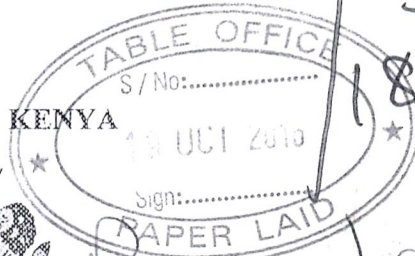


Approved for tabling *BT SNA*

PARLIAMENT OF KENYA



18/10/16
Paper Laid on
Wednesday
19th October 2016
by Hon. Samuel
Nderitu, MP
at 9.30am.

NATIONAL ASSEMBLY

ELEVENTH PARLIAMENT – THIRD SESSION

DEPARTMENTAL COMMITTEE ON ENVIRONMENT AND NATURAL
RESOURCES

REPORT ON THE PETITION BY HON.ABDULLAHI MOHAMED DIRIYE ON
BEHALF OF RESIDENTS OF DOWNSTREAM EWASO NYIRO RIVER BASIN ON
THE MANAGEMENT OF EWASO NYIRO WATER BY THE WATER RESOURCES
MANAGEMENT AUTHORITY

Clerk's Chambers

OCTOBER, 2016

Directorate of Committee Services

Parliament Buildings,

Nairobi

Table of Contents

ACRONYMS.....	4
CHAIR’S FOREWORD.....	5
MANDATE	7
MEMBERS OF THE COMMITTEE	8
LIST OF RECOMMENDATIONS	10
1.0 Introduction	11
2.0 Evidence	12
2.1 Submission by Hon. Abdullahi Diriye, M.P, the Member of Parliament for Wajir South Constituency	12
2.2 Submission by Eng. Joseph Kinyua, Technical Manager - Water Resources Management Authority (WRMA).....	12
2.3 Submission By Mr. Sheikh Omar, Managing Director, Ewaso Nyiro North Development Authority.....	15
2.4 Submission by Mr. David Oyosi, Director, Regional Development, Ministry of Environment & Natural Resources	16
2.5 Field Visit to Habasweine, Wajir County	16
3.0 OBSERVATIONS	19
4.0 RESPONSE TO THE PRAYERS OF THE PETITIONERS	20

ANNEXES

A. Petition

B. Submissions

- I. Submission by WRMA.
- II. Submission by residents of Habasweine
- III. Submission by EwasoNyiro North River Basin Development Authority

C. Minutes of Committee deliberations



ACRONYMS

ENNCA	EwasoNg'iro North Catchment Area
ENDDA	EwasoNg'iro North Development Authority
WRMA	Water Resources Management Authority
WRUA	Water Resources Users Association

CHAIR'S FOREWORD

The Petition was tabled before the House by Hon. Abdullahi Mohamed Diriye, M.P on behalf of residents of downstream EwasoNyiro North Catchment Area in Wajir County. The Petition relates to the Management of EwasoNyiro River Water by the Water Resources Management Authority. Pursuant to Standing Order 227 (1) the petition was committed to the departmental Committee on Environment and Natural Resources for consideration.

In considering the Petition the Committee held meetings with the Petitioner Hon. Abdullahi Diriye, MP who appeared on behalf of the residents of Wajir County. The Committee also held meetings with officials of the Water Resources Management Authority and the Ministry of Environment & Natural Resources. The Committee also carried out a fact finding visit to Wajir County on 15th April, 2016.

The Committee wishes to register its appreciation to the offices of the Speaker and the Clerk of the National Assembly for the support accorded to the Committee in the execution of its mandate.

On behalf of the Committee and pursuant to Standing Order 227 (2) of the National Assembly, I now have the honor to present the Committee Report on the Petition.

Hon. Amina Abdalla, CBS, MP

EXECUTIVE SUMMARY

In this report the Committee has considered and responded to the specific prayers of the residents of EwasoNyiro North catchment area regarding the Management of River EwasoNyiro by the Water Resources Management Authority. The Committee established that the prayers presented by the petitioners were valid as there was serious encroachment of catchment areas upstream. There were also illegal abstractions upstream which reduced the amount of water downstream.

