water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

WATER RESOURCE INFORMATION MANAGEMENT
LIMPOPO PROVINCE

GH4330

STATUS ON MONITORING & SURFACE WATER LEVEL TRENDS
Up to 30 September 2017

Tzaneen Dam: Photo courtesy of Willie and Mariette Botha

D Viljoen
21 December 2017

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1. EXECUTIVE SUMMARY

The information presented in this report is based on the status of all the major dams in the province up to 25 September 2017.
Currently 82% of the dams in Limpopo Province have more water than the corresponding period last year and Only Middle Letaba Dam is below 40%, currently at 19%. The average storage capacity for the province is 71.5% comparing to 47.8% the previous year.

The storage volume of the dams in the Limpopo WMA is 1044.5 million cubic meters (80.5%) and is 298.4 million cubic meters more than the corresponding period last year (57.5%).

The storage volume of the dams in the Olifants River WMA is 1263.1 million cubic meters (68%) and is 453.2 million cubic meters more than the corresponding period last year (43.6%).

The challenge in both WMAs is that there are smaller dams, which supply water to communities that still need to be monitored. Resources need to be put in place before monitoring of these dams can be considered. Water level monitoring infrastructure at these dams are non existing or totally dilapidated, very little design, as built and survey information exists. This need to be addressed before any form of water level monitoring can be considered. The Thapane and Sheshego Dams are examples of this.

Attached find the graph indicating Seasonal rainfall page 10.

Available water resources at Middle Letaba Dam will have to be managed with great care and restrictions will have to be strictly adhered to as part of precaution measures**.**

The SAWS indicated the following:

- No relief from the drought for the Western Cape as the winter rainfall season has drawn to an end.
- Although some summer rainfall areas has started receiving thunderstorms, below normal rainfall is expected due to the negative IOD in the SW Indian ocean. There is however, a great deal of uncertainty with that forecast. (as explained in previous slide)
- Forecasts indicate enhanced likelihood for wetter conditions during early summer over central and eastern parts, in agreement with earlier forecasts.

2. MONITORING NETWORK

The hydrological monitoring network for the Limpopo Province consists of the following:

81 river flow gauging stations (excluding canals and pipelines)
22 dam gauging stations
16 evaporation stations

3. OVERVIEW

For information purposes graphs depicting seasonal rainfall (July 2017 to September 2017) and surface water storage trends for Limpopo Province (October 1978 to September 2017), are attached, pages 10 and 11.

For information purposes a table indicating the comparison of water storage percentage for the different provinces is attached on page 12.

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 WMA consists of secondary drainage areas A1 to A9, of which A4 to A9 were addressed in this report.

4.1 A4 Drainage Area (Matlabas, Mokolo Rivers)

A graph of the Mokolo Dam (A4R001) is attached as no other dam exists in the A4 hydrological monitoring network.

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)

Graphs of the Doorndraai Dam (A6R001) and Glen Alpine Dam (A6R002) are attached as no other dams exist in the A6 hydrological monitoring network.
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!
Hout River Dam is the only dam equipped with gauge plates. Data capturing and real-time equipment has been installed at Hout River Dam. The dam is currently on 43.8% (2.9 million m^3)

4.5 A8 Drainage Area (Nwanedzi and Nzhelele Rivers)

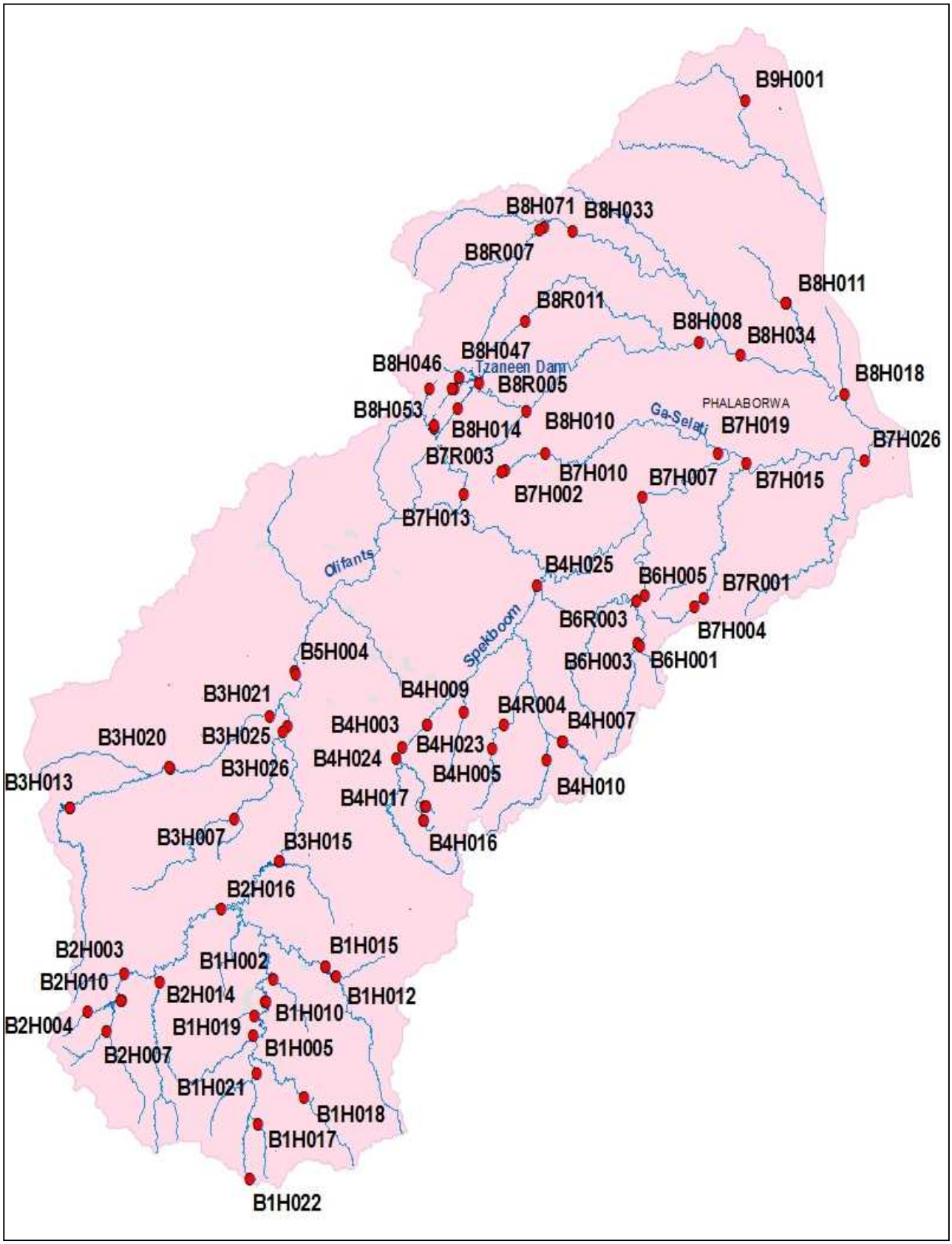
Graphs for the Nzhelele Dam (A8R001), Luphephe (A8R002), Nwanedzi (A8R003) and Mutshedzi (A8R004) Dams are attached.

4.6 A9 Drainage Area (Mutale, Luvuvhu Rivers)

Graphs for the Albasini Dam (A9R001), Vondo Dam (A9R002) and Nandoni (A9R004) Dams are attached.

5. OLIFANTS WATER MANAGEMENT AREA

The WMA consists of secondary drainage areas B1 to B9, of which monitoring sites in the B3 to B5 and B7 to B9 were addressed.



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

For information as well as operational matters a graph of Rust de Winter Dam (B3R001) has been included.

5.2 B4 Drainage Area (Steelpoort River)
For information as well as operational matters a graph of De Hoop Dam (B4R007) has been included.

5.3 B5 Drainage Area (Olifants River)
For information as well as operational matters the graph of Flag Boshielo Dam (B5R002) has been included in this report.

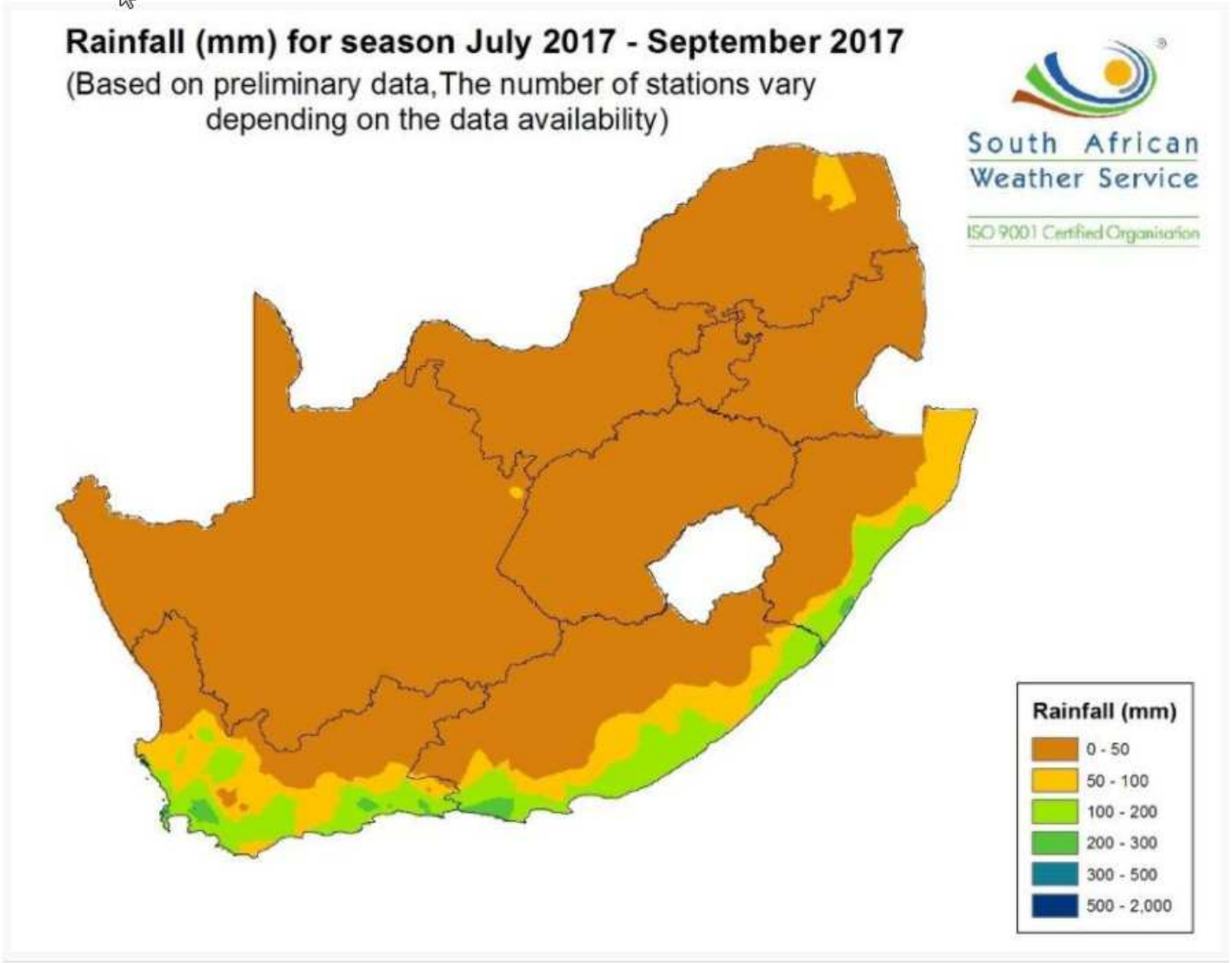
5.4 B7 Drainage Area (Klaserie and Olifants Rivers)
For information as well as operational matters the graphs of Klaserie Dam (B7R001) and Tours Dam (B7R003) have been included in this report.

