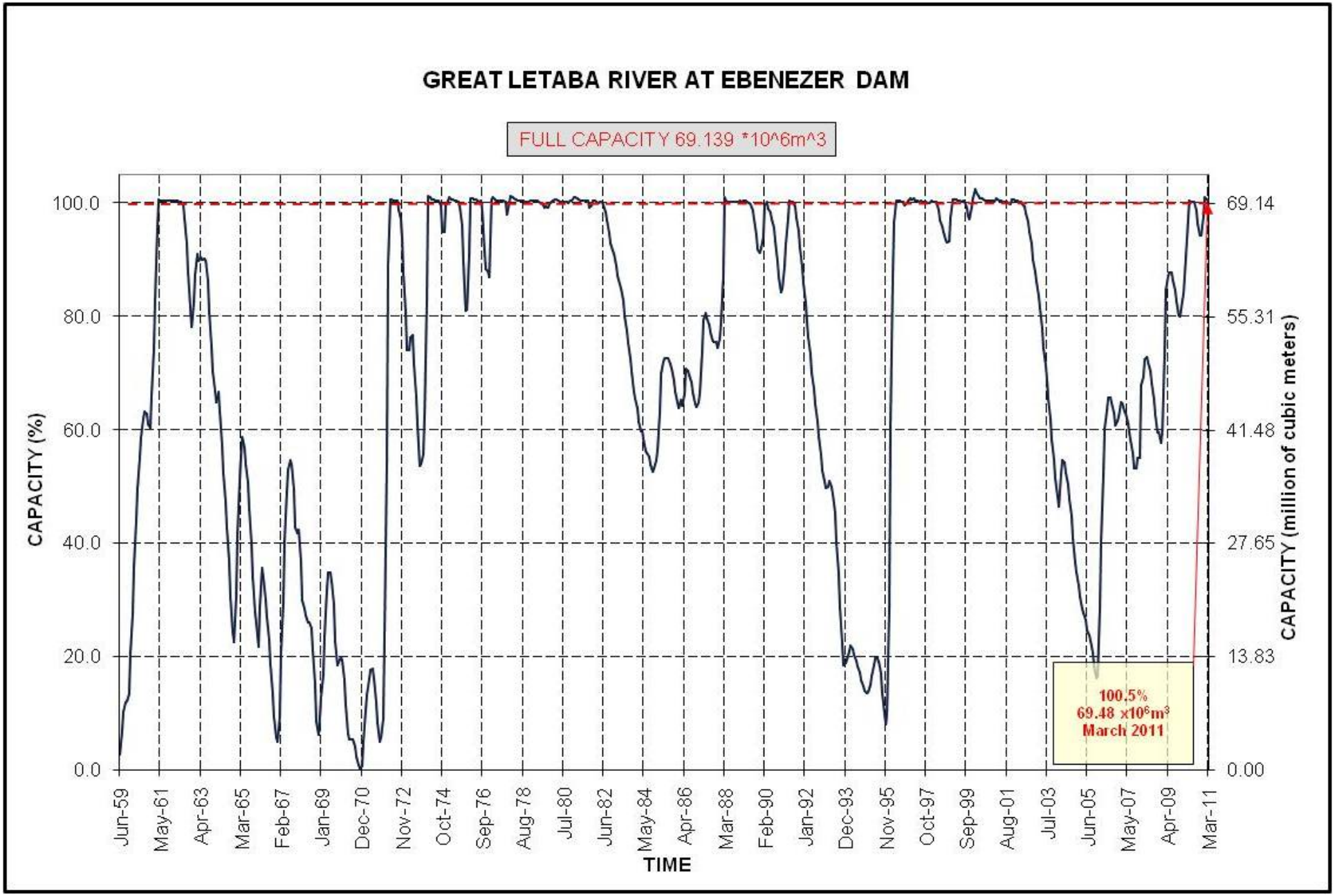

NWANEDZI RIVER AT NWANEDZI DAM
FULL CAPACITY 5.14*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
5.14
4.11
3.08
2.06
1.03
0.00
CAPACITY (million of cubic meters)
100.2%
5.15x10^6m^3
March 2011
Oct-79
Oct-81
Oct-83
Oct-85
Oct-87
Oct-89
Oct-91
Oct-93
Oct-95
Oct-97
Oct-99
Oct-01
Oct-03
Oct-05
Oct-07
Oct-09
TIME

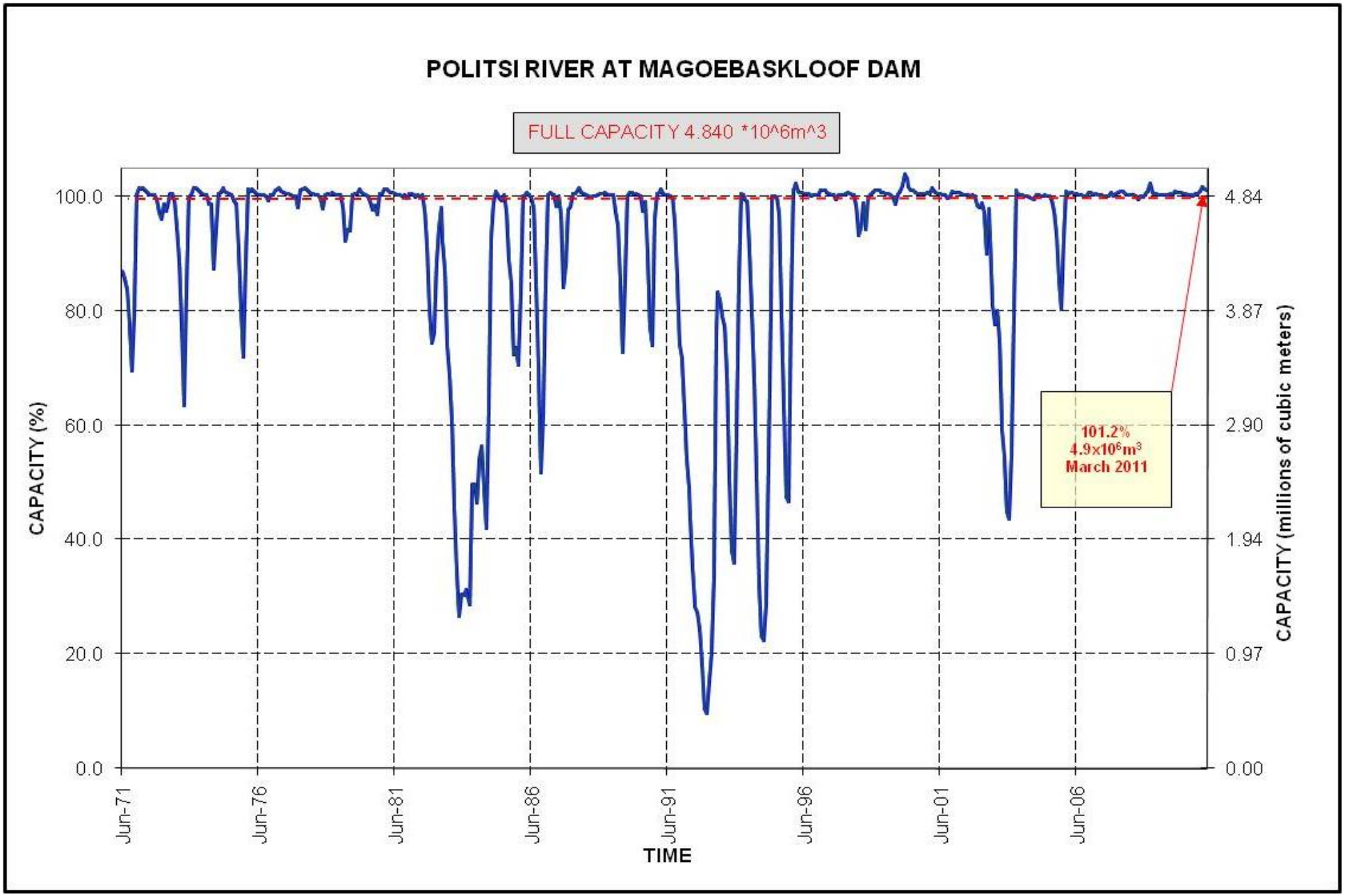

MUTSHEDZI RIVER AT MUTSHEDZI DAM
FULL CAPACITY 2.34 *10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
2.34
1.872
1.404
0.936
0.468
0
CAPACITY (million of cubic meters)
Green line is based on silt survey performed after 2000 flood event. Full capacity volume for this period need to be verified!
90.2 %
2.11x10^6m^3
March 2011
Jul-90
Jul-91
Jul-92
Jul-93
Jul-94
Jul-95
Jul-96
Jul-97
Jul-98
Jul-99
Jul-00
Jul-01
Jul-02
Jul-03
Jul-04
Jul-05
Jul-06
Jul-07
Jul-08
Jul-09
Jul-10
TIME