The Committee held meetings with the Member for Wajir South Constituency, the Hon. Abdullahi Diriye, M.P who informed the Committee that the Water Resources Management Authority had deliberately given priority to agricultural, industrial and other non-domestic uses of water. The Committee also held a meeting with officials of the Ministry of Environment & Natural Resources who submitted that the main problem in River EwasoNyiro North was encroachment of the water catchment areas by private developers.

The Committee recommends that the Water Resources Management Authority should collaborate with security agencies to stop all illegal abstractions. Any individual/company carrying out illegal abstractions should be arrested and prosecuted in accordance with the law. The Committee further recommends that the Ministry of Water and Irrigation should consider constructing a dam in the middle reaches of the EwasoNyiroNorth River. This will ensure flow of the river is regulated throughout the year.

MANDATE

The Departmental Committee on Environment and Natural Resources is established under the National Assembly Standing Orders No. 216(1).

The functions and mandate of the Committee are contained under Standing Order 216(5) and include, to:-

1. Investigate, inquire into, and report on all matters relating to the mandate, management, activities, administration, operations and estimates of the assigned Ministries and departments;
2. Study the program and policy objectives of the Ministries and departments and the effectiveness of the implementation;
3. Study and review all legislation referred to it;
4. Study, access and analyze the relative success of the Ministries and Departments as measured by the results obtained as compared with its stated objectives;
5. Investigate and inquire into all matters relating to the assigned Ministries and departments as they may deem necessary, and as may be referred to them by the House;
6. Vet and report on all appointments where the constitution or any law requires the National Assembly to approve, except those under Standing Order 204; and
7. Make reports and recommendations to the House as often as possible, including recommendation of proposed legislation.

The Committee oversees issues to do with climate change, environment management and conservation, forestry, water resource management, wildlife, mining and natural resources, pollution and waste management amongst others.

MEMBERS OF THE COMMITTEE

The Committee comprises the following members:-

Chairperson	The Hon. Amina Abdalla, CBS M.P.
Vice chairperson	The Hon. Alexander Kosgey, M.P.
	The Hon. Alice Ng'ang'a, M.P.
	The Hon. Samuel Ndiritu, M.P.
	The Hon. Zuleikha Hassan Juma, M.P.
	The Hon. Ejidius Njogu Barua, M.P.
	The Hon. Jude Njomo, M.P.
	The Hon. Moitalel Ole Kenta, M.P.
	The Hon. Kathuri Murungi, M.P.
	The Hon. Sunjeev Birdi, M.P.
	The Hon. Jackson K. Rop, M.P.
	The Hon. Abdi Noor Ali, M.P.
	The Hon. Joyce Emanikor, M.P.
	The Hon. Abdulaziz Farah, M.P.
	The Hon. Ronald Tonui, M.P.
	The Hon. (Dr.) Reginalda Wanyonyi, M.P.
	The Hon. Gideon Mwiti, M.P.
	The Hon. Hassan Dukicha, M.P.
	The Hon. Isaac Mwaura, M.P.
	The Hon. Charles G. Mongare, M.P.
	The Hon. (Dr.) Wilber K. Ottichilo, M.P.
	The Hon. Richard Makenga, M.P.
	The Hon. George Ogalo, M.P.
	The Hon. (Major) Muluvi Mutua, M.P.
	The Hon. Mohamed, Diriye M.P.
	The Hon. Peter Kinyua, MP.
	The Hon. Shukran Hussein Gure, M.P.
	The Hon. Joyce Lay, M.P.