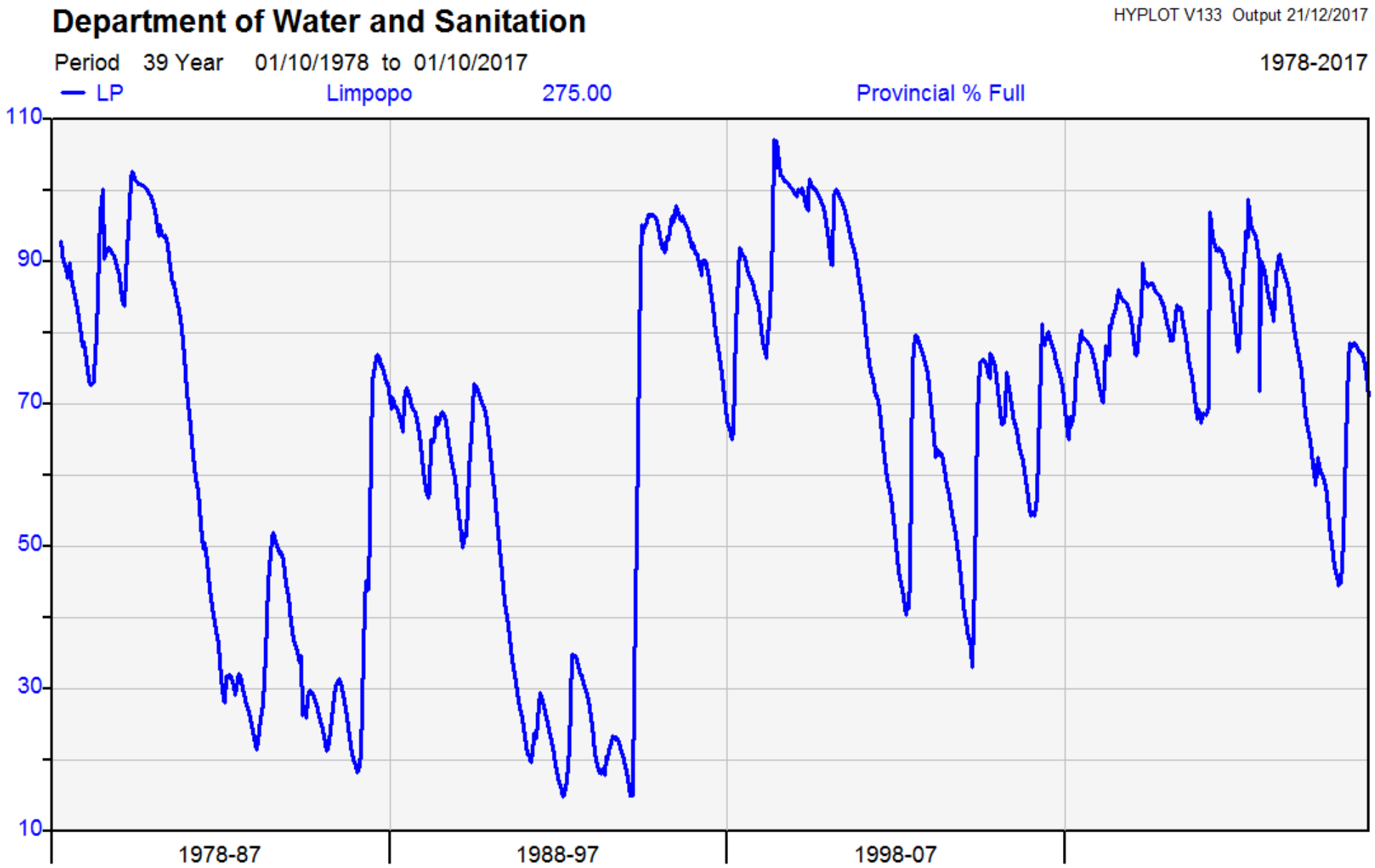
5.5 B8 Drainage Area (Great, Middle and Klein Letaba Rivers)
Graphs for the Ebenezer Dam (B8R001), Magoebaskloof Dam (B8R003), Tzaneen Dam (B8R005), Middle-Letaba Dam (B8R007), Nsami Dam (B8R009) and Modjadji Dam (B8R011) are attached.

5.6 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!