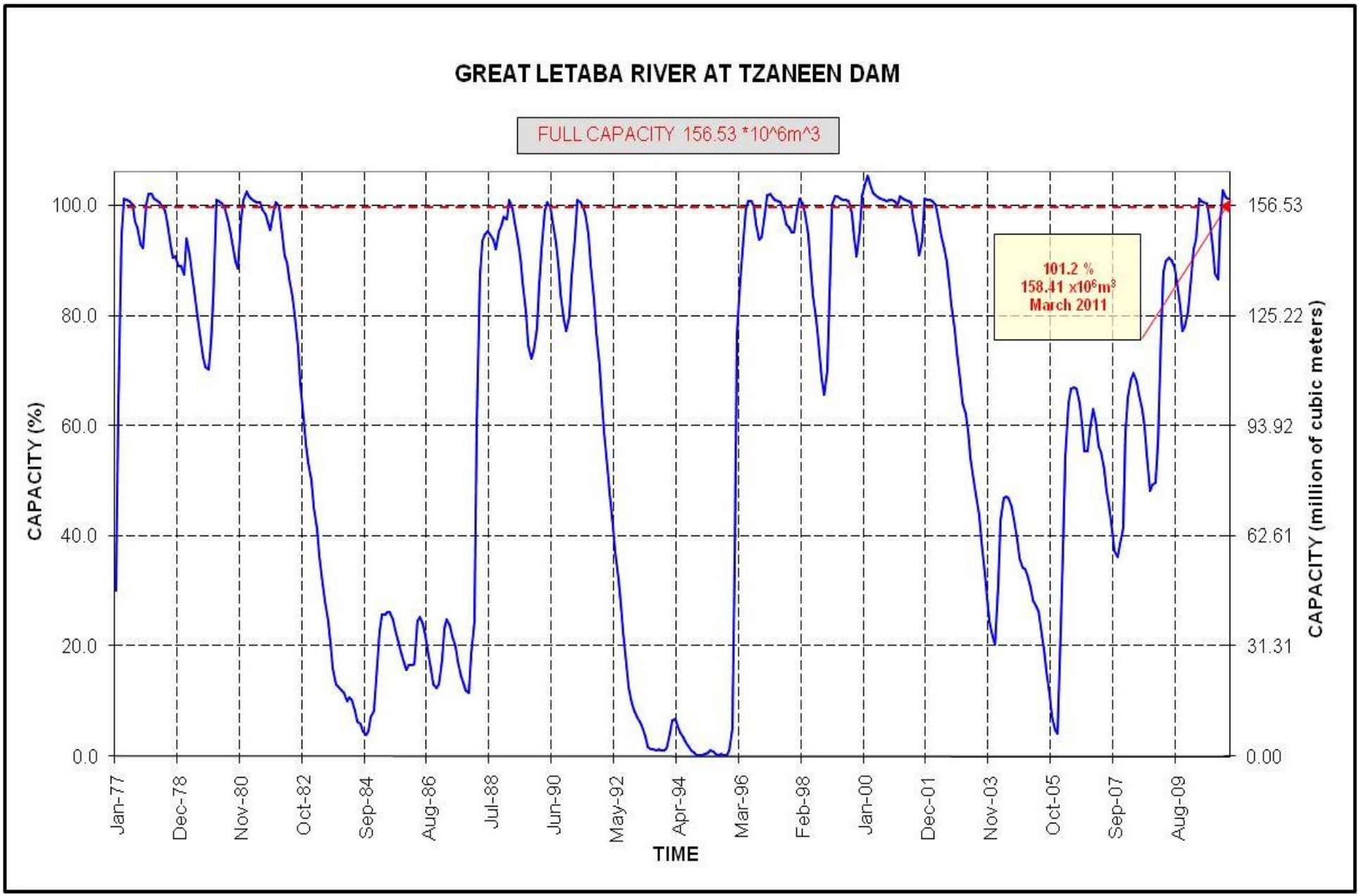

LUVUVHU RIVER AT ALBASINI DAM
FULL CAPACITY 28.21*10^6m^3
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
28.21
22.57
16.93
11.28
5.64
0.00
Oct-52
Oct-54
Oct-56
Oct-58
Oct-60
Oct-62
Oct-64
Oct-66
Oct-68
Oct-70
Oct-72
Oct-74
Oct-76
Oct-78
Oct-80
Oct-82
Oct-84
Oct-86
Oct-88
Oct-90
Oct-92
Oct-94
Oct-96
Oct-98
Oct-00
Oct-02
Oct-04
Oct-06
Oct-08
Oct-10
48.5 %
13.68x10^6m^3
March 2011

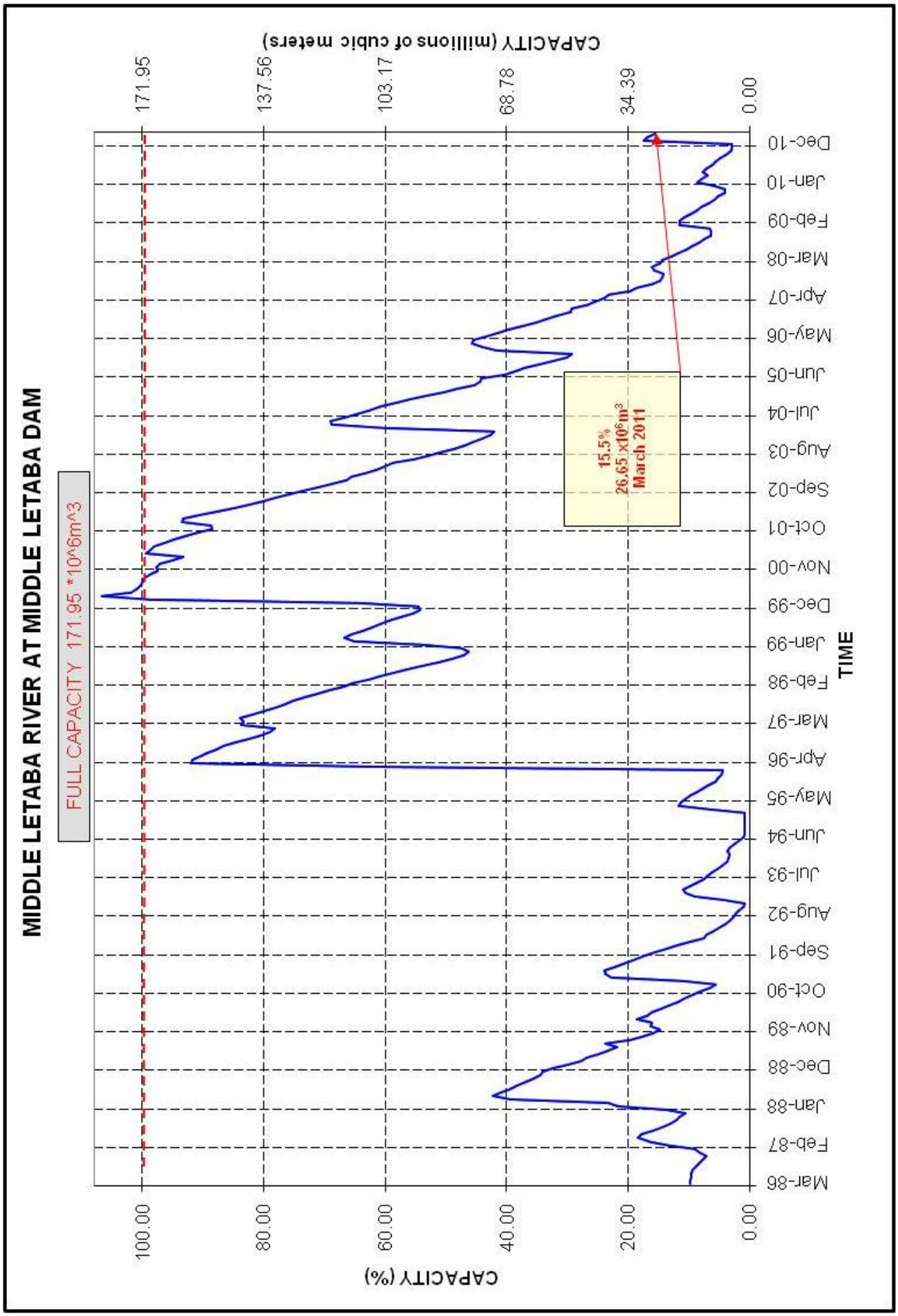

MUTSHINDUDI RIVER AT VONDO DAM
FULL CAPACITY 30.447*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
30.17
24.13
18.10
12.07
6.03
0.00
CAPACITY (million of cubic meters)
100.7 %
30.66 x10^8 m^3
March 2011
Dec-93
Dec-94
Dec-95
Dec-96
Dec-97
Dec-98
Dec-99
Dec-00
Dec-01
Dec-02
Dec-03
Dec-04
Dec-05
Dec-06
Dec-07
Dec-08
Dec-09
Dec-10
TIME