COMMITTEE SECRETARIAT

The Committee is serviced by the following Members of Staff:

Ms. Tracy Chebet Koskei	Clerk AssistantII
Mr. Hassan A. Arale	Clerk Assistant III
Mr. Ronald Walala	Legal Counsel II
Mr. James Muguna	Research Officer III
Ms. AmranMursal	Fiscal Analyst III

LIST OF RECOMMENDATIONS

The petitioner's prayers were that the National Assembly, through the Departmental Committee on Environment and Natural Resources:

1. Investigates circumstances under which the Water Resources Management Authority has been issuing water extraction and abstraction permits to upstream users in breach of sections 29(4) and 32 (2) of the water act 2002;
2. Intervenes with the relevant authorities to ensure that any permits issued contrary to provisions of the Water Act, 2002 are revoked forthwith with a view to alleviating the acute shortage caused to downstream users.

To this Prayers, the Committee responds as follows:

1. Following its investigation, the Committee established that the Water Resources Management Authority follows due process when issuing abstraction licenses. However, illegal abstractions and encroachment on the upstream side of the River EwasoNyiro North Basin were a major problem. The Committee also established the WRMA was facing challenges in stopping illegal abstractions. Following this finding, the Committee recommends that the Water Resources Management Authority should collaborate with security agencies to stop all illegal abstractions. Any individual/ company carrying out illegal abstractions should be arrested and prosecuted;

The Committee further recommends that:

2. The Ministry of Water and Irrigation should construct a dam in the middle reaches of the EwasoNyiro North River. The Ministry should consider constructing the Nantudu Dam proposed by the EwasoNyiro North Development Authority. This will ensure flow of the river is regulated throughout the year; and
3. An inter-agency unit should be established to carry out a forensic audit of the land encroached on within the catchment areas both upstream and downstream in order to initiate the process of reclaiming the same.

1.0 Introduction

On 31st March, 2015, Hon. Abdullahi Mohamed Diriye, MP, the Member for WajirSouthConstituency presented a petition on behalf of Residents for Downstream Ewaso Nyiro River Basin. The petition is in regard to the management of EwasoNyiro River by the Water Resources Management Authority.

The petition sought to draw the attention of the House to the following:

1. All rivers, lakes and other bodies in the country fall under public land as contemplated under Article 62(1)(i) of the constitution;
2. Ownership in trust and management of water resources is a prerogative of the National Government through the National land commission and the water Resources Management Authority as stipulated in Article 62(3) of the constitution and section 8 of the water Act,2002;
3. Management of EwasoNyiro North Catchment Area, which is classified as a water-scarce region falls under the National Land Commission and the Water Resources Management Authority;
4. The Water Resources Management Authority has been issuing permits for the extraction and abstraction of water in the upstream of EwasoNyiro river without due consideration of procedure outlined in section 29(4) of the Water Act,2002;
5. By so doing, the Authority has deliberately given priority to agricultural, industrial and other non-domestic uses of water instead of giving precedence to domestic use as set out in section 32(2) of the Act;
6. In this regard the Authority has acted in abdication of its solemn duty of ensuring equitable use of water resources in the EwasoNyiro basin, thereby jeopardizing livelihoods of downstream users in Wajir County;
7. Even though the dire shortage of water resulting from flawed issuances of water usage permits to upstream users has been raised to the Water Resources Management Authority, no remedial measures have been initiated by the Authority;

The petitioner's prayers were that the National Assembly, through the Departmental Committee on environment and natural resources:

1. Investigates circumstances under which the resources Management Authority has been issuing water extraction and abstraction permits to upstream users in breach of sections 29(4) and 32 (2) of the water act 2002; and

2. Intervenes with the relevant authorities to ensure that any permits issued contrary to provisions of the water Act 2002 are revoked forthwith with a view to alleviating the acute shortage caused to downstream users.