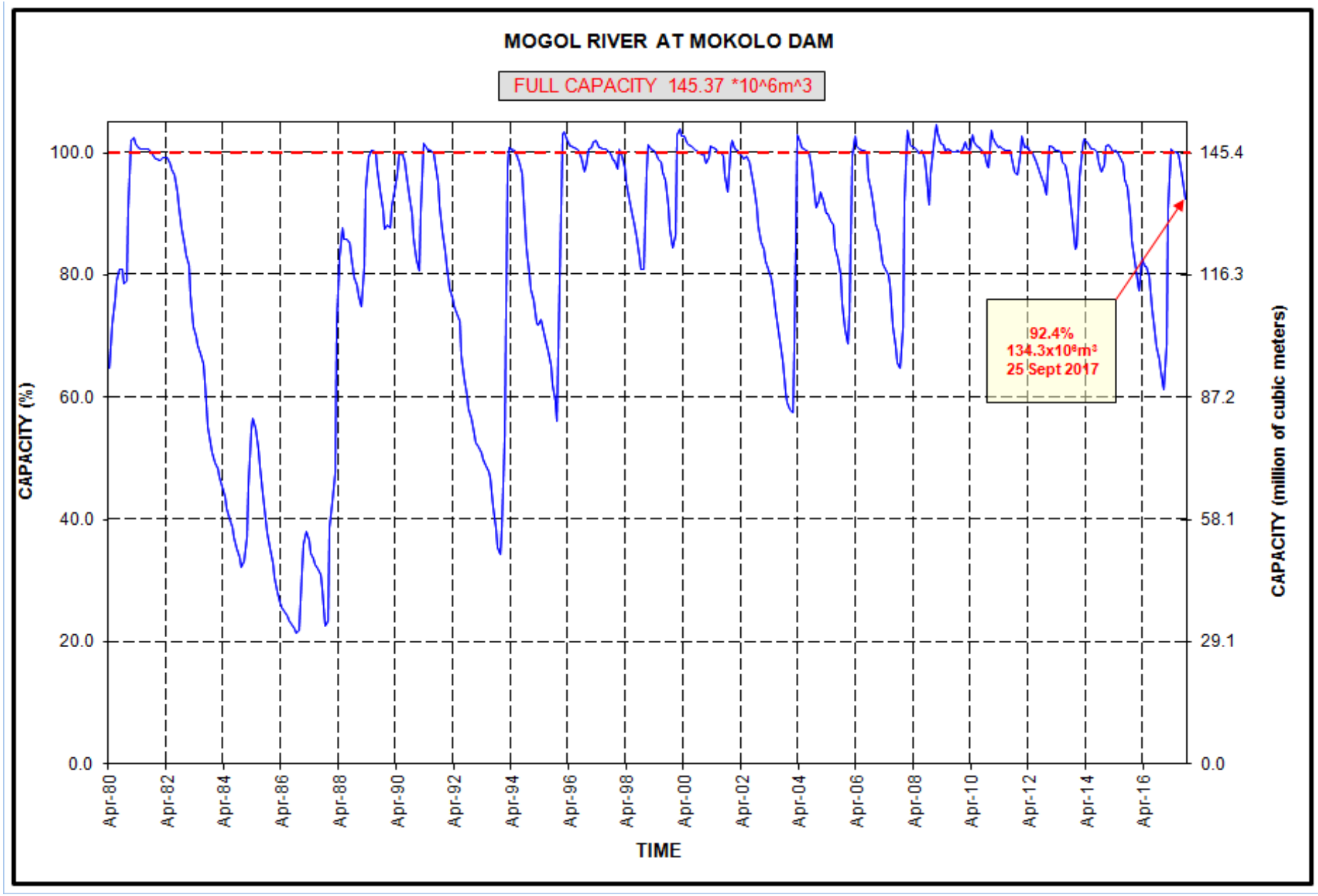
Historical Rain Maps

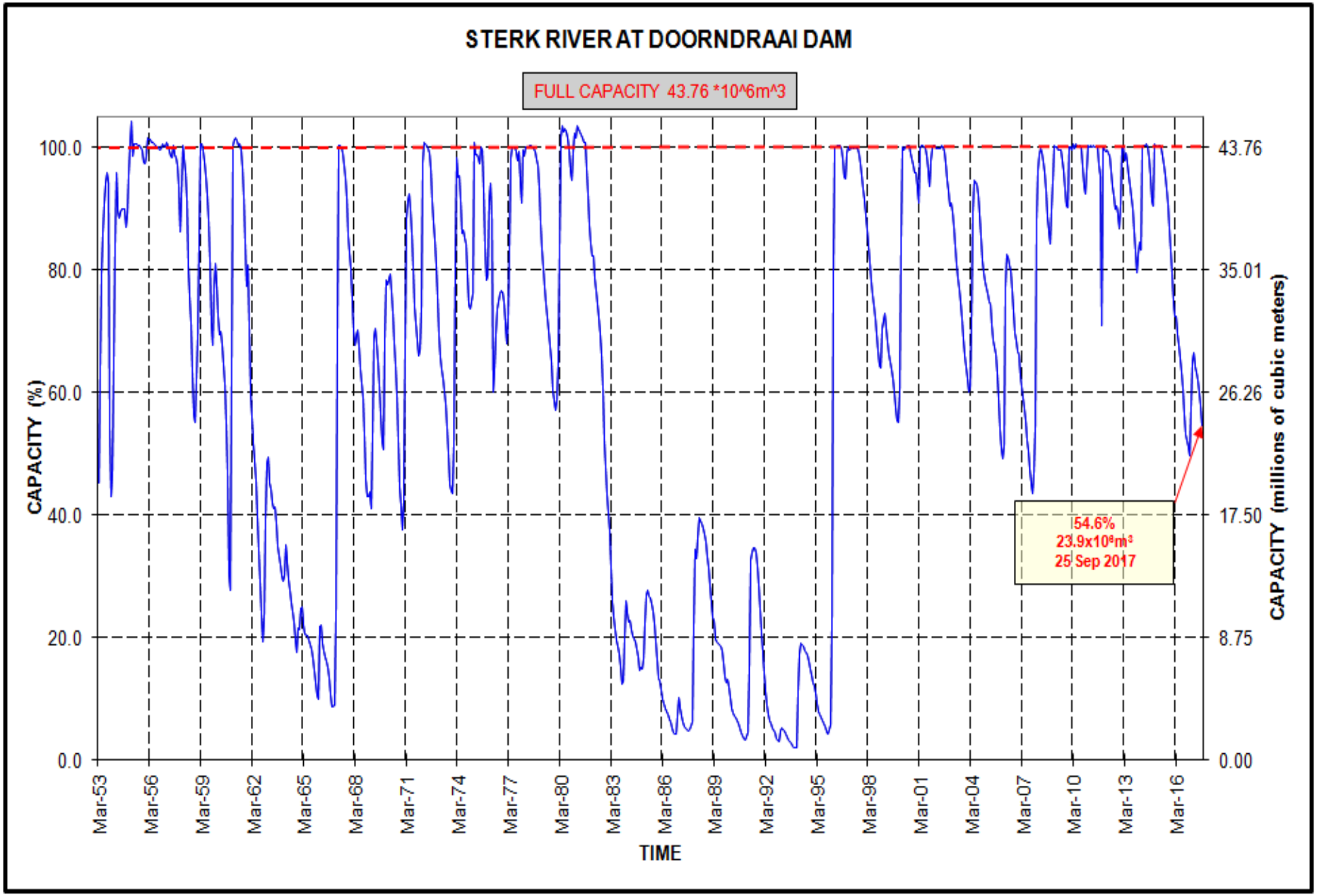
September | 2017 | Mm | Seasonal

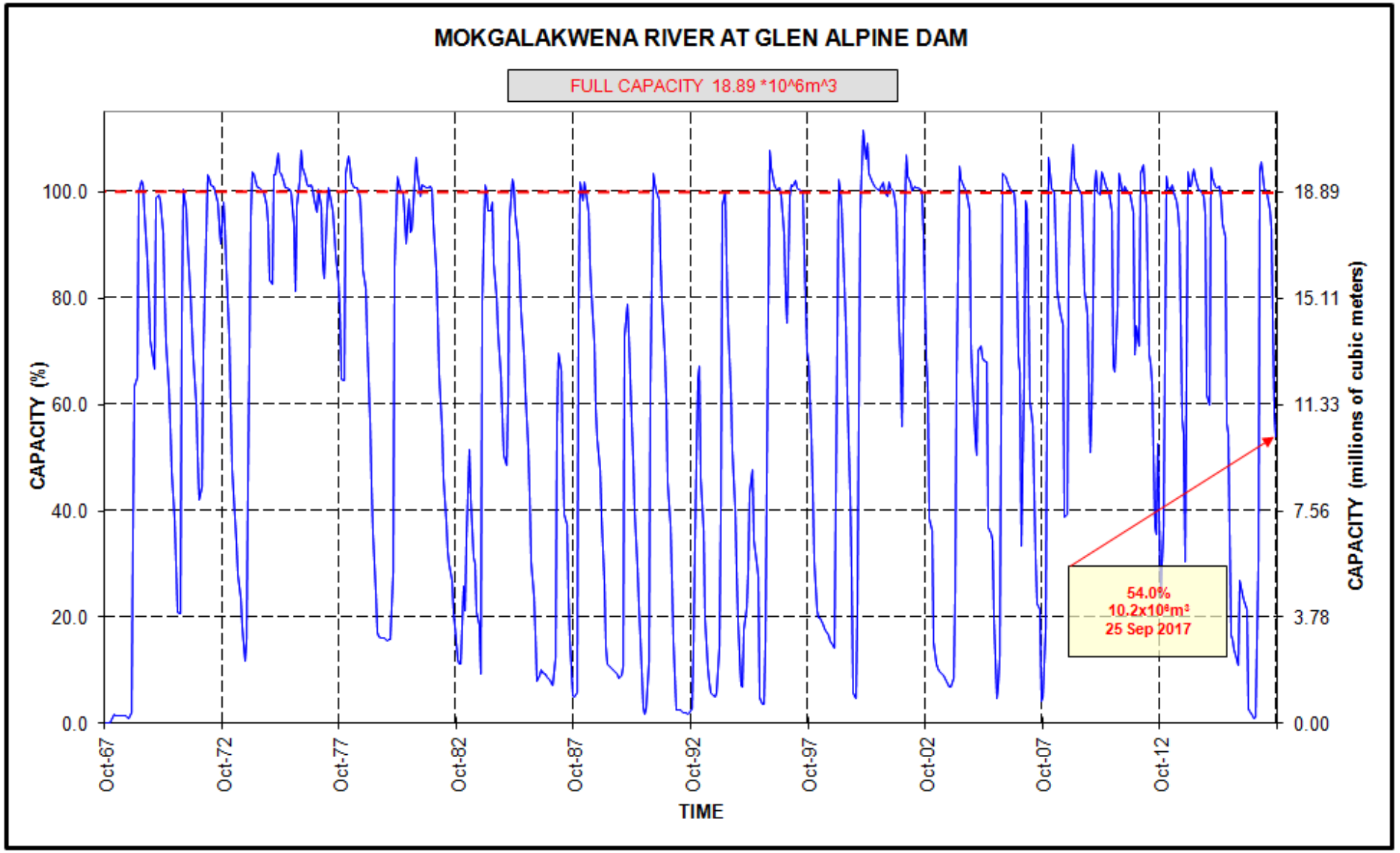


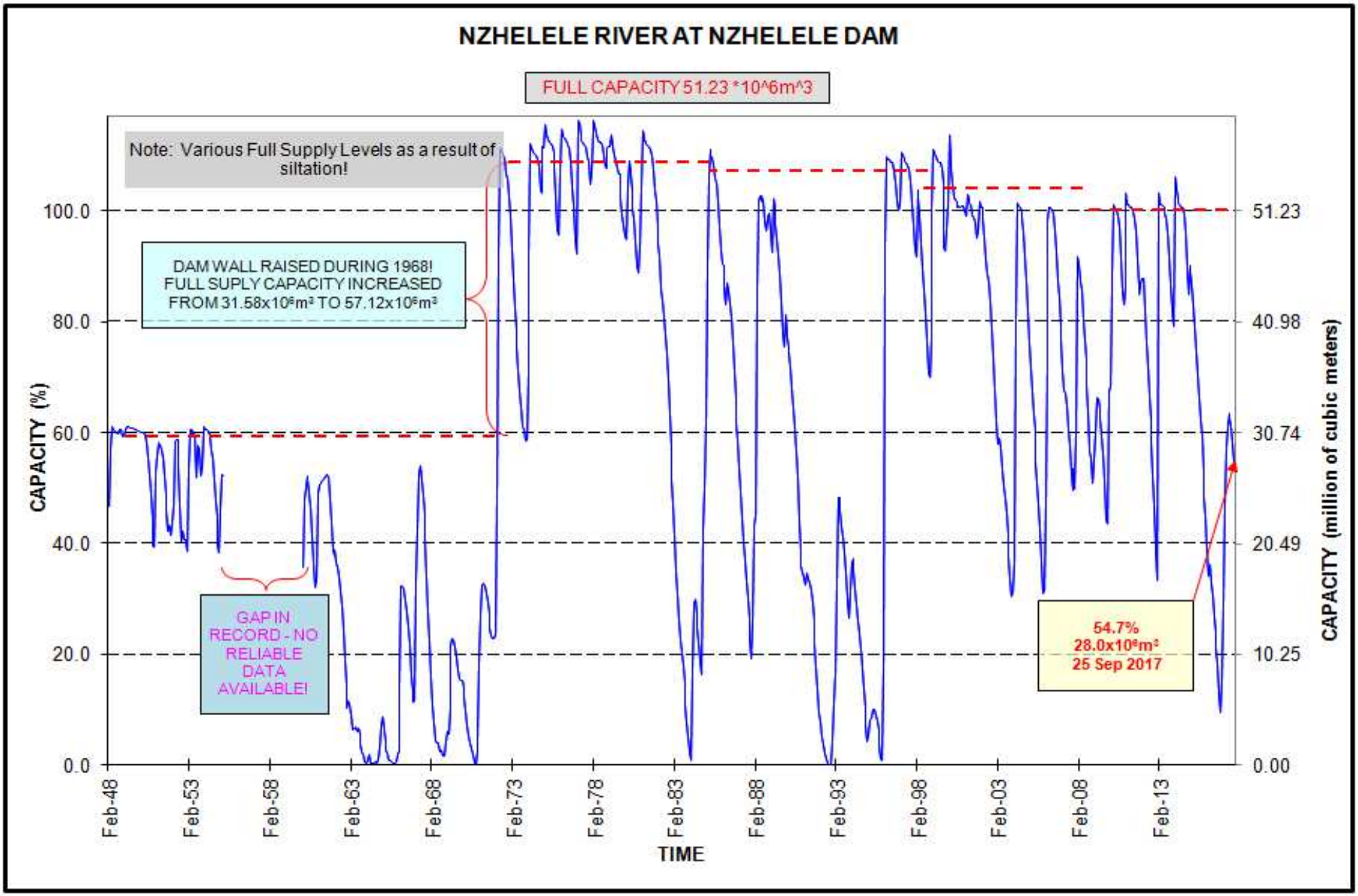

Department of Water and Sanitation
HYPLOT V133 Output 21/12/2017
Period 39 Year 01/10/1978 to 01/10/2017
1978-2017
LP
Limpopo
275.00
Provincial % Full
110
90
70
50
30
10
1978-87
1988-97
1998-07

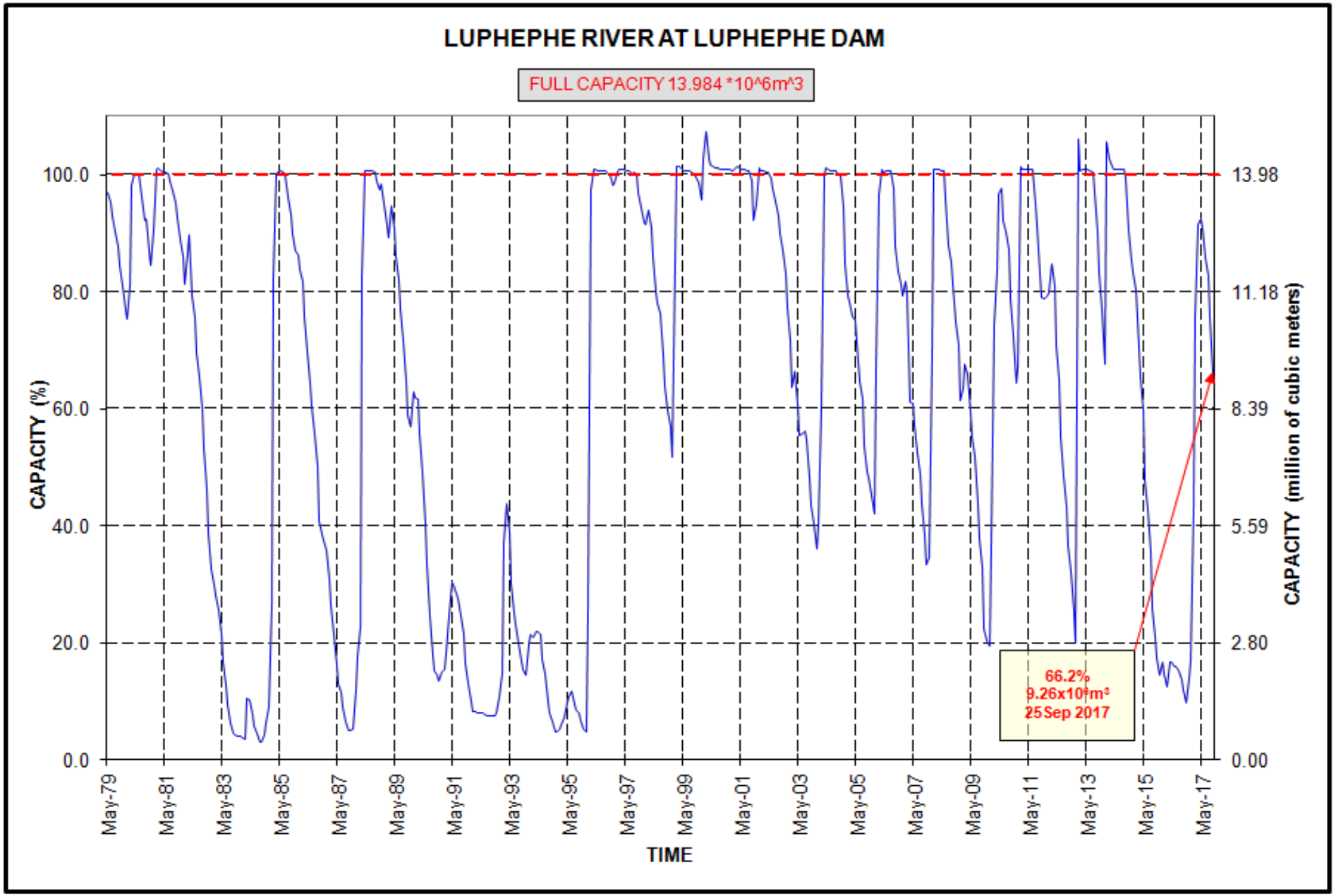
Summary Provinces	Full Supply Capacity 10^6M^3	Water in Storage 10^6M^3	Last Year %Full	Last Week %Full	This Week 25/09/2017 %Full
EC Eastern Cape	1832.4	1016.4	64.7	55.6	55.5
FS Free State	15968.0	12035.1	53.6	76.4	75.4
G Gauteng	114.8	99.3	80.9	86.7	86.5
KN Kwazulu-Natal	4782.7	2380.2	42.2	50.3	49.8
L Lesotho	2362.6	877.3	39.4	38.3	37.1
LP Limpopo	1522.3	1088.6	47.9	72.1	71.5
M Mpumalanga	2538.8	1808.8	50.8	72.7	71.2
NC Northern Cape	146.3	128.5	62.7	85.6	87.8
NW North West	881.4	703.8	60.4	80.8	79.8
S Swaziland	333.8	214.1	18.0	66.6	64.2
WCo Western Cape - Other rainfall	269.5	55.5	41.6	20.3	20.6
WCw Western Cape - Winter rainfall	1597.5	614.9	65.6	38.7	38.5
WC Western Cape - Total	1867	670.4	62.1	36.0	35.9
GRAND TOTAL	32350.1	21022.6	51.4	65.9	65.0

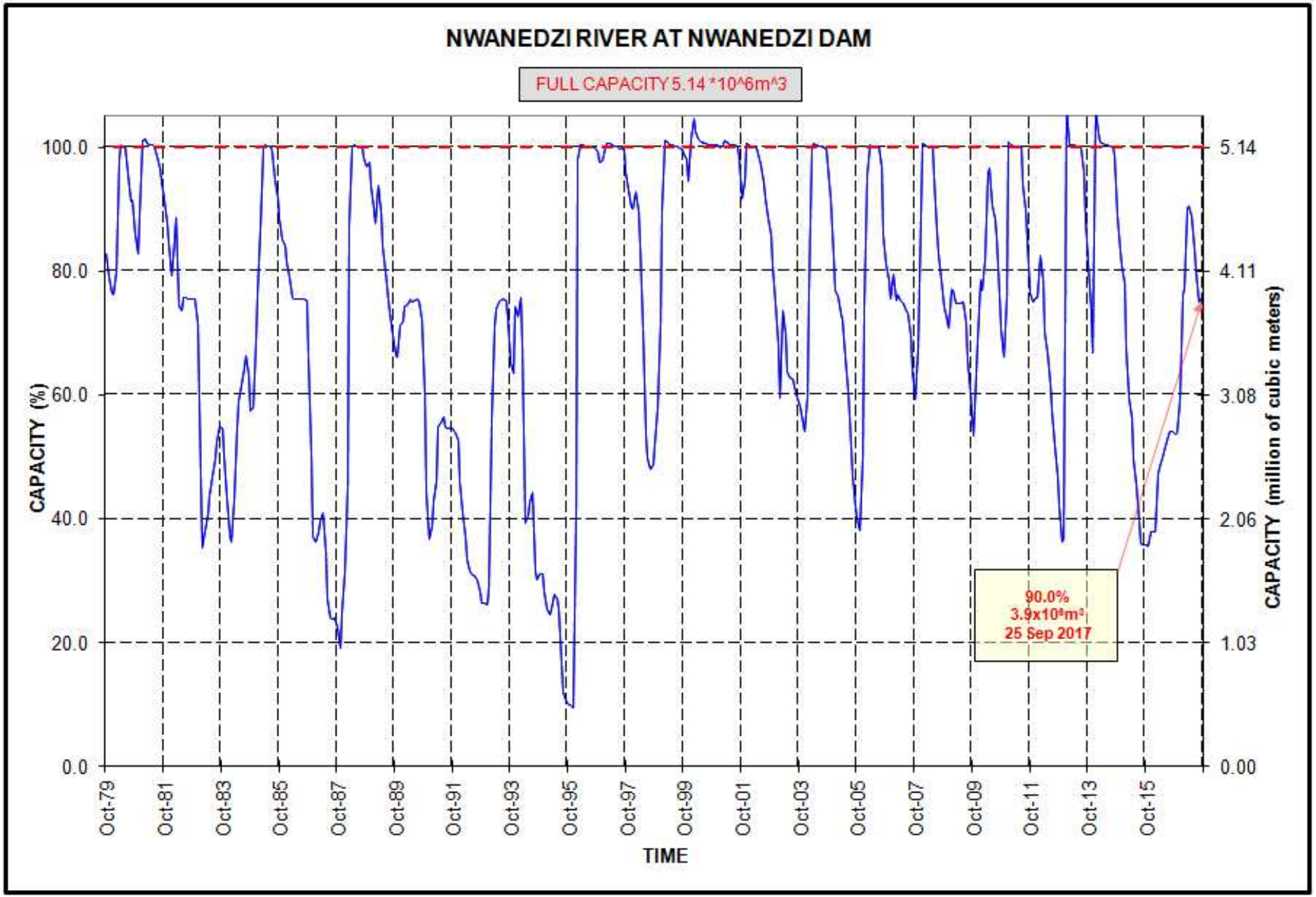

MOGOL RIVER AT MOKOLO DAM
FULL CAPACITY 145.37 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
145.4
116.3
87.2
58.1
29.1
0.0
CAPACITY (million of cubic meters)
92.4%
134.3x10⁶m³
25 Sept 2017
Apr-80
Apr-82
Apr-84
Apr-86
Apr-88
Apr-90
Apr-92
Apr-94
Apr-96
Apr-98
Apr-00
Apr-02
Apr-04
Apr-06
Apr-08
Apr-10
Apr-12
Apr-14
Apr-16
TIME