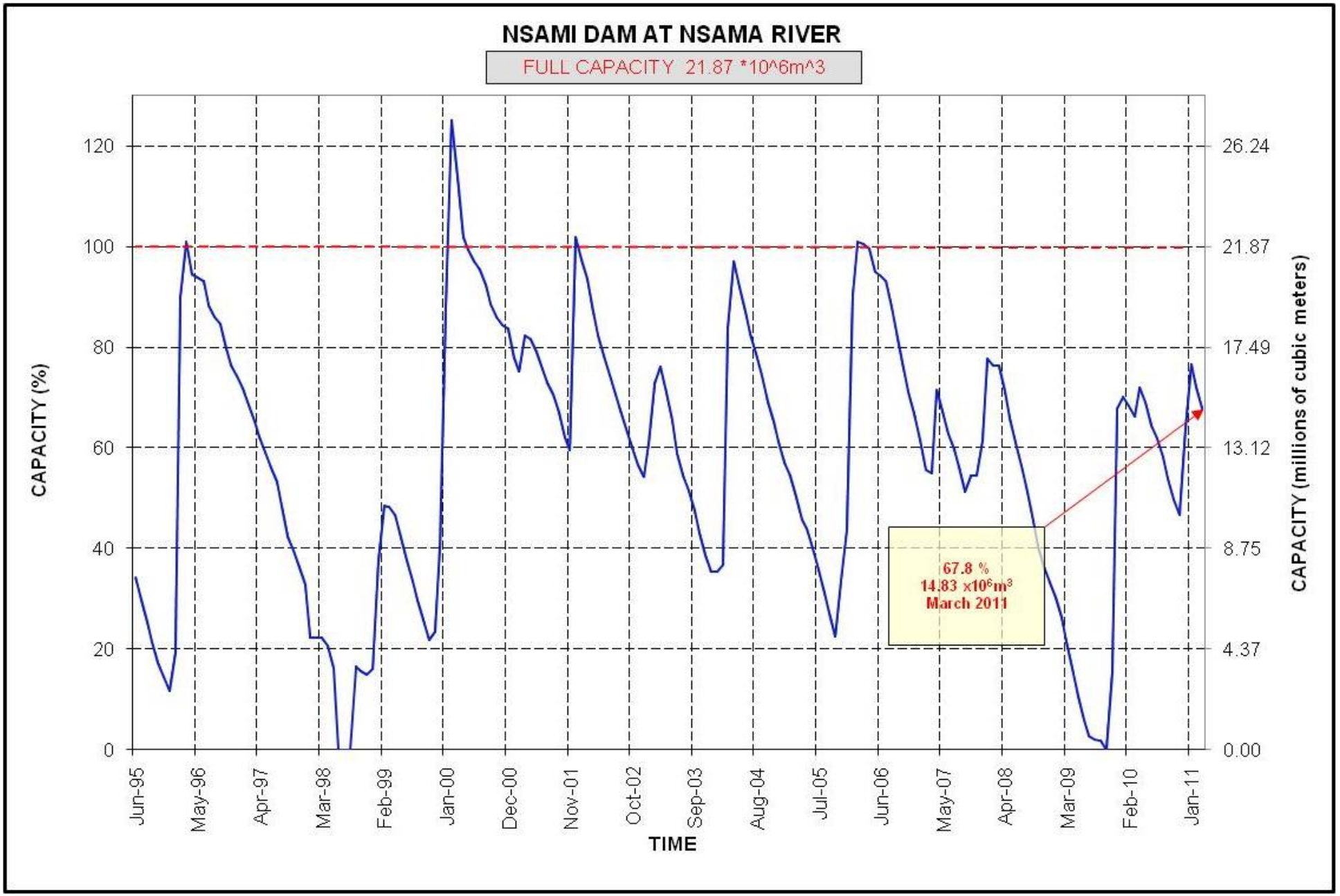

LUVUVHU RIVER AT NANDONI DAM
FULL CAPACITY 166.11*10^6m^3
Note: Full Supply Capacity was adjusted from 150 million cubic meters to 166.11 million cubic meters, after dam basin survey was completed by HO!
101.6 %
168.77x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
166.10
132.88
99.66
66.44
33.22
0.00
Feb-05
Aug-05
Feb-06
Aug-06
Feb-07
Aug-07
Feb-08
Aug-08
Feb-09
Aug-09
Feb-10
Aug-10
Feb-11

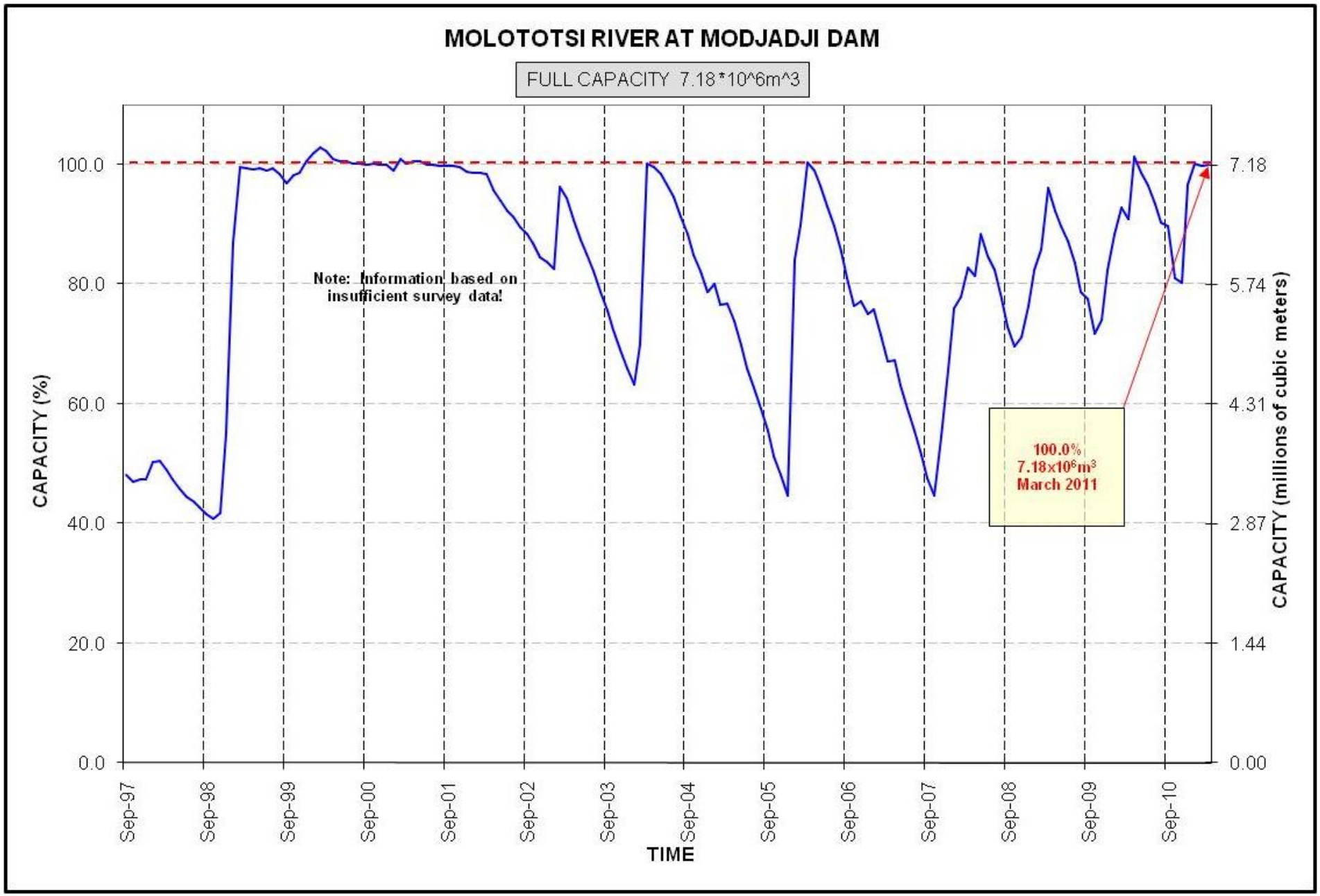

GREAT LETABA RIVER AT EBENEZER DAM
FULL CAPACITY 69.139 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (million of cubic meters)
69.14
55.31
41.48
27.65
13.83
0.00
100.5%
69.48 x10^6m^3
March 2011
Jun-59
May-61
Apr-63
Mar-65
Feb-67
Jan-69
Dec-70
Nov-72
Oct-74
Sep-76
Aug-78
Jul-80
Jun-82
May-84
Apr-86
Mar-88
Feb-90
Jan-92
Dec-93
Nov-95
Oct-97
Sep-99
Aug-01
Jul-03
Jun-05
May-07
Apr-09
Mar-11
TIME