2.0 Evidence

2.1 Submission by Hon. Abdullahi Diriye, M.P, the Member of Parliament for Wajir South Constituency

Hon. Diriye informed the Committee that:-

1. The petition was presented on behalf of the residents of EwasoNyiro North catchment area;
2. River EwasoNyiroriver passes through Isiolo to Wajir;
3. There has been no water in Wajir for the last fifteen years because the community in the upstream has blocked water therefore the river doesn't flow as it used to;
4. The Water Resource Management Authority (WRMA) has been issuing permits for the extraction and abstraction of water in the upstream of EwasoNyiro without the consideration of the people living downstream; and
5. WRMA has deliberately given priority to agricultural, industrial and other non-domestic uses of water.

2.2 Submission by Eng. Joseph Kinyua, Technical Manager -Water Resources Management Authority (WRMA)

Eng. Kinyuawhile appearing before the Committee on 8th March, 2016, submitted the following:

The historical water data discharge of River Ewaso Ngiro

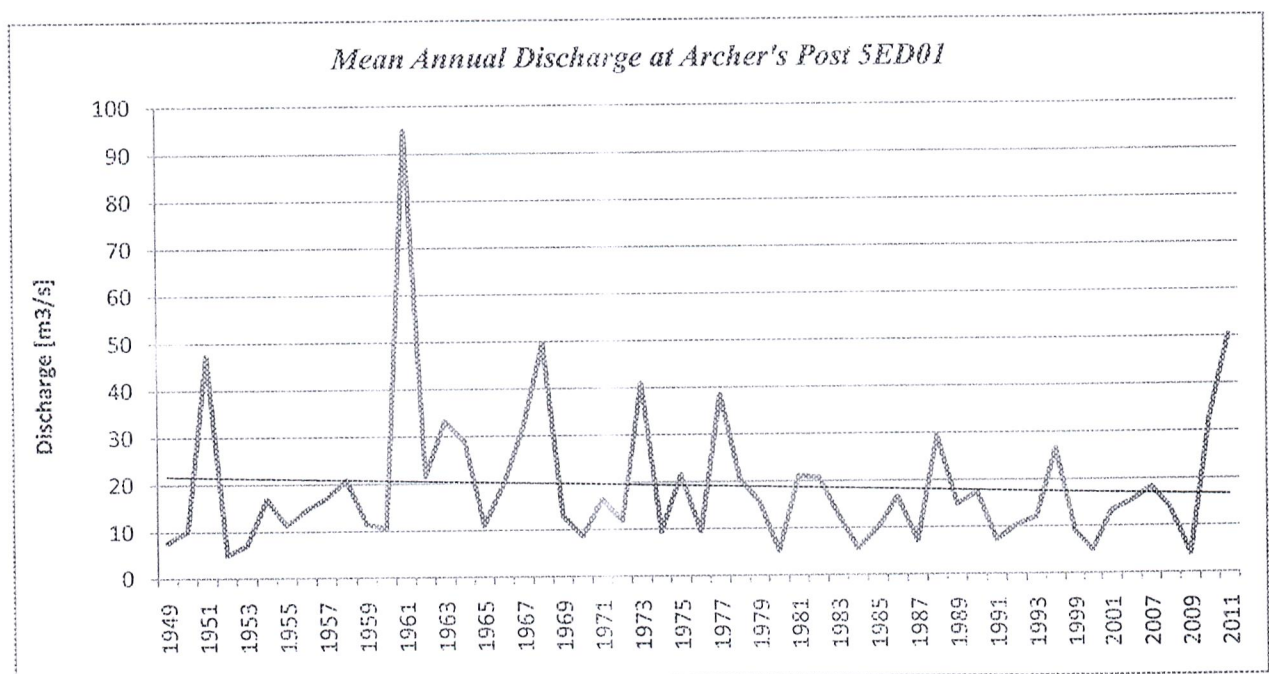
- (i) Ewaso Ngiro River sources are at a very high altitude of above 4000 metres above mean sea level at Mt. Kenya and Aberdare Mountain ranges and by the time it is traversing Isiolo County the altitude drops to 800 meters. At *Harbaswein* on the other hand, the altitude averages at 150 meter. This implies that at lower limits of *Harbaswein* the river has completely lost its velocity and erosional ability. At this point the river attains deposition characteristic forming levy and sand deltas while spreading apart.
- (ii) The river is further burdened by huge sand deposits of Rivers *Bhogal* and *Balal* whose source is Ethiopian highlands. Consequently, its flow is interrupted to infiltrate and percolate underground forming a long stretch of *Merti* aquifer which extends all the way to Somalia.