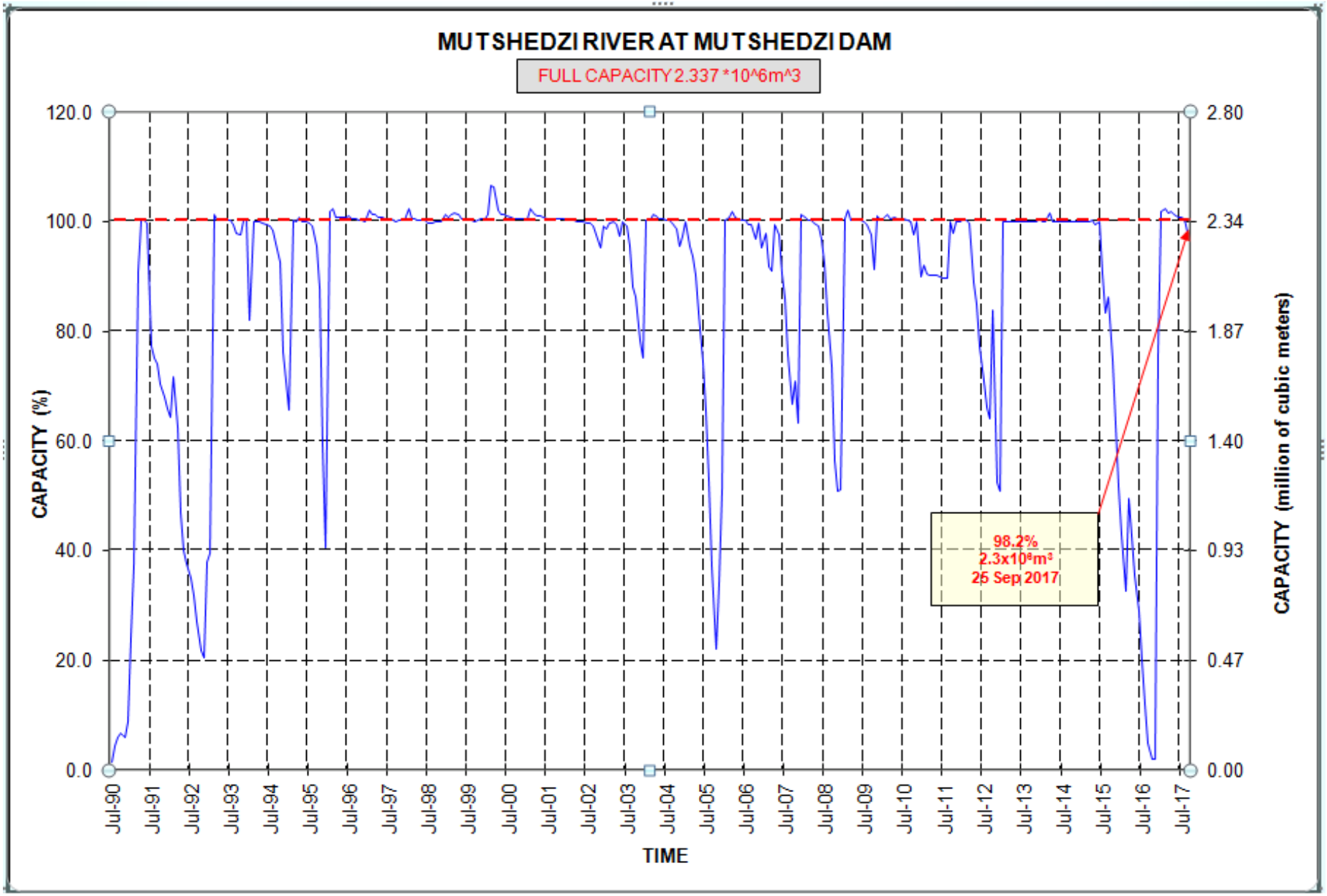

STERK RIVER AT DOORNDRAAI DAM
FULL CAPACITY 43.76 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
43.76
35.01
26.26
17.50
8.75
0.00
CAPACITY (millions of cubic meters)
54.6%
23.9x10⁶m³
25 Sep 2017
Mar-53
Mar-56
Mar-59
Mar-62
Mar-65
Mar-68
Mar-71
Mar-74
Mar-77
Mar-80
Mar-83
Mar-86
Mar-89
Mar-92
Mar-95
Mar-98
Mar-01
Mar-04
Mar-07
Mar-10
Mar-13
Mar-16
TIME

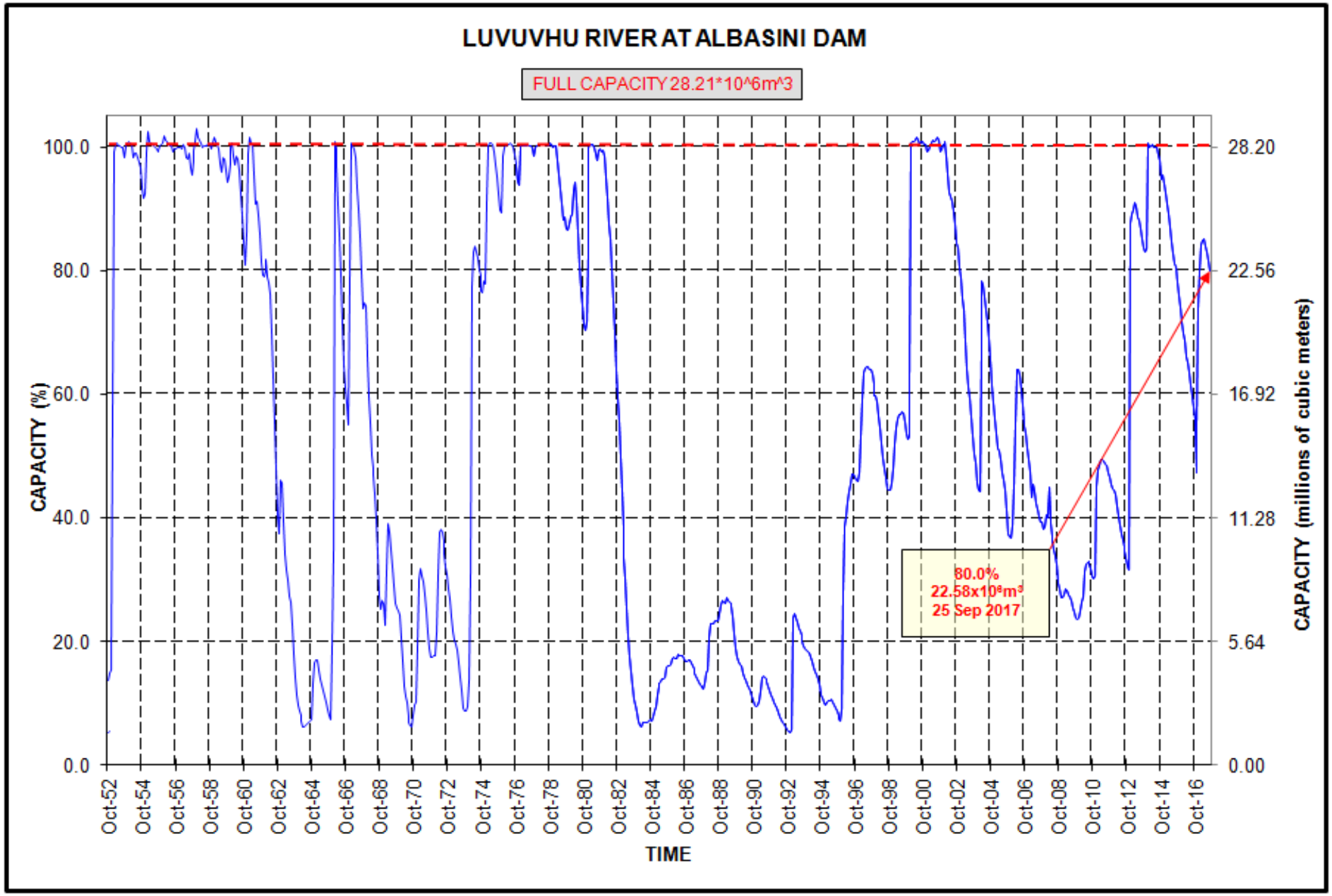

MOKGALAKWENA RIVER AT GLEN ALPINE DAM
FULL CAPACITY 18.89 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
18.89
15.11
11.33
7.56
3.78
0.00
CAPACITY (millions of cubic meters)
Oct-67
Oct-72
Oct-77
Oct-82
Oct-87
Oct-92
Oct-97
Oct-02
Oct-07
Oct-12
TIME
54.0%
10.2x10⁸m³
25 Sep 2017

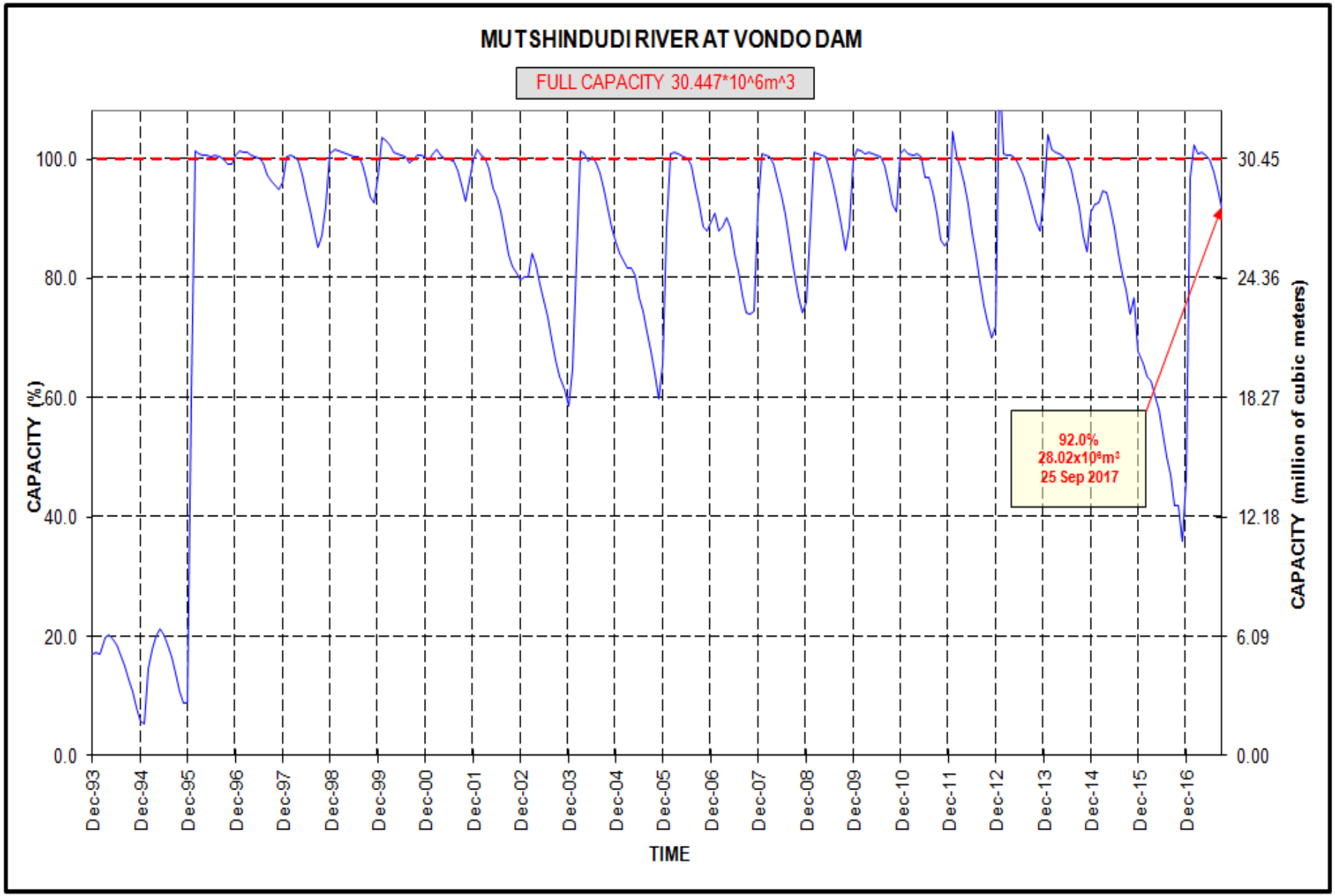

NZHELELE RIVER AT NZHELELE DAM
FULL CAPACITY 51.23 *10^6m^3
Note: Various Full Supply Levels as a result of siltation!
DAM WALL RAISED DURING 1968!
FULL SUPLY CAPACITY INCREASED
FROM 31.58x10⁶m³ TO 57.12x10⁶m³
GAP IN RECORD - NO RELIABLE DATA AVAILABLE!
54.7%
28.0x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
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
Feb-13