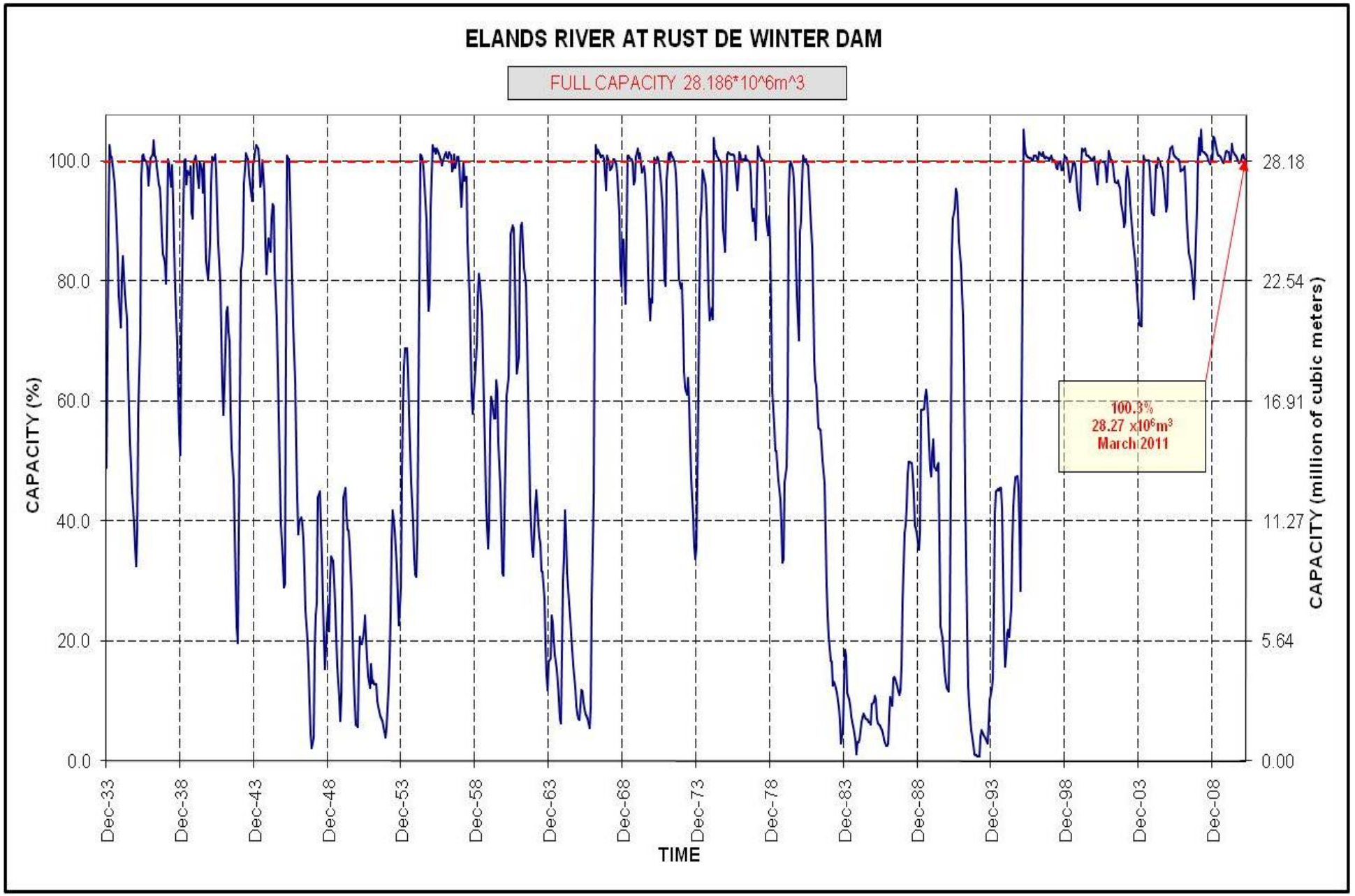

POLITSI RIVER AT MAGOEBASKLOOF DAM
FULL CAPACITY 4.840 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
4.84
3.87
2.90
1.94
0.97
0.00
CAPACITY (millions of cubic meters)
101.2%
4.9x10^6m^3
March 2011
Jun-71
Jun-76
Jun-81
Jun-86
Jun-91
Jun-96
Jun-01
Jun-06
TIME

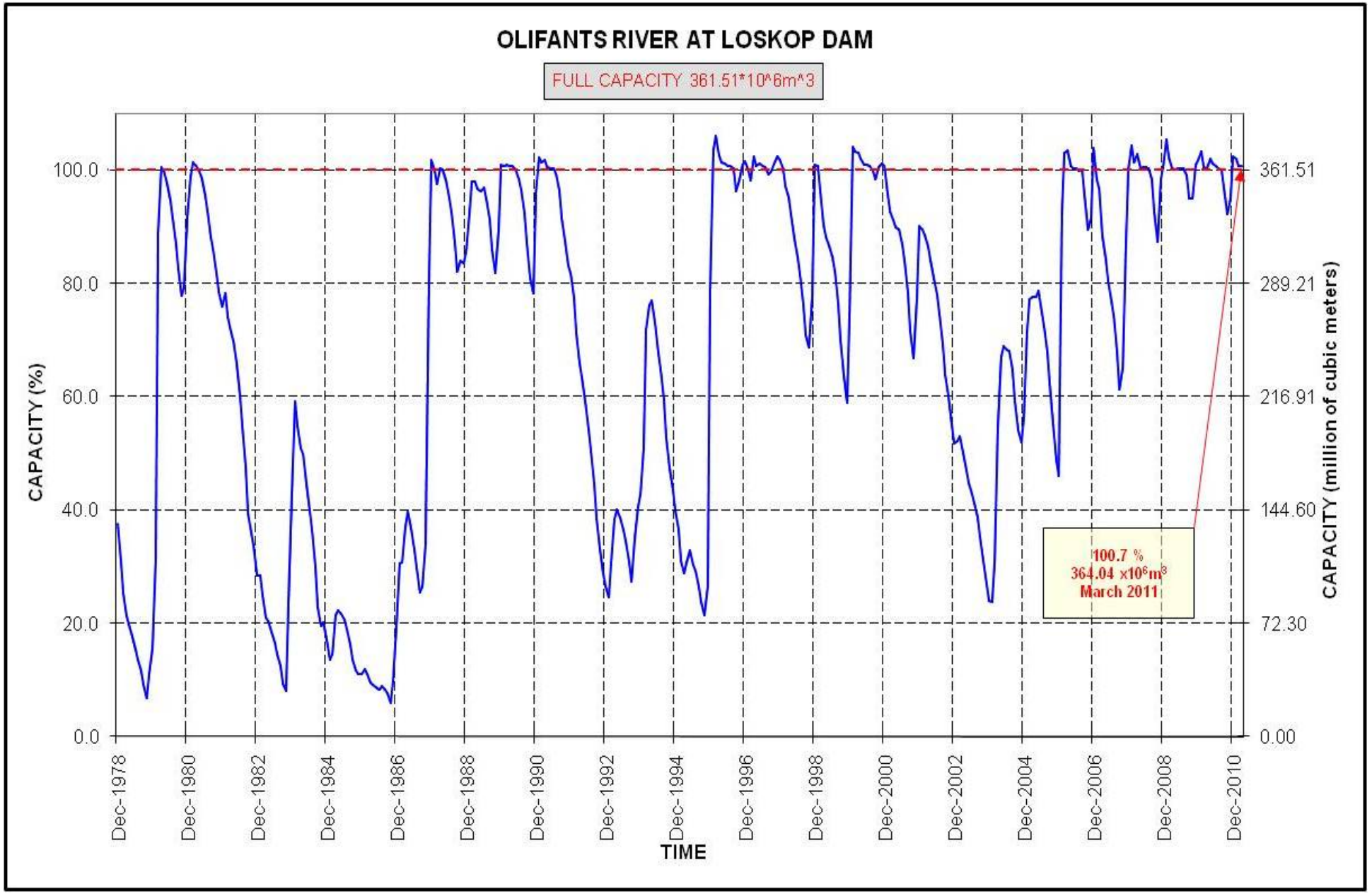

GREAT LETABA RIVER AT TZANEEN DAM
FULL CAPACITY 156.53 *10^6m^3
101.2 %
158.41 x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
156.53
125.22
93.92
62.61
31.31
0.00
Jan-77
Dec-78
Nov-80
Oct-82
Sep-84
Aug-86
Jul-88
Jun-90
May-92
Apr-94
Mar-96
Feb-98
Jan-00
Dec-01
Nov-03
Oct-05
Sep-07
Aug-09