(iii) The Merti aquifer is as a result of Ewaso Ngiro River disappearance into the Lorian Swamp where it gets underground to recharge the aquifer. This phenomenon of the river is natural and is dictated by the geology and the land geomorphology.

i) Surface Water Resources

(iv) Approximately 90% of the surface water resources originate from the Mt. Kenya and Aberdare water towers. These waters are concentrated in Upper Ewaso Ngiro and the southern part of EngareNarokMelghis Sub Regions. These form the headwaters of the Ewaso Ngiro North River that flows eastward to disappear into the Lorian Swamp.

(v) The drainage from the Upper Ewaso Ngiro North catchment area is concentrated at the Archer's Post National Station which is used to gauge the discharge from this area. The station was installed in 1949 and has been operational since then. However, there are some data gaps occasioned by destruction of the station by natural or human causes. From the available data, the river has the following discharges:



Source: The Water Resources Management Authority

Based on hydrological analysis, the above results indicate the following:

- (a) The river exhibits regular peaks in the annual discharge which occurred in 1951, 1961 and 1968 (duration of almost 10 years apart). However, after 1971, the peaks are recurring with less intensity and more frequently;
- (b) Between 1949 and 2011, the trend shows a reduction in the discharge volume of almost 200 Million Cubic Meters of water. Considering the water use and demand within the upper Ewaso Ngiro North Catchment area, the drop is very high and is not solely as a result of abstractions.

ii) Some causes of water discharge reduction overtime in Ewaso Ngiro River

Some causes of water discharge reduction overtime in Ewaso Ngiro River include:-

- (a) Changes in land use and land cover in the upper areas/water towers;
- (b) Allocation Title Deeds over Catchment Areas, wetlands and riparian land;
- (c) Depletion of vegetation cover in the three main gazetted water towers of Mt. Kenya, Aberdares and Nyambene hills through human activities;
- (d) Effects of Climate Change; Temperatures have risen throughout the country, rainfalls have become irregular and unpredictable;
- (e) Non-Compliance with the law; compliance with the legal framework governing the water resources sub-sector in Kenya is fairly low. Most people assume that since water is God given, they are entitled to use it to their satisfaction without any control from the Government or any other authority.

Eng. Kinyua informed the Committee that WRMA had put in place measures to ensure the continuous flow of water is not interrupted and to mitigate the destruction of the river which include:

- (a) Regulation and enforcement of water resources uses that involves receiving and processing applications and issuance of water use permit and Enforcing permit conditions;
- (b) Catchment Protection and conservation that involves Protection of springs for improved water resources availability and Gazettement of water catchment areas and wetlands. It also involves Riparian land delineation and demarcation and Tree planting especially on the riparian lands and water catchment areas;
- (c) Participatory Management of Water Resources that involves the establishment of WRUAs, Development of sub catchment management plans (SCMP), Stakeholders' collaboration and, Sensitization, capacity building and technical assistance to WRUAs and stakeholders; and
- (d) Water Resources monitoring, assessment and data management that includes use of Gauging Stations to record daily water levels on the perennial rivers.

iii) The Abstraction Formula for The Entire Basin

- (a) The abstraction formula for the entire basin is done by WRMA through issuance of water permits with permit conditions for abstractions. The permits are guided by the Catchment Management Strategy, Water Allocation Guidelines and Water Allocation Thresholds.
- (b) While exercising the mandate for water allocation, WRMA gives preference/priority to water for domestic use;