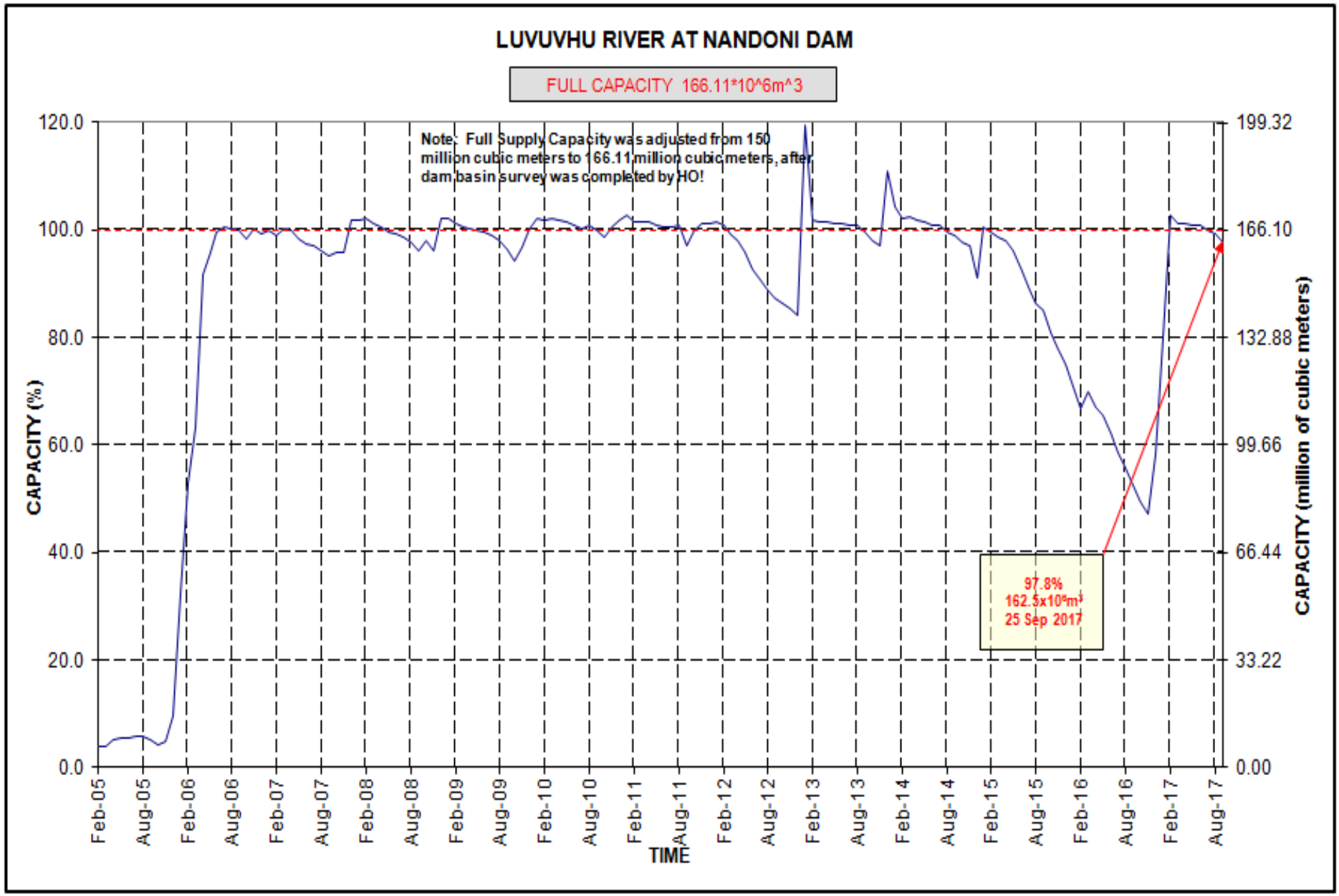

LUPHEPHE RIVER AT LUPHEPHE DAM
FULL CAPACITY 13.984 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
13.98
11.18
8.39
5.59
2.80
0.00
CAPACITY (million of cubic meters)
May-79
May-81
May-83
May-85
May-87
May-89
May-91
May-93
May-95
May-97
May-99
May-01
May-03
May-05
May-07
May-09
May-11
May-13
May-15
May-17
TIME
66.2%
9.26x10⁶m³
25 Sep 2017


NWANEDZI RIVER AT NWANEDZI DAM
FULL CAPACITY 5.14 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
5.14
4.11
3.08
2.06
1.03
0.00
CAPACITY (million of cubic meters)
90.0%
3.9x10⁶m³
25 Sep 2017
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
Oct-11
Oct-13
Oct-15
TIME


MUTSHEDZI RIVER AT MUTSHEDZI DAM
FULL CAPACITY 2.337 *10^6m^3
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
120.0
100.0
80.0
60.0
40.0
20.0
0.0
2.80
2.34
1.87
1.40
0.93
0.47
0.00
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
Jul-11
Jul-12
Jul-13
Jul-14
Jul-15
Jul-16
Jul-17
98.2%
2.3x10⁸m³
25 Sep 2017


LUVUVHU RIVER AT ALBASINI DAM
FULL CAPACITY 28.21*10^6m^3
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
28.20
22.56
16.92
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
Oct-12
Oct-14
Oct-16
80.0%
22.58x10⁸m³
25 Sep 2017


MUTSHINDUDI RIVER AT VONDO DAM
FULL CAPACITY 30.447*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
30.45
24.36
18.27
12.18
6.09
0.00
CAPACITY (million of cubic meters)
92.0%
28.02x10⁸m³
25 Sep 2017
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
Dec-11
Dec-12
Dec-13
Dec-14
Dec-15
Dec-16
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!
97.8%
162.5x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
120.0
100.0
80.0
60.0
40.0
20.0
0.0
199.32
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
Aug-11
Feb-12
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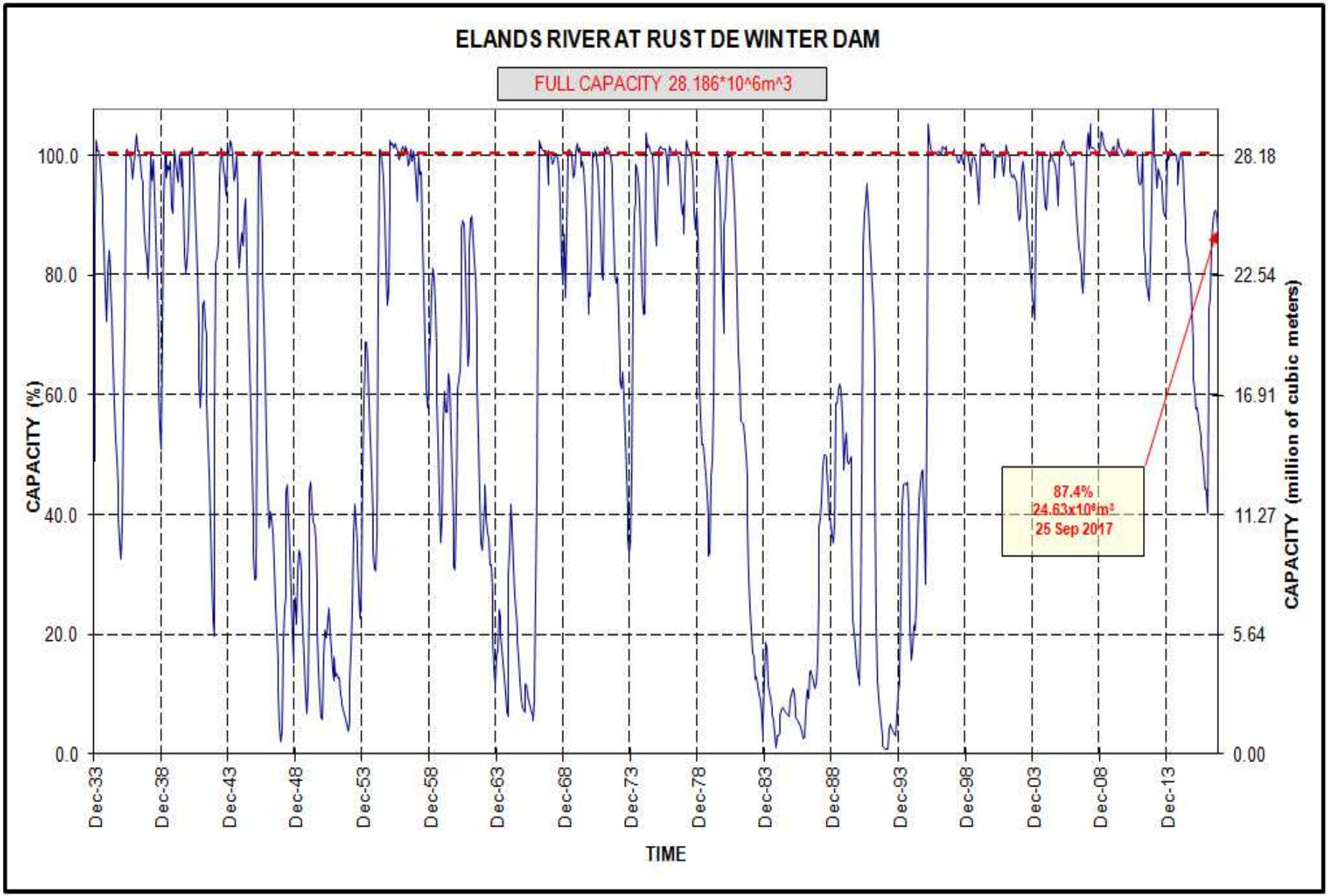
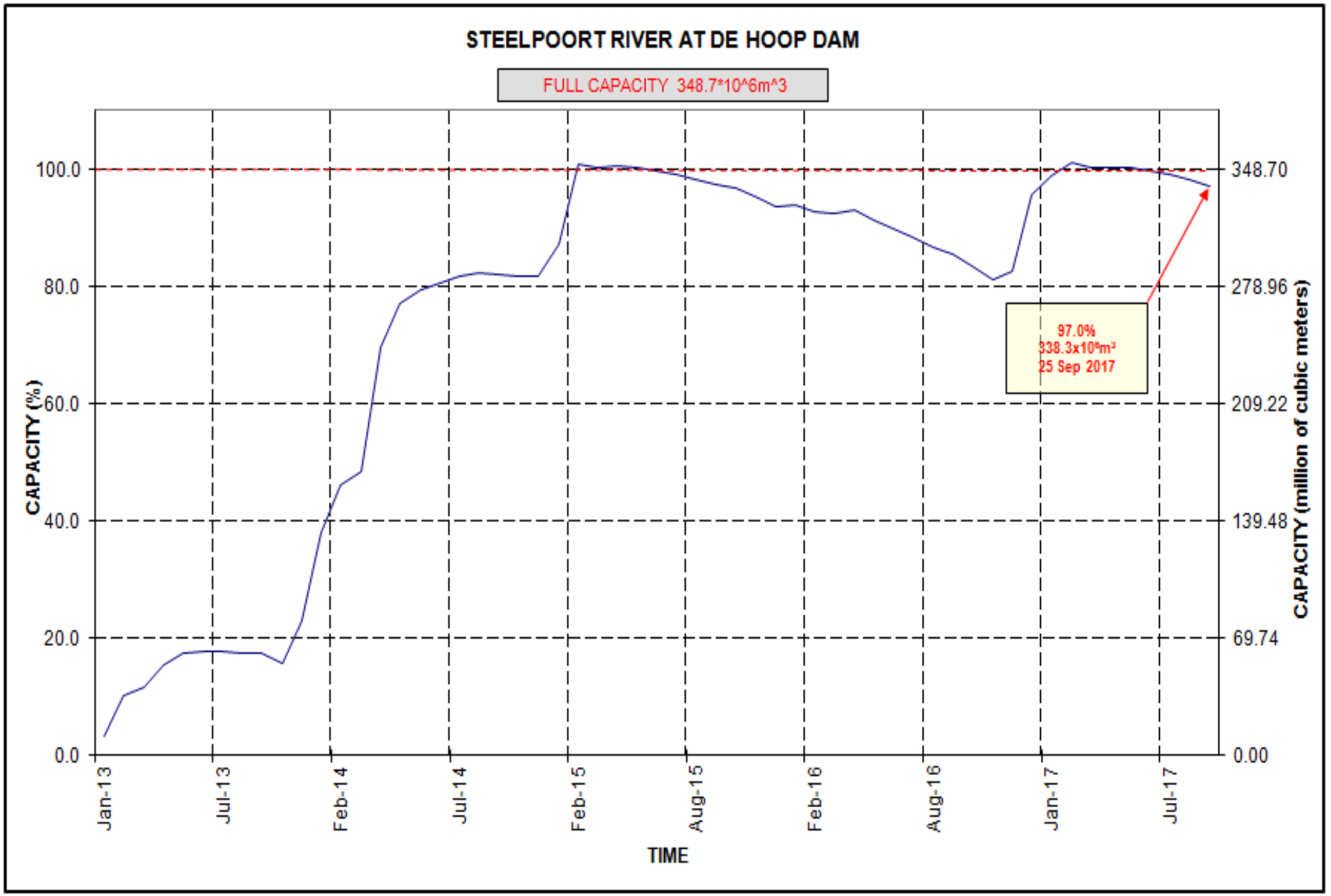
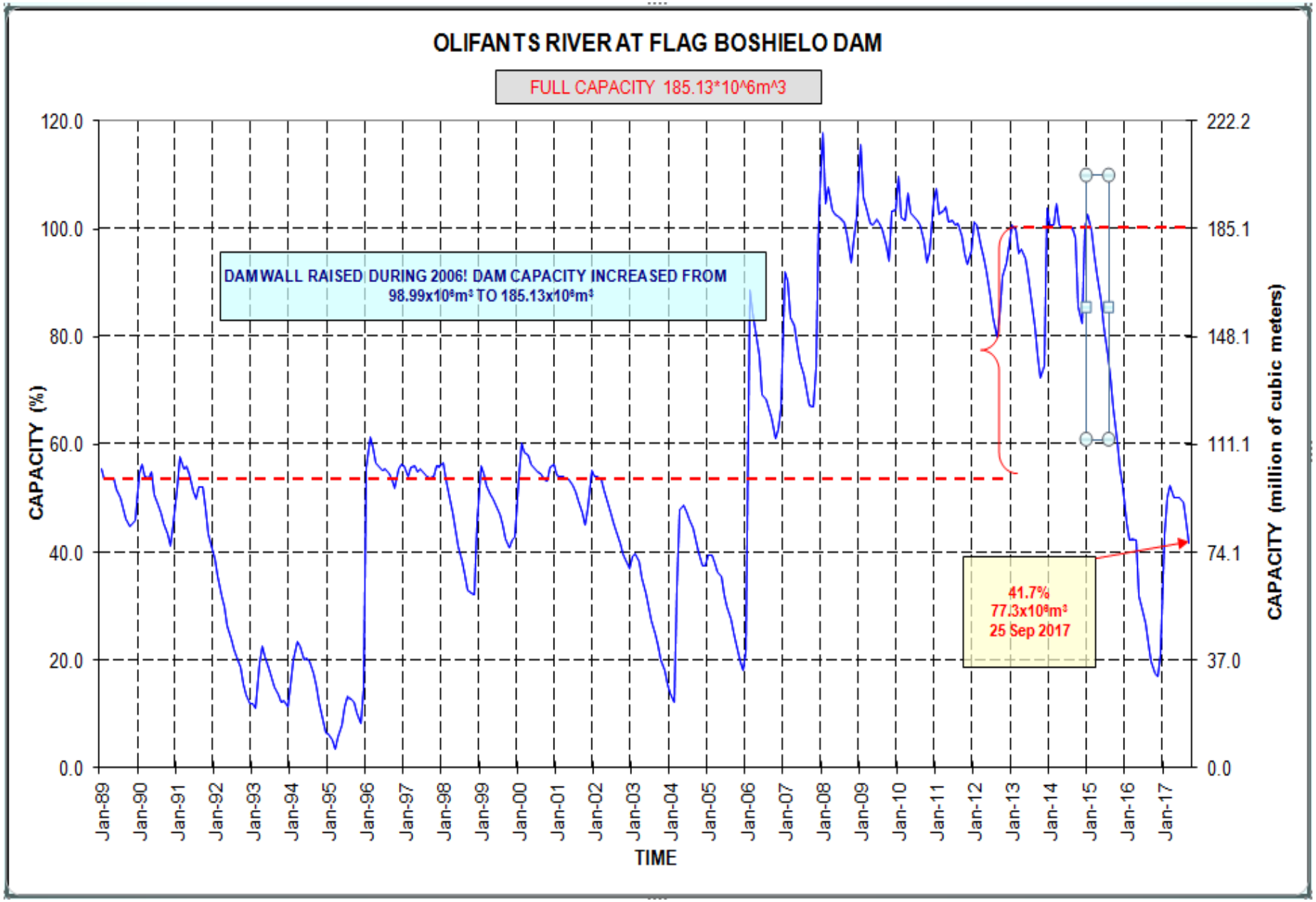
Feb-15
Aug-15
Feb-16
Aug-16
Feb-17
Aug-17