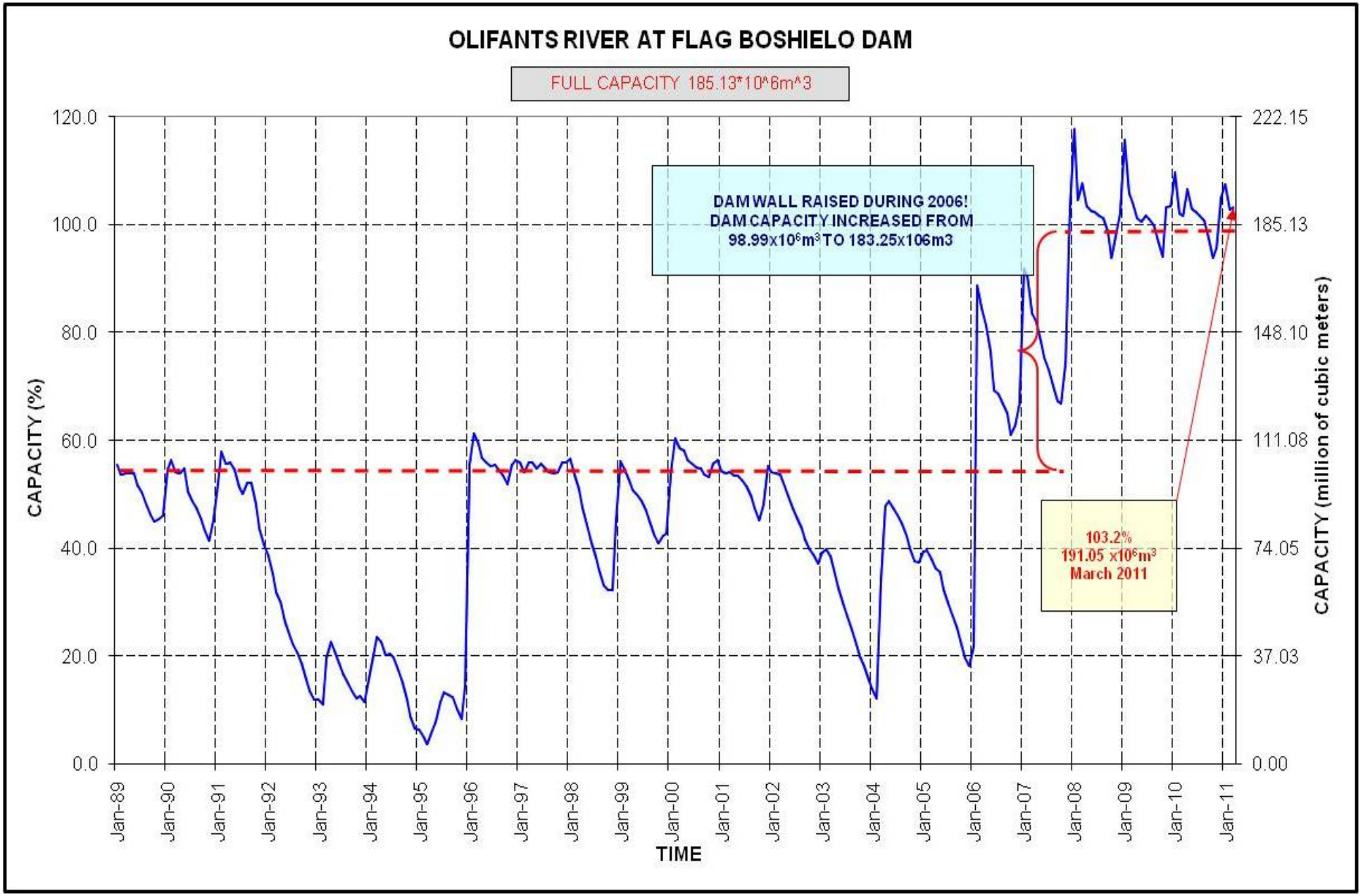

MIDDLE LETABA RIVER AT MIDDLE LETABA DAM
FULL CAPACITY 171.95 *10^6m^3
15.5%
26.65 x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.00
80.00
60.00
40.00
20.00
0.00
171.95
137.56
103.17
68.78
34.39
0.00
Mar-86
Feb-87
Jan-88
Dec-88
Nov-89
Oct-90
Sep-91
Aug-92
Jul-93
Jun-94
May-95
Apr-96
Mar-97
Feb-98
Jan-99
Dec-99
Nov-00
Oct-01
Sep-02
Aug-03
Jul-04
Jun-05
May-06
Apr-07
Mar-08
Feb-09
Jan-10
Dec-10