- (c) Prior to issuance of permits, WRMA takes into account views of various stakeholders, including members of the public, Catchment Area Advisory Committees and Water Resources Users Associations amongst others;
- (d) The Ewaso Ngiro North Catchment Area (ENNCA) has adequate volumes of renewable freshwater. However, its availability in terms of spatial and temporal distribution does not match the demand pattern. According to National Water Master Plan 2030, renewable surface water in the catchment is 1,725 MCM/year, while that for ground water is 18,197 Million Cubic Metres /year giving a total 19,922 Million Cubic Metres/year;
- (e) Consequently, ENNCA has a renewable per capita water of 5,534 Cubic Metres per year which is way beyond the current demand. However, majority of it is available only during the rainy seasons and flows away due to lack of storage facilities;
- (f) As part of its mandate, and in collaboration with other stakeholders, WRMA has identified some potential water storage infrastructure. These will greatly assist in flow regulation and water demand management and also ensure that no deficit is experienced during the dry season.

2.3 Submission by Mr. Sheikh Omar, Managing Director, EwasoNyiro North Development Authority

Mr. Sheikh Omar appeared before the Committee on 8th March, 2016 and informed it that:-

- (i) Wajir County was facing water shortage and if this was not checked it could result into conflict among communities in the area;
- (ii) There was need to construct a dam upstream to increase water storage and save water for people downstream;
- (iii) In an effort to protect the catchment area, the Agency had planted four (4) million trees upstream;
- (iv) Construction of dams would help mitigate floods which were common during rainy seasons;
- (v) Education visits should be organized for people both upstream and downstream to understand the issues going on at both ends;
- (vi) Constitute a water Parliament or a body that would ensure consultation on water allocation. This will enhance equitable water distribution; and
- (vii) Initiate other economic activities such as an abattoir, camel milk commercialization. These activities would ease pressure on water.

2.4 Submission by Mr. David Oyosi, Director, Regional Development, Ministry of Environment & Natural Resources

Mr. Oyosi, on 8th March, 2016, while responding to the issues raised in the petition informed the Committee that:

- (i) The main problem in River EwasoNyiro was encroachment of the water catchment areas by private developers;
- (ii) Construction of surface dams, water pans and water harvesting initiatives such as roof catchment would help in dealing with water shortage in the area;
- (iii) WRMA was underfunded and there was need to supplement the agency's budget to enhance its capacity to execute its mandate;
- (iv) The licences issued by the National Environment Management Authority should be assessed by WRMA, this will help in protection of catchment areas; and
- (v) Reclamation of catchment areas had begun in some areas such as Kikuyu springs and Kaberia springs; this is a difficult exercise that will involve various stakeholders for it to succeed.

2.5 Field Visit to Habasweine, Wajir County

On 15th April, 2016, the Committee held a meeting in Habasweine Town in Wajir County where it received submissions from among others hereunder outlined:-

I Submission by Mr. Bare Abdi Ogle (an Elder)

Mr. Ogle informed the Committee that during the 76 years that he has been a resident of the area the river used to flow during both the dry and wet seasons and might have been blocked by the Missionaries. He further informed the Committee that the residents are suffering from food shortage as farming is unsustainable without the river, therefore if the river was to flow they wouldn't need relief food but grow their own and be self-sufficient.

II Submission by Mr. Bishar Dagane Abdi (a former area councillor/opinion leader)

Mr. Dagane informed the Committee that the river stopped flowing in 1972 and since then their livelihood had been greatly affected: particularly their animals died which is their economic backbone. He further informed the meeting that the Water Resources Management Authority was planning to take water from the Mertiacquiferto supply to Wajir town. He termed this as very unfair to them as this would finish the water underground.