ELANDS RIVER AT RUST DE WINTER DAM
FULL CAPACITY 28.186*10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
28.18
22.54
16.91
11.27
5.64
0.00
CAPACITY (million of cubic meters)
87.4%
24.63x10^6m^3
25 Sep 2017
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
Dec-13
TIME


STEELPOORT RIVER AT DE HOOP DAM
FULL CAPACITY 348.7*10^6m^3
100.0
80.0
60.0
40.0
20.0
0.0
CAPACITY (%)
348.70
278.96
209.22
139.48
69.74
0.00
CAPACITY (million of cubic meters)
97.0%
338.3x10⁶m³
25 Sep 2017
Jan-13
Jul-13
Feb-14
Jul-14
Feb-15
Aug-15
Feb-16
Aug-16
Jan-17
Jul-17
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 185.13x10⁶m³
41.7%
77.3x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
120.0
100.0
80.0
60.0
40.0
20.0
0.0
222.2
185.1
148.1
111.1
74.1
37.0
0.0
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
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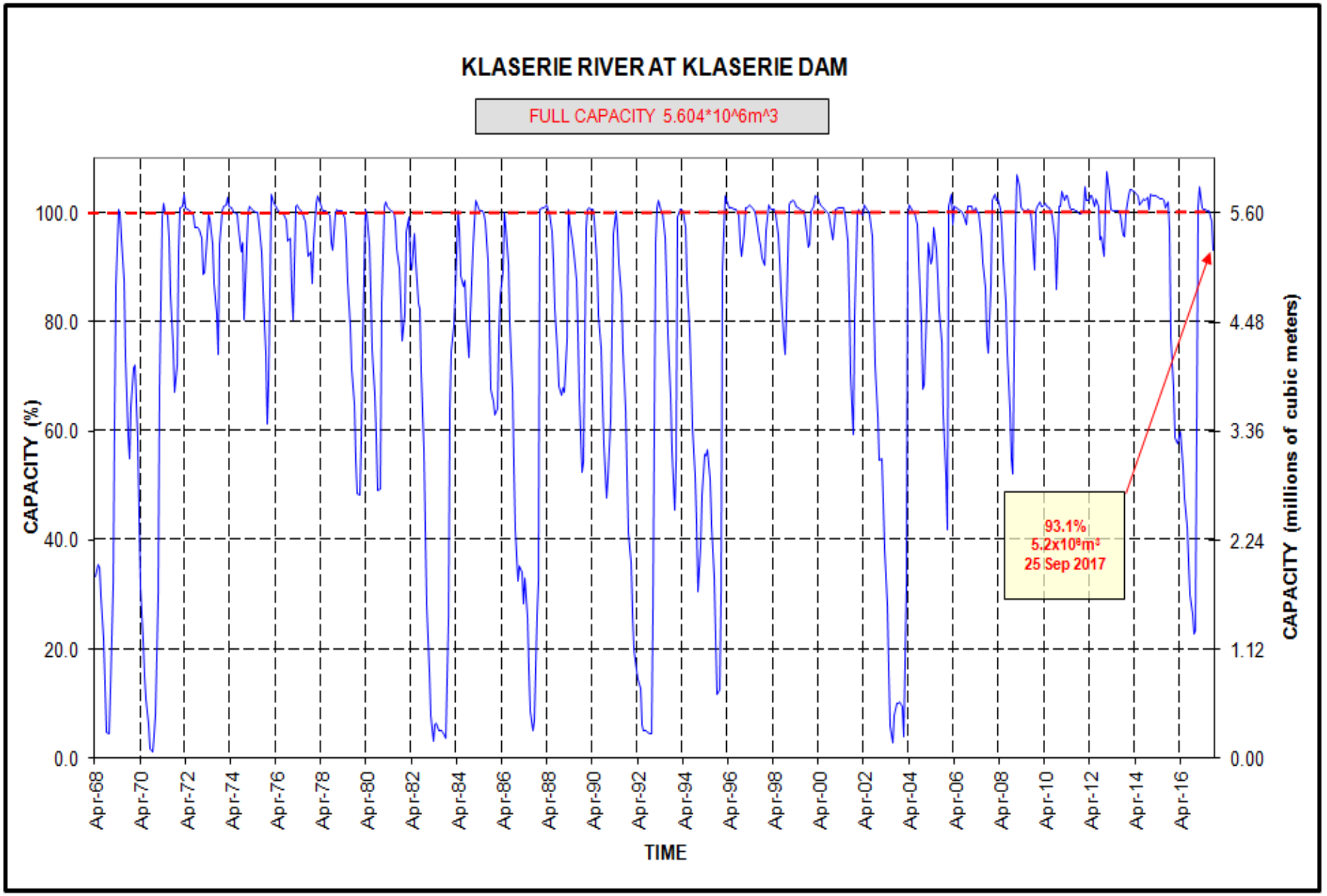
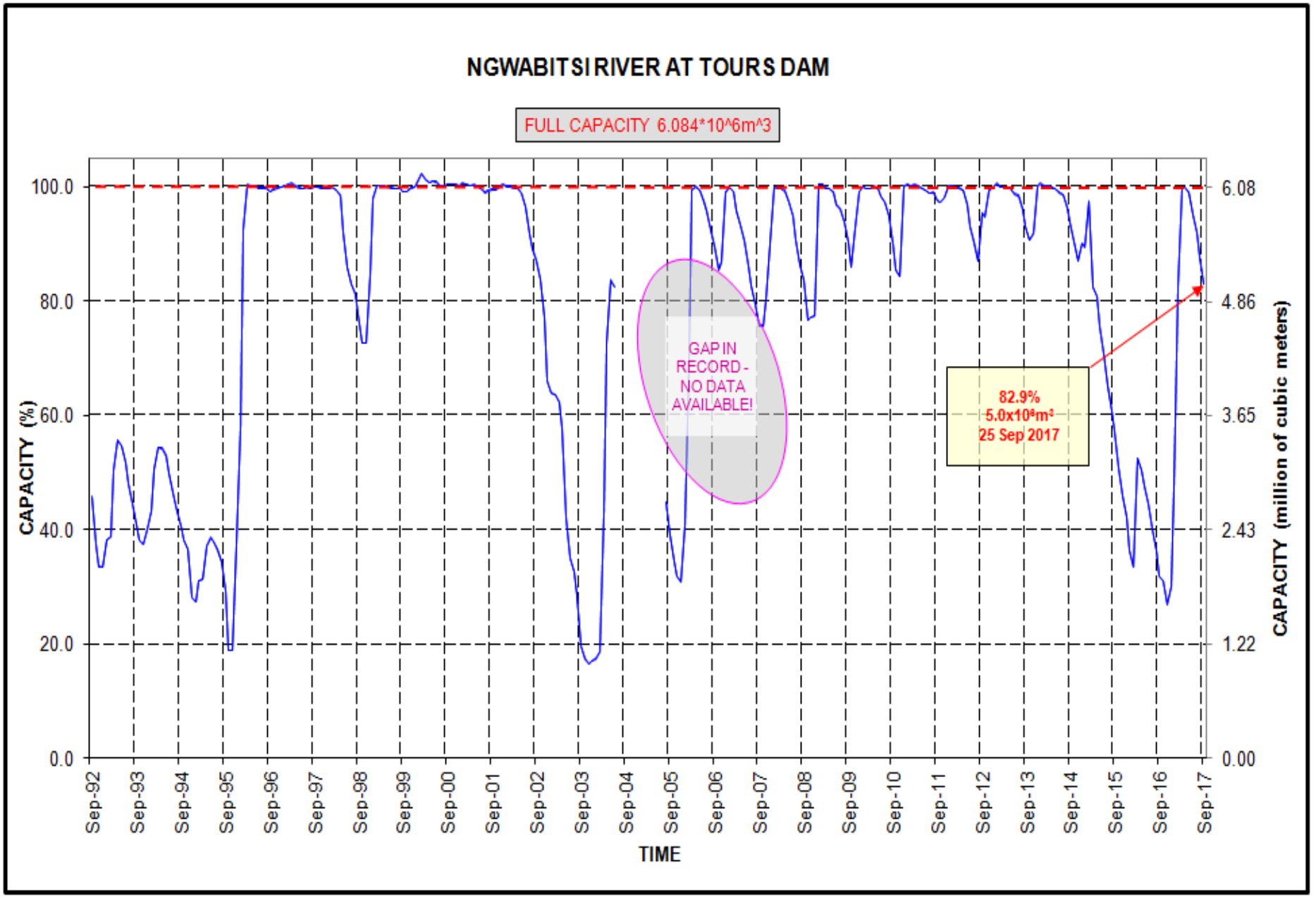
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17