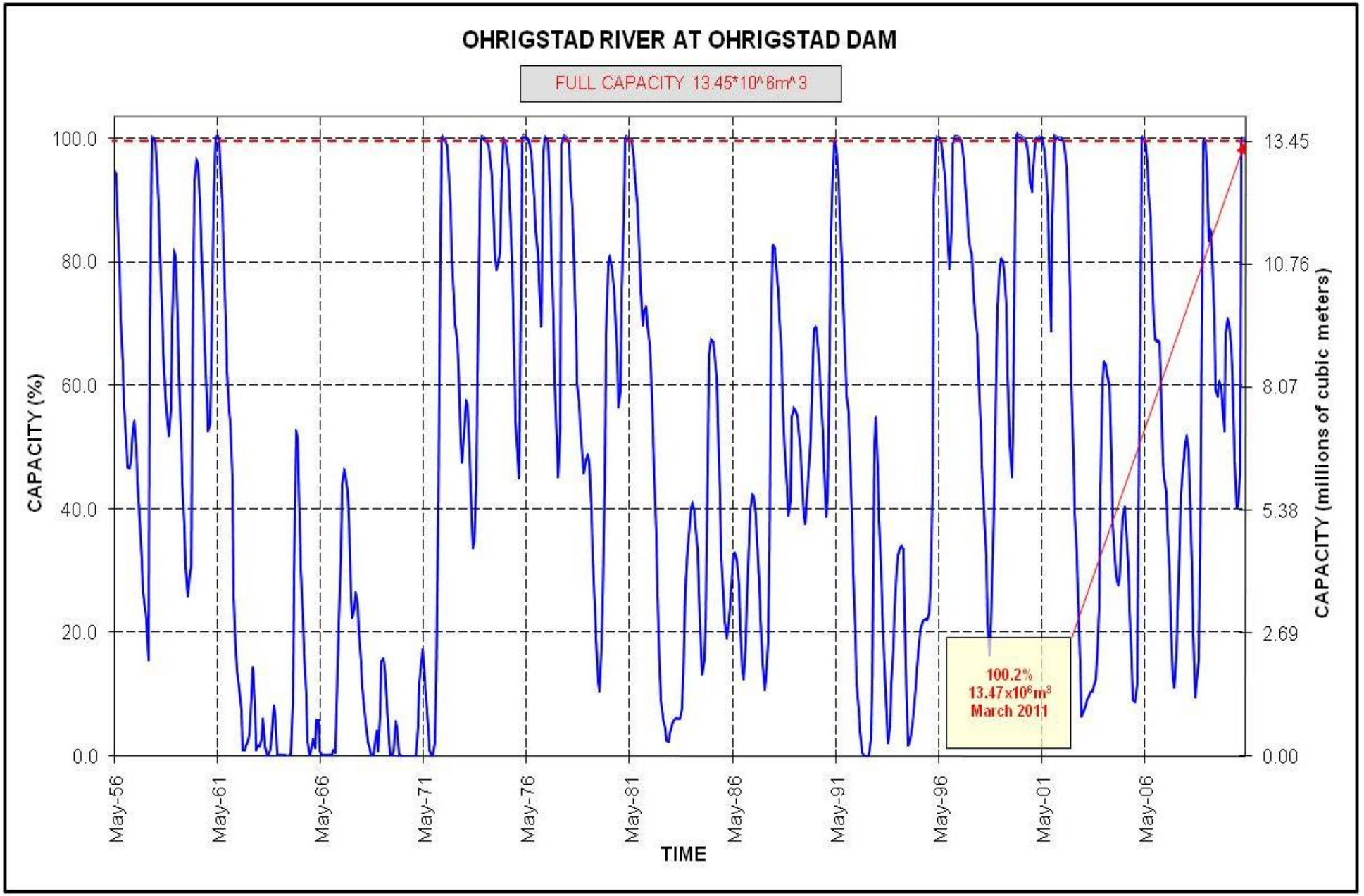

NSAMI DAM AT NSAMA RIVER
FULL CAPACITY 21.87 *10^6m^3
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
120
100
80
60
40
20
0
26.24
21.87
17.49
13.12
8.75
4.37
0.00
Jun-95
May-96
Apr-97
Mar-98
Feb-99
Jan-00
Dec-00
Nov-01
Oct-02
Sep-03
Aug-04
Jul-05
Jun-06
May-07
Apr-08
Mar-09
Feb-10
Jan-11
67.8 %
14.83 x10^6m^3
March 2011

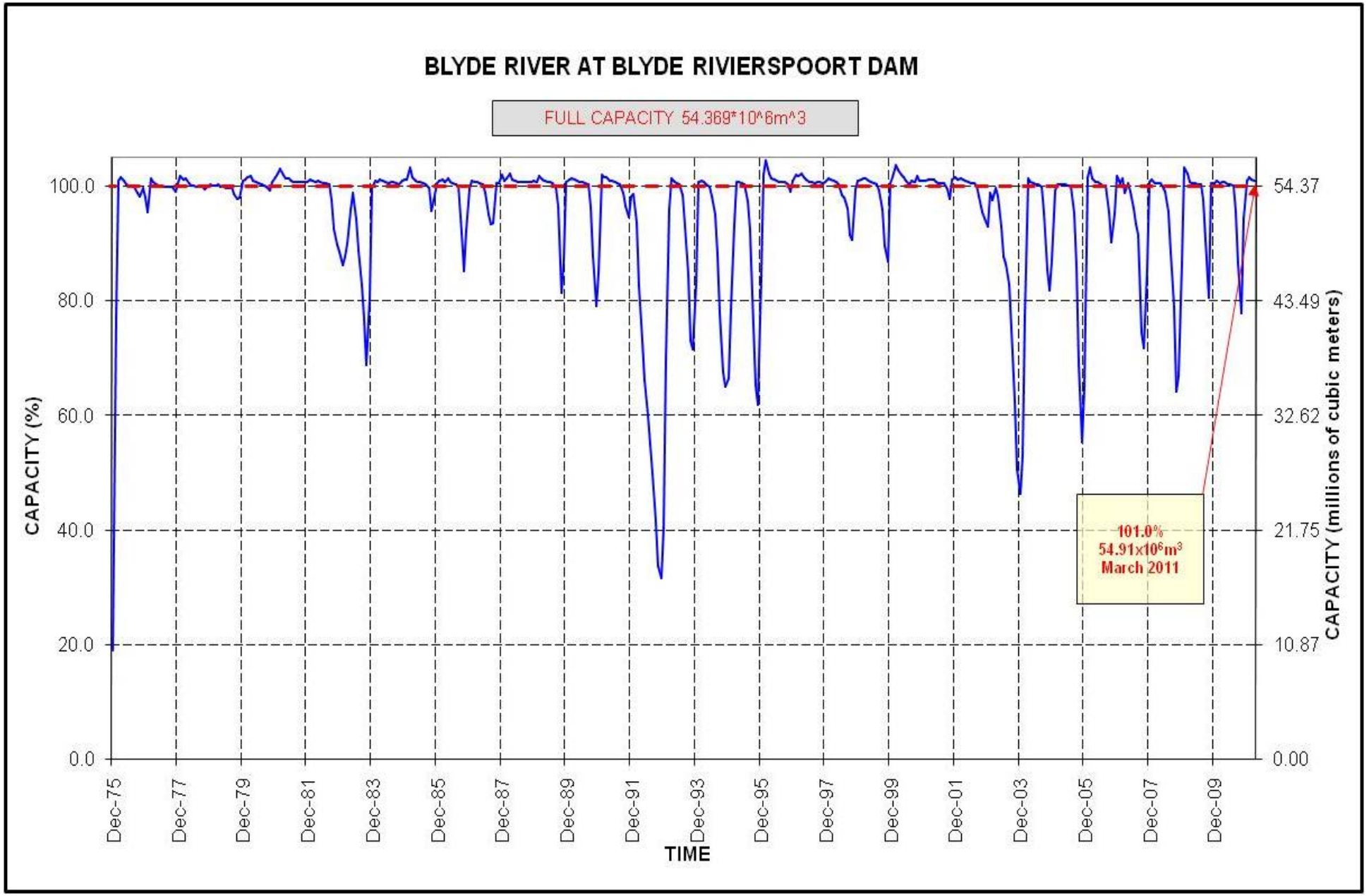

MOLOTOTSI RIVER AT MODJADJI DAM
FULL CAPACITY 7.18*10^6m^3
Note: Information based on insufficient survey data!
100.0%
7.18x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
7.18
5.74
4.31
2.87
1.44
0.00
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Sep-08
Sep-09
Sep-10