KLASERIE RIVER AT KLASERIE DAM
FULL CAPACITY 5.604*10^6m^3
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
Apr-12
Apr-14
Apr-16
93.1%
5.2x10⁶m³
25 Sep 2017


NGWABITSI RIVER AT TOURS DAM
FULL CAPACITY 6.084*10^6m^3
GAP IN RECORD - NO DATA AVAILABLE!
82.9%
5.0x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
6.08
4.86
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
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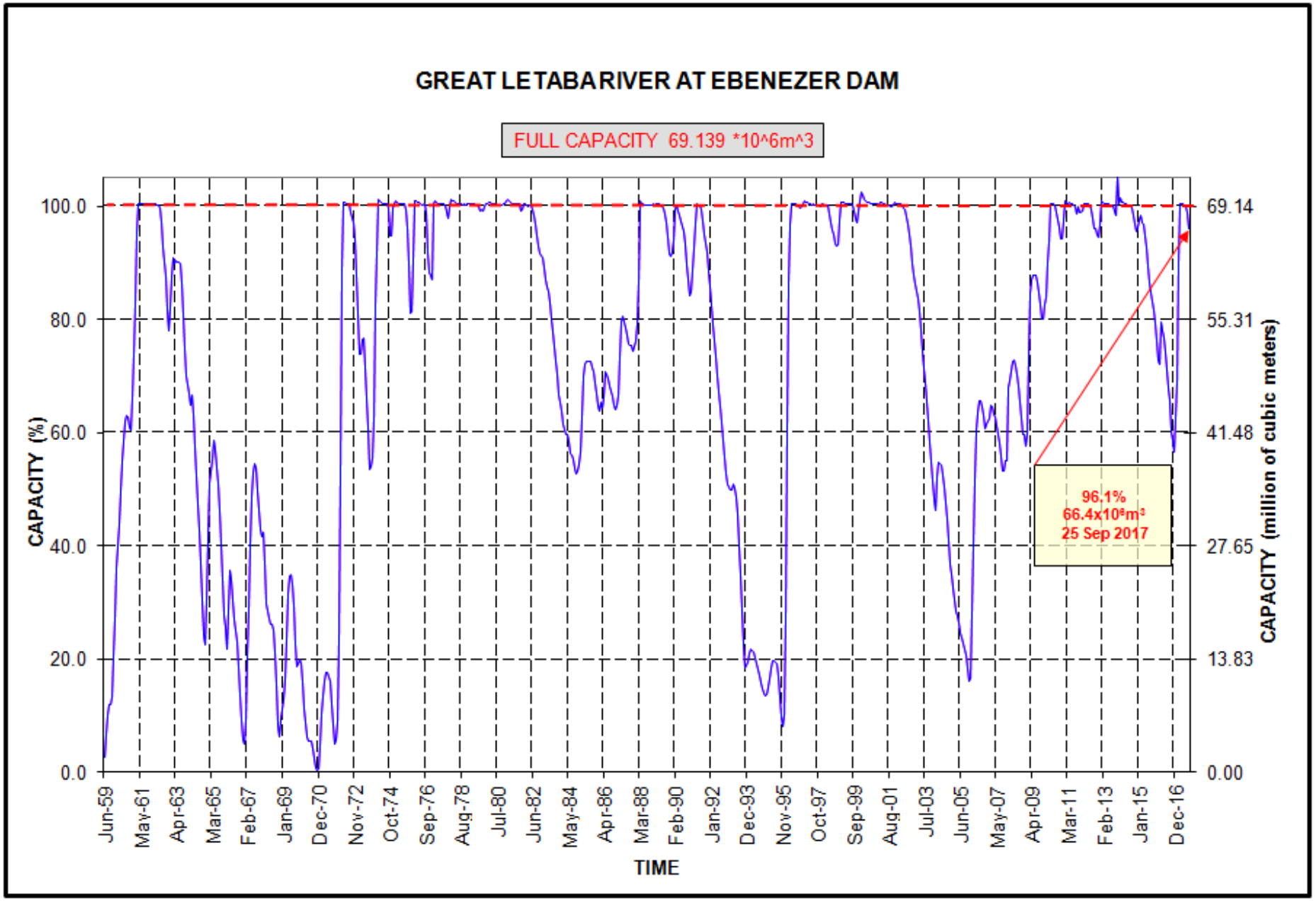
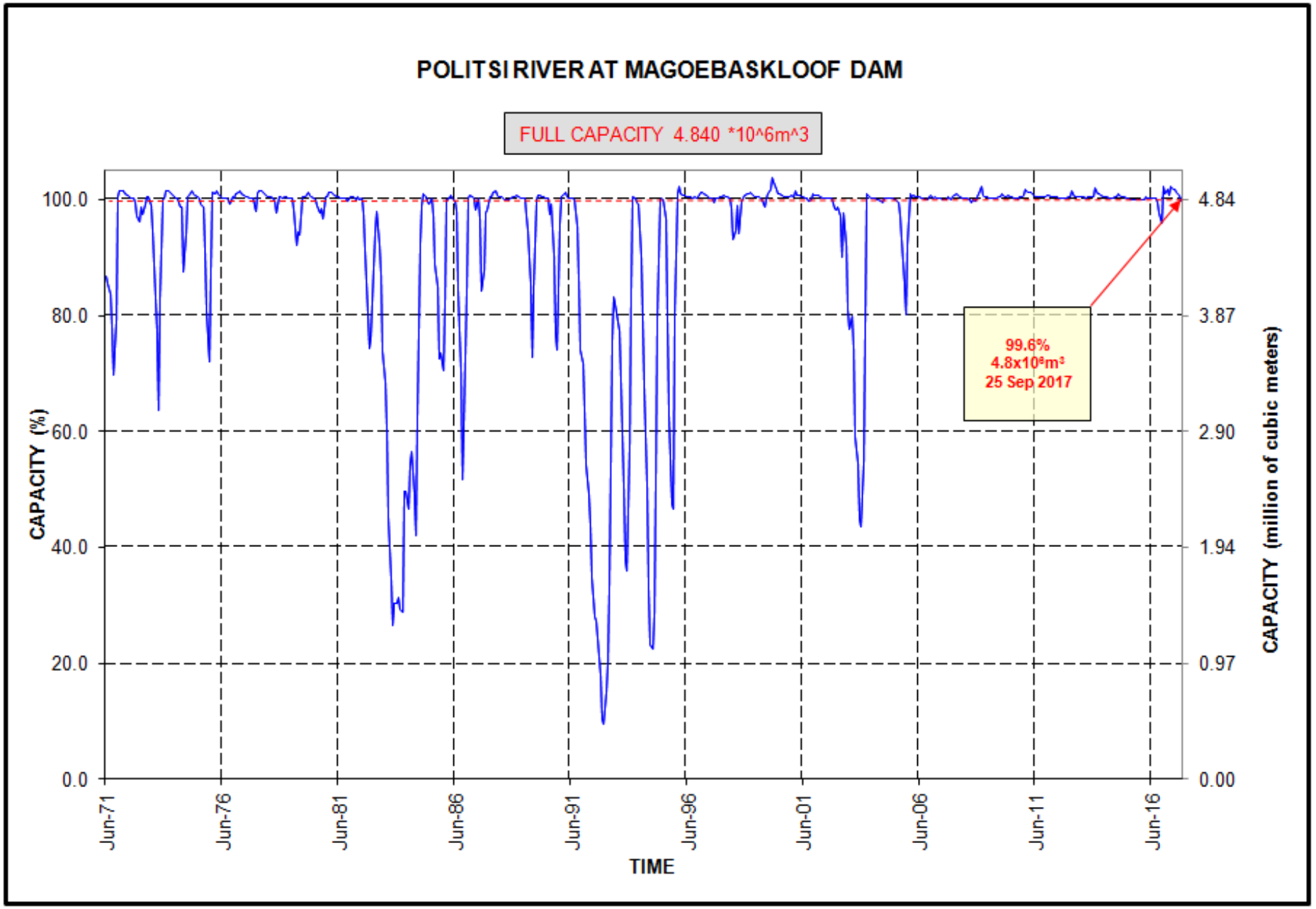
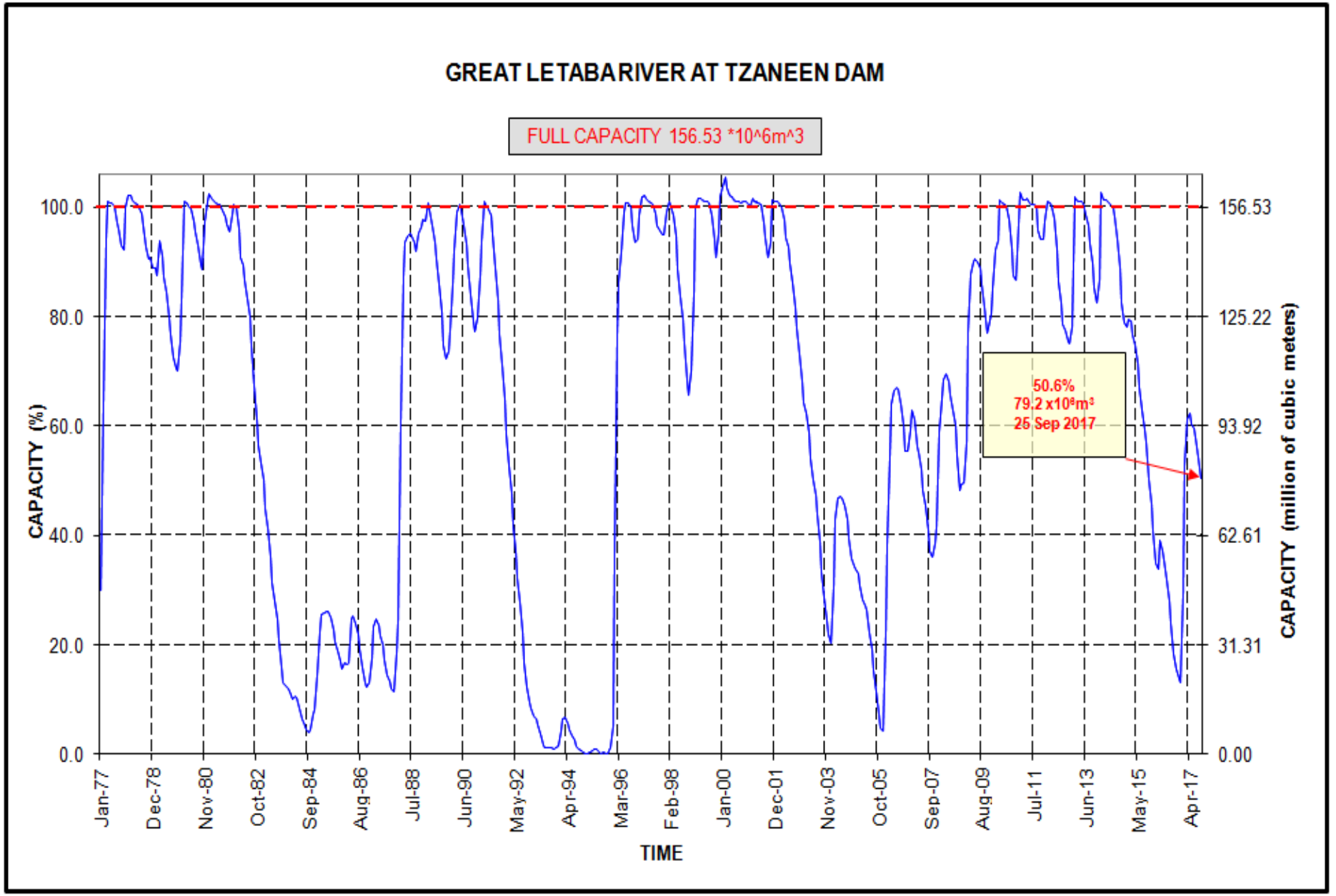
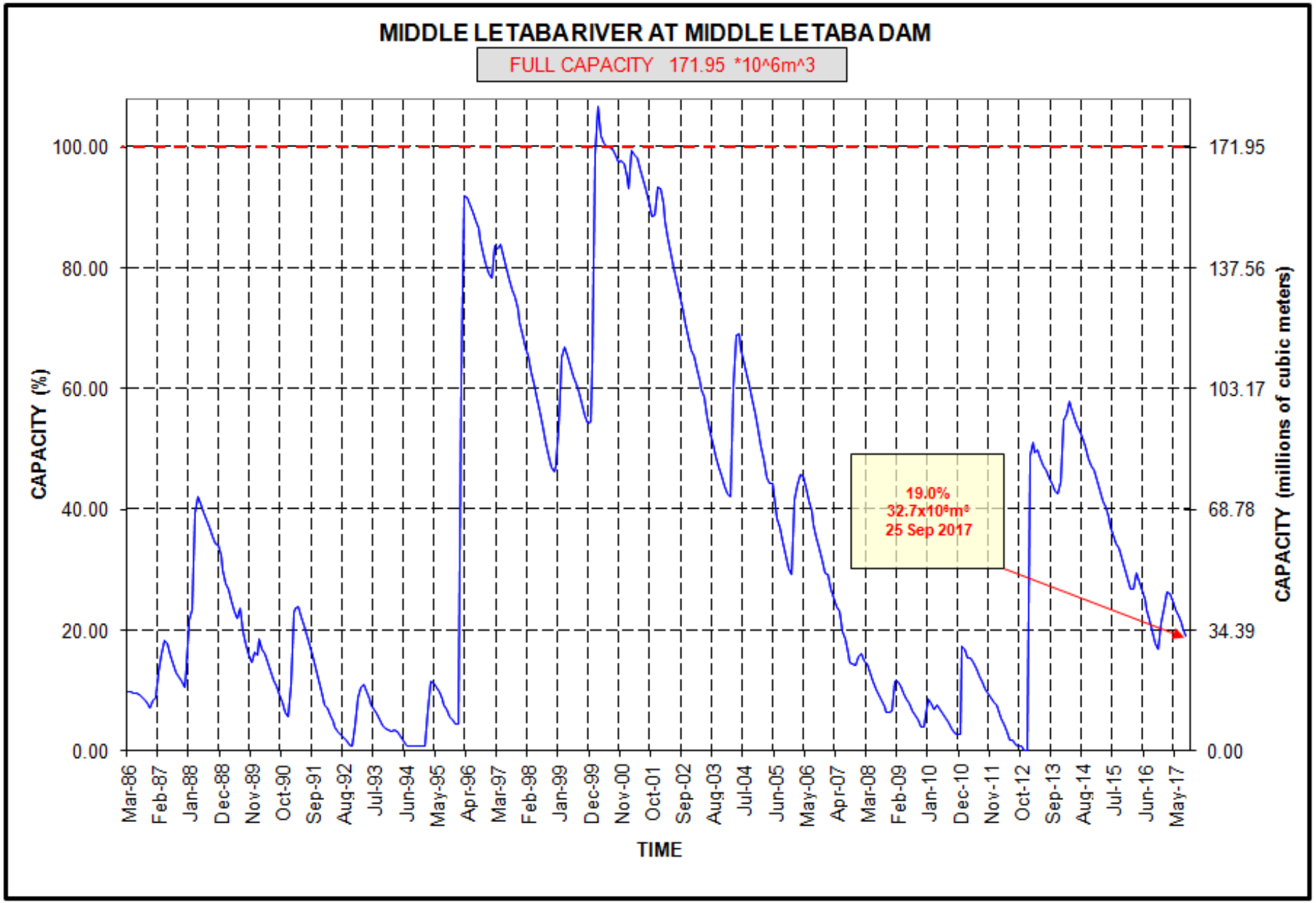
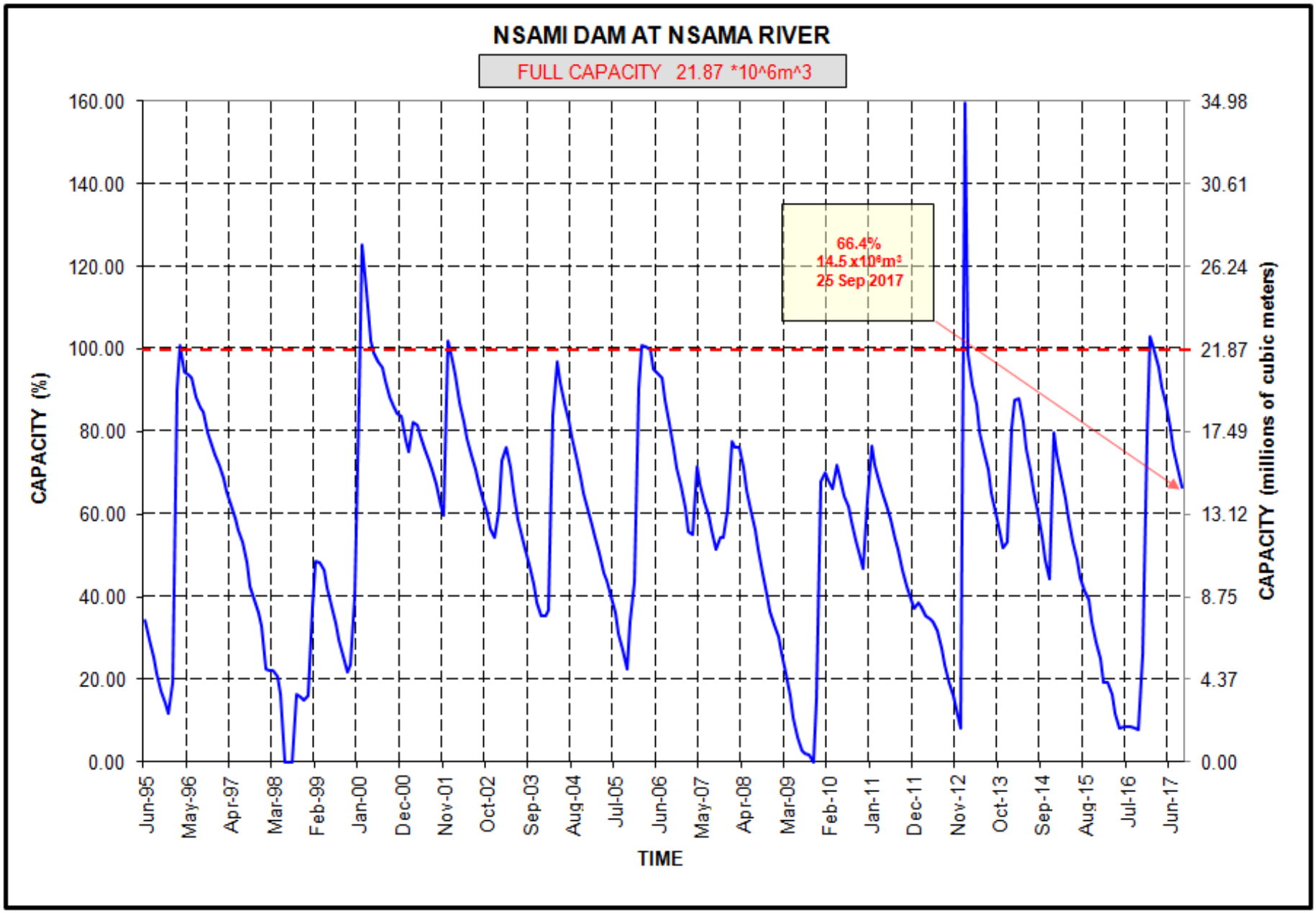
Sep-15
Sep-16
Sep-17