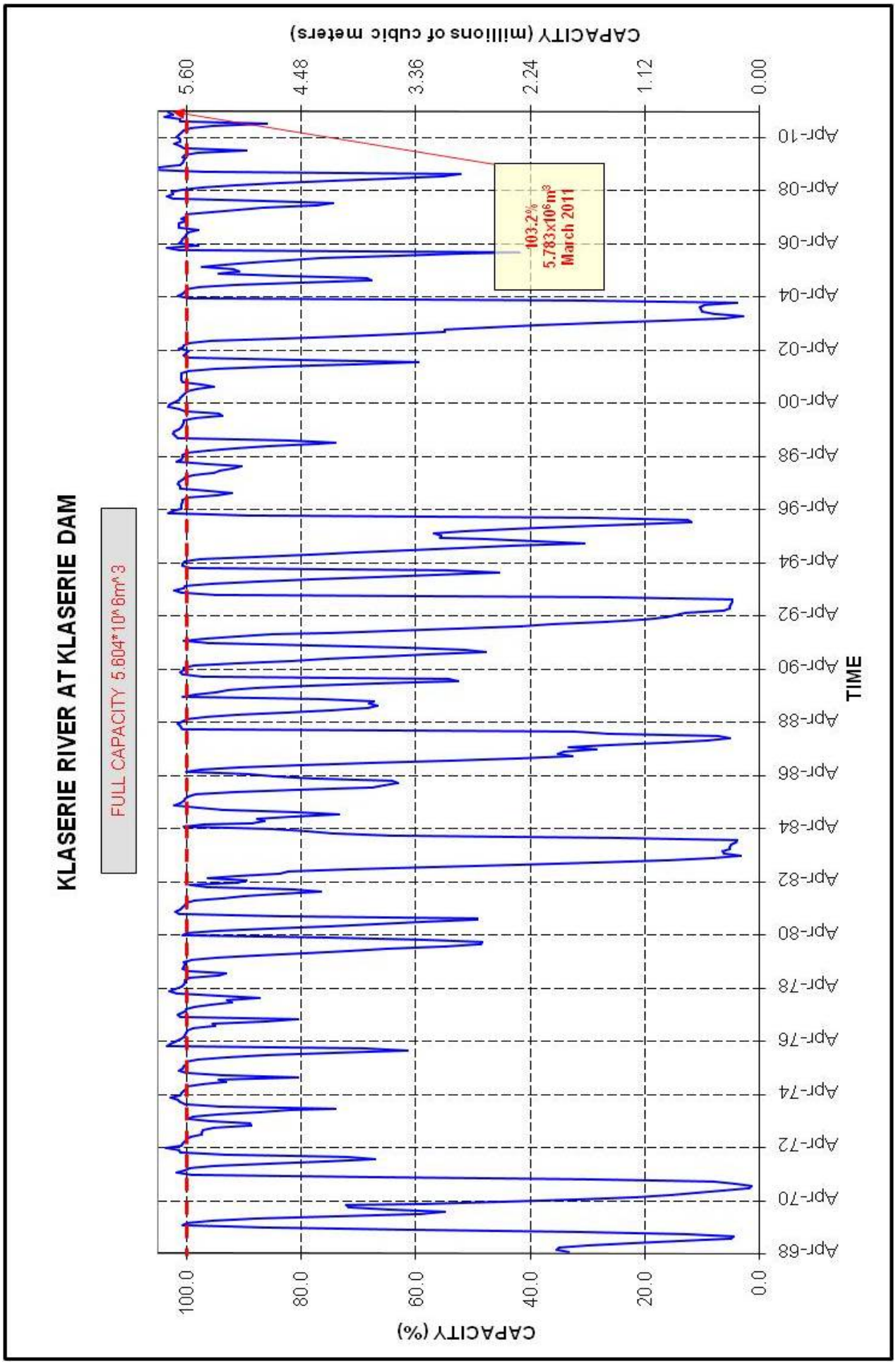

ELANDS RIVER AT RUST DE WINTER DAM
FULL CAPACITY 28.186*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
28.18
22.54
16.91
11.27
5.64
0.00
CAPACITY (million of cubic meters)
100.3%
28.27 x10^6m^3
March 2011
Dec-33
Dec-38
Dec-43
Dec-48
Dec-53
Dec-58
Dec-63
Dec-68
Dec-73
Dec-78
Dec-83
Dec-88
Dec-93
Dec-98
Dec-03
Dec-08
TIME

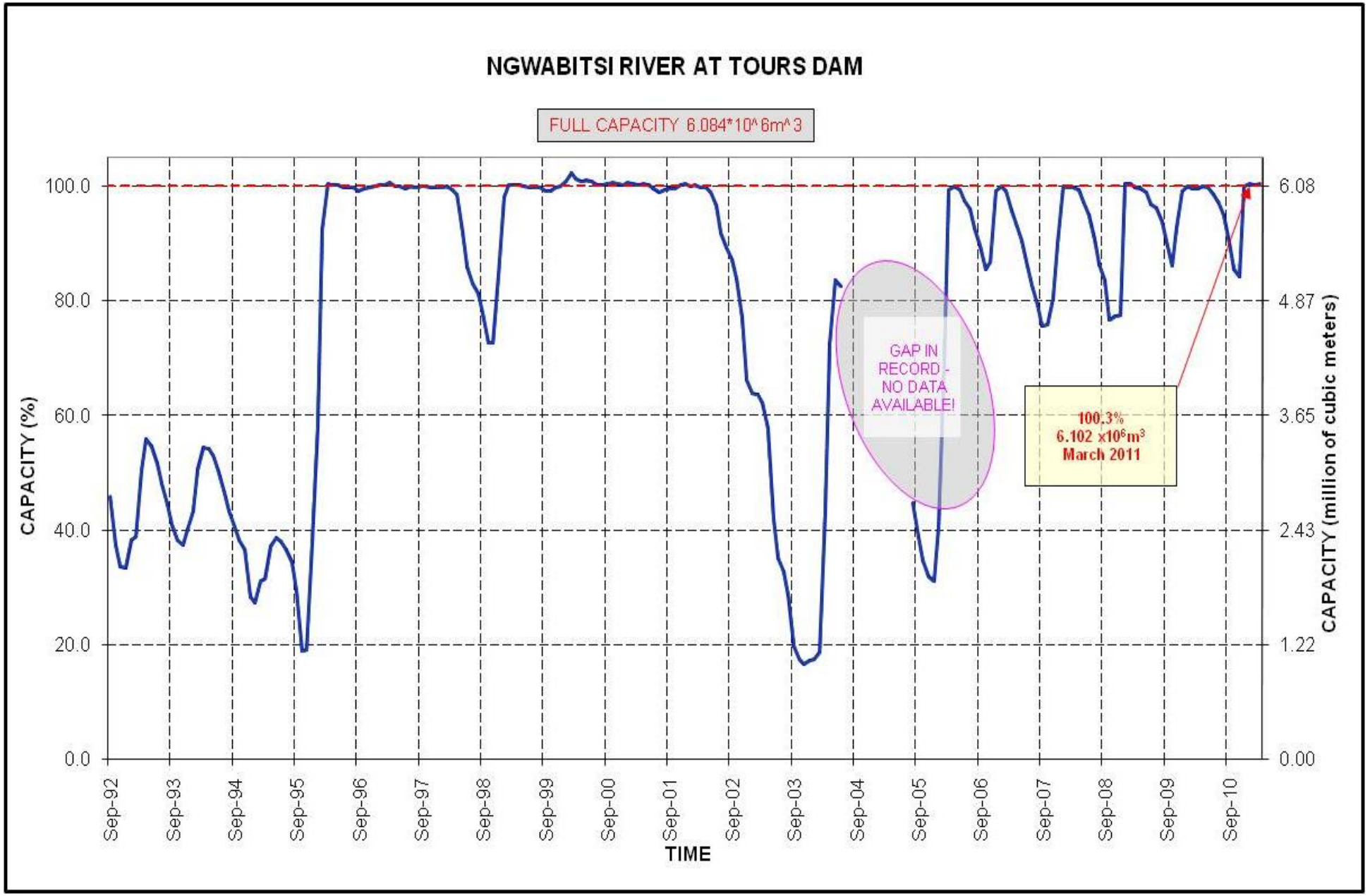

OLIFANTS RIVER AT LOSKOP DAM
FULL CAPACITY 361.51*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (million of cubic meters)
361.51
289.21
216.91
144.60
72.30
0.00
100.7 %
364.04 x10^6m^3
March 2011
Dec-1978
Dec-1980
Dec-1982
Dec-1984
Dec-1986
Dec-1988
Dec-1990
Dec-1992
Dec-1994
Dec-1996
Dec-1998
Dec-2000
Dec-2002
Dec-2004
Dec-2006
Dec-2008
Dec-2010
TIME