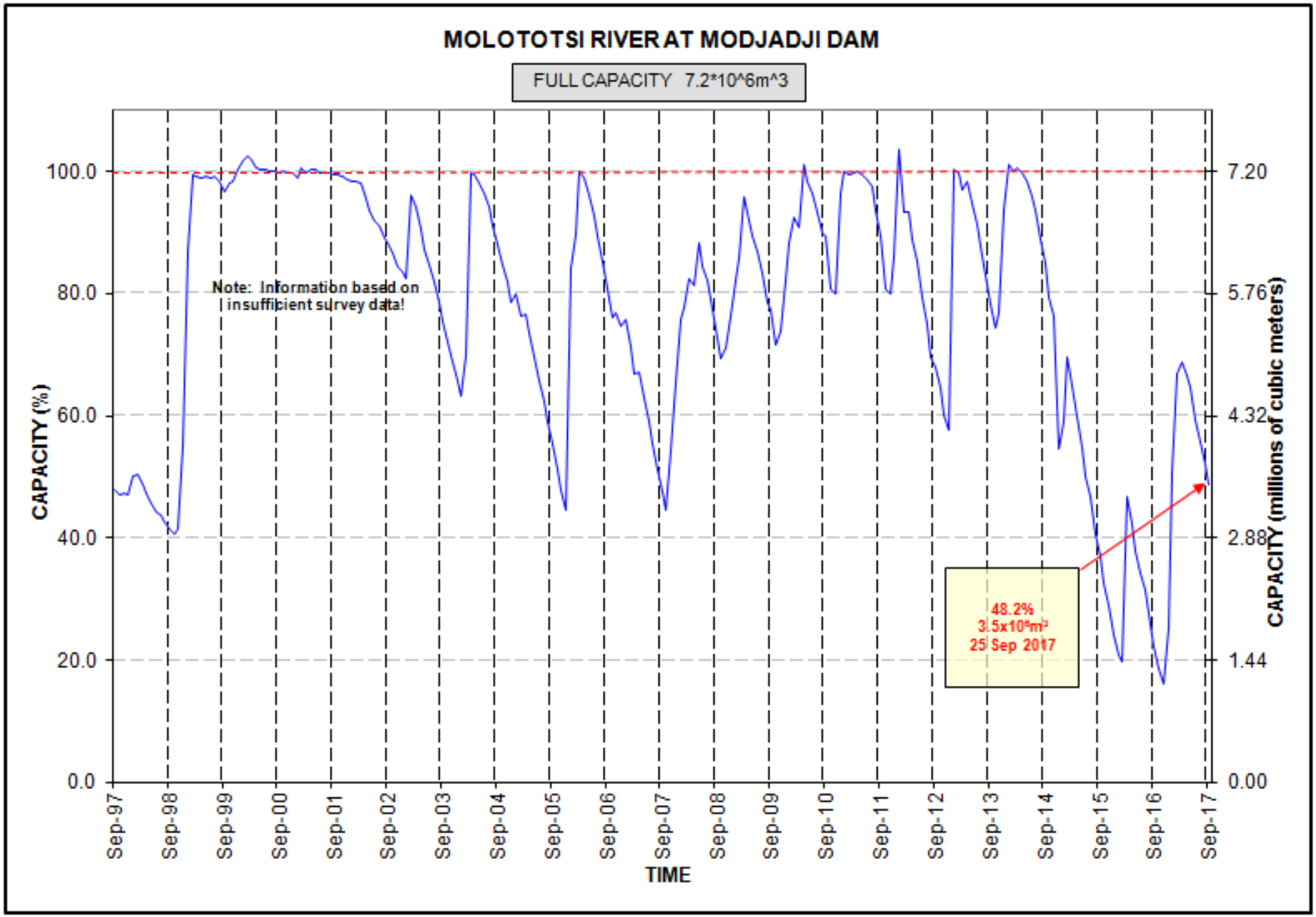

GREAT LETABA RIVER AT EBENEZER DAM
FULL CAPACITY 69.139 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
69.14
55.31
41.48
27.65
13.83
0.00
CAPACITY (million of cubic meters)
96.1%
66.4x10⁶m³
25 Sep 2017
Jun-59
May-61
Apr-63
Mar-65
Feb-67
Jan-69
Dec-70
Nov-72
Oct-74
Sep-76
Aug-78
Jul-80
Jun-82
May-84
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
Feb-13
Jan-15
Dec-16
TIME


POLITSI RIVER AT MAGOEBASKLOOF DAM
FULL CAPACITY 4.840 *10^6m^3
99.6%
4.8x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (million of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
4.84
3.87
2.90
1.94
0.97
0.00
Jun-71
Jun-76
Jun-81
Jun-86
Jun-91
Jun-96
Jun-01
Jun-06
Jun-11
Jun-16


GREAT LETABA RIVER AT TZANEEN DAM
FULL CAPACITY 156.53 *10^6m^3
CAPACITY (%)
100.0
80.0
60.0
40.0
20.0
0.0
156.53
125.22
93.92
62.61
31.31
0.00
CAPACITY (million of cubic meters)
50.6%
79.2 x10⁶m³
25 Sep 2017
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
Jul-11
Jun-13
May-15
Apr-17
TIME


MIDDLE LETABA RIVER AT MIDDLE LETABA DAM
FULL CAPACITY 171.95 *10^6m^3
100.00
80.00
60.00
40.00
20.00
0.00
CAPACITY (%)
171.95
137.56
103.17
68.78
34.39
0.00
CAPACITY (millions of cubic meters)
19.0%
32.7x10⁶m³
25 Sep 2017
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
Nov-11
Oct-12
Sep-13
Aug-14
Jul-15
Jun-16
May-17
TIME


NSAMI DAM AT NSAMA RIVER
FULL CAPACITY 21.87 *10^6m^3
66.4%
14.5 x10⁶m³
25 Sep 2017
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
34.98
30.61
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
Dec-11
Nov-12
Oct-13
Sep-14
Aug-15
Jul-16
Jun-17


MOLOTOTSI RIVER AT MODJADJI DAM
FULL CAPACITY 7.2*10^6m^3
Note: Information based on insufficient survey data!
48.2%
3.5x10^6m^3
25 Sep 2017
CAPACITY (%)
CAPACITY (millions of cubic meters)
TIME
100.0
80.0
60.0
40.0
20.0
0.0
7.20
5.76
4.32
2.88
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
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