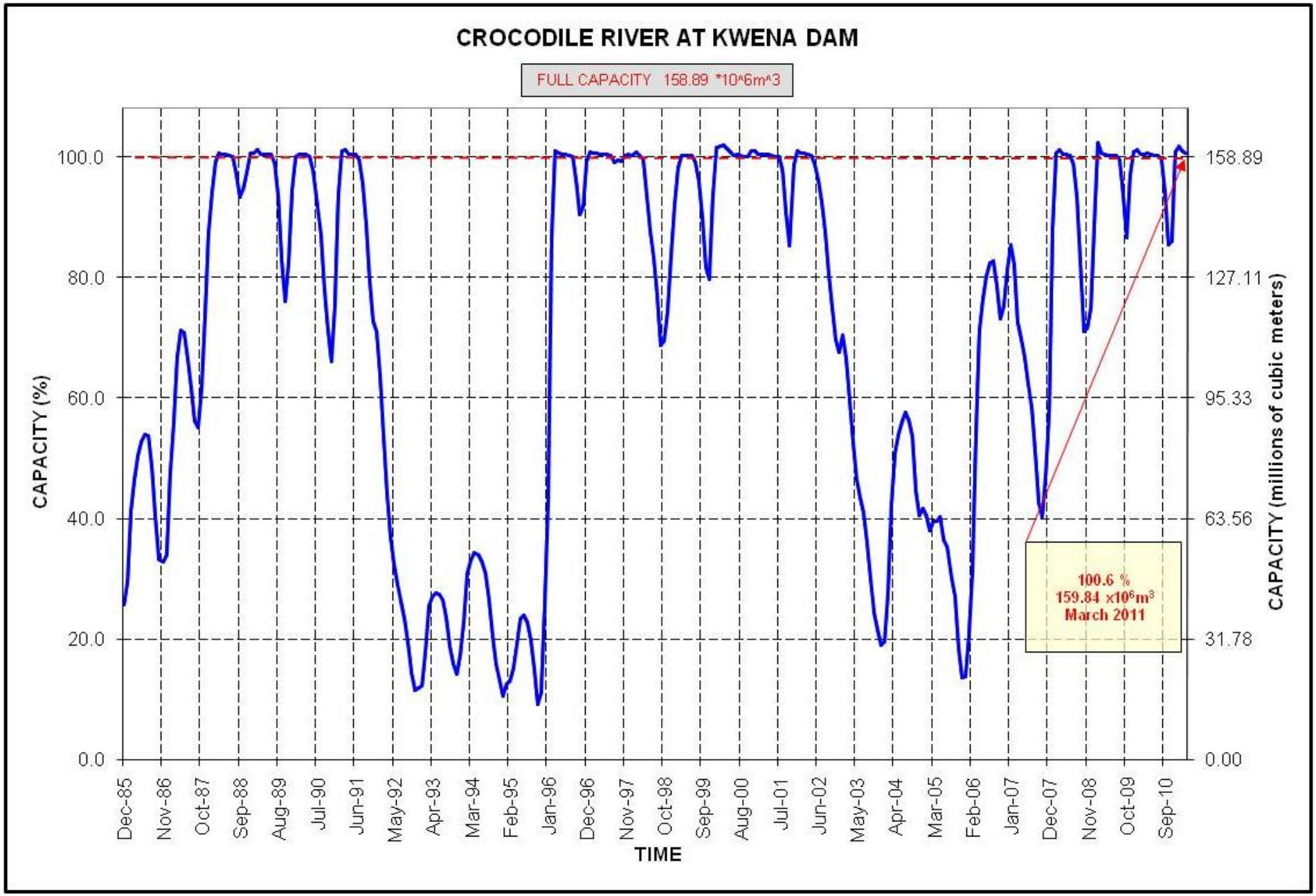

OLIFANTS RIVER AT FLAG BOSHIELO DAM
FULL CAPACITY 185.13*10^6m^3
DAM WALL RAISED DURING 2006!
DAM CAPACITY INCREASED FROM
98.99x10⁶m³ TO 183.25x106m3
103.2%
191.05 x10⁶m³
March 2011
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
120.0
100.0
80.0
60.0
40.0
20.0
0.0
222.15
185.13
148.10
111.08
74.05
37.03
0.00
Jan-89
Jan-90
Jan-91
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11

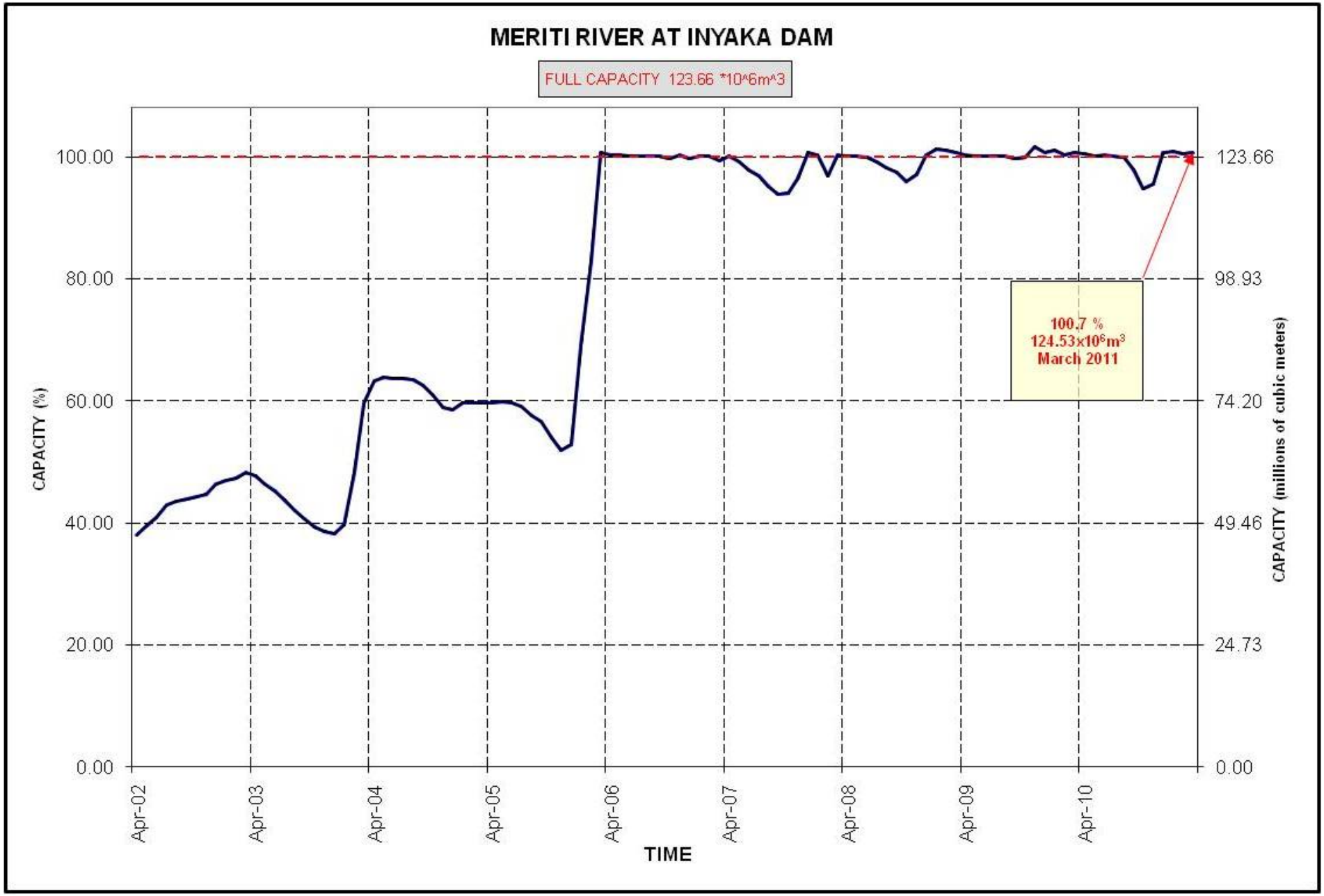

OHRIGSTAD RIVER AT OHRIGSTAD DAM
FULL CAPACITY 13.45*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (millions of cubic meters)
13.45
10.76
8.07
5.38
2.69
0.00
May-56
May-61
May-66
May-71
May-76
May-81
May-86
May-91
May-96
May-01
May-06
TIME
100.2%
13.47x10^6m^3
March 2011


BLYDE RIVER AT BLYDE RIVIERSPOORT DAM
FULL CAPACITY 54.369*10^6m^3
CAPACITY (%)
CAPACITY (millions of cubic meters)
100.0
80.0
60.0
40.0
20.0
0.0
54.37
43.49
32.62
21.75
10.87
0.00
101.0%
54.91x10^6m^3
March 2011
Dec-75
Dec-77
Dec-79
Dec-81
Dec-83
Dec-85
Dec-87
Dec-89
Dec-91
Dec-93
Dec-95
Dec-97
Dec-99
Dec-01
Dec-03
Dec-05
Dec-07
Dec-09
TIME


KLASERIE RIVER AT KLASERIE DAM
FULL CAPACITY 5.604*10^6m^3
103.2%
5.783x10^6m^3
March 2011
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
5.60
4.48
3.36
2.24
1.12
0.00
Apr-68
Apr-70
Apr-72
Apr-74
Apr-76
Apr-78
Apr-80
Apr-82
Apr-84
Apr-86
Apr-88
Apr-90
Apr-92
Apr-94
Apr-96
Apr-98
Apr-00
Apr-02
Apr-04
Apr-06
Apr-08
Apr-10


NGWABITSI RIVER AT TOURS DAM
FULL CAPACITY 6.084*10^6m^3
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
6.08
4.87
3.65
2.43
1.22
0.00
Sep-92
Sep-93
Sep-94
Sep-95
Sep-96
Sep-97
Sep-98
Sep-99
Sep-00
Sep-01
Sep-02
Sep-03
Sep-04
Sep-05
Sep-06
Sep-07
Sep-08
Sep-09
Sep-10
GAP IN RECORD - NO DATA AVAILABLE!
100.3%
6.102 x10^6m^3
March 2011


CROCODILE RIVER AT KWENA DAM
FULL CAPACITY 158.89 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
158.89
127.11
95.33
63.56
31.78
0.00
CAPACITY (millions of cubic meters)
100.6 %
159.84 x10^6m^3
March 2011
Dec-85
Nov-86
Oct-87
Sep-88
Aug-89
Jul-90
Jun-91
May-92
Apr-93
Mar-94
Feb-95
Jan-96
Dec-96
Nov-97
Oct-98
Sep-99
Aug-00
Jul-01
Jun-02
May-03
Apr-04
Mar-05
Feb-06
Jan-07
Dec-07
Nov-08
Oct-09
Sep-10
TIME


MERITI RIVER AT INYAKA DAM
FULL CAPACITY 123.66 *10^6m^3
100.00
80.00
60.00
40.00
20.00
0.00
CAPACITY (%)
123.66
98.93
74.20
49.46
24.73
0.00
CAPACITY (millions of cubic meters)
100.7 %
124.53x10^6m^3
March 2011
Apr-02
Apr-03
Apr-04
Apr-05
Apr-06
Apr-07
Apr-08
Apr-09
Apr-10
TIME