III Submission by Mrs. Nathan Mohamed (Chairperson, Habasweine WRUA)

Mrs. Nathan informed the Committee that:

- (i) The waters of the Ewaso Ngiro River which has its source in the Aberdare Mountains in the central highlands of Kenya have been continuously getting depleted since the early 1970s;
- (ii) The river last naturally flowed there in 1972. Since then continuous abstraction at various points along the river's course has rendered it a seasonal stream;
- (iii) During the rainy seasons the river would burst its banks and cause flooding in Habasweine;
- (iv) The biggest problem lies along the course in Nyandarua and Laikipia counties where giant mega dams have been put up for agricultural uses and electricity generation. This has grossly affected the already weak flow of water downstream;
- (v) The action of these upstream users contravenes the rights of other users downstream. The residents in Wajir South have been greatly affected as water resources have been grossly depleted making water availability perennially unsustainable. Its consequences include;
 - a) Perennial cycle of poverty;
 - b) Water resource conflict among communities;
 - c) Human - wildlife conflict;
 - d) Catchment destruction; and
 - e) Poor water recharge levels among other issues.
- (vi) Further, the water table has gone lower this shows a steady and very fast water resource depletion. The problem is compounded by over-abstraction of water in the refugee camp in Dadaab which also lies on the same belt; and
- (vii) WRMA haphazardly issues abstraction permits without consulting local communities and other institutions;

IV. Mr. Khalif Abdi Hajji (Representing the Youth)

Mr. Hajji informed the committee that in the past the river used to flow continuously throughout the year before it dried up in 1979. Further, he believed that the river had been blocked upstream and therefore farming is no longer viable in the area.

V. Submission by Mr. J.W. Mulwa, EwasoN'giro North River Basin Development Authority (ENNDA)

Mr. Mulwa who submitted as follows:

Reasons for Flow reduction in EwasoN'giroRiver

- (i) Increased abstraction due to Increased Water Demand upstream;
- (ii) Destruction And Degradation of Catchment Areas;
- (iii) Climate Changes Effects.

He further proposed the following as a way forward:

1. ENNDA in partnership with other stakeholders should construct a multipurpose water storage reservoir at the middle reaches of the River. This would assist in flow regulation to ensure the river flows through the entire stretch year round. The Proposed Nantudu Dam above crocodile jaws is aimed to do that as the principal function with non-consumptive water uses taking subsidiary objectives such as Hydropower generation, recreation and tourism among others;
2. Catchment conservation to be undertaken majorly in the upper Basin to reserve the ongoing degradation with special emphasis on the protection and rehabilitation of the two water towers found in the basin (Mt. Kenya and Aberdare ranges);
3. Promotion of riparian protection along the main river channel and its principal tributaries to enhance subsurface flows to augment the surface in the river during drought periods; and
4. Harvesting of the Milgis water system which comes when the main river is at its lowest flow in the lower reaches to increase the water basket in EwasoNyiro North Catchment Area.

VI Submission by Mr. KaranjaMunyua, Water Resources Management Authority (WRMA)

Mr. Munyua informed the Committee that the Constitution of Kenya and the Water Act, 2002 empowers WRMA to provide water to all Kenyans without any favour. In his opinion, the reduction of water could be as a result of the following:-

1. Change of weather
2. Reduction of the water
3. Population increase
4. Occasional flooding
5. Environmental changes.

Mr. Munyua further assured the delegation that WRMA is fighting the encroachment of water catchment areas however the Authority has on various occasions faced violent attacks in the course of duty from people who had encroached on catchment areas.

3.0 COMMITTEE OBSERVATIONS

Following its interaction with various stakeholders and after carrying out a field visit to Habasweine, the Committee made the following observations:-

1. River Ewaso Nyiro used to flow throughout the year until the mid-seventies when it started being erratic. The duration of flow has been decreasing through the years;
2. There was major encroachment of riparian areas on the upstream of the river;
3. Illegal abstractions upstream was causing water shortage to the downstream water users;
4. There is need to urgently address the issue of water scarcity in Wajir County as it could breed conflict among communities; and
5. There is lack of information by the community on the causes of the river drying up. There was therefore need for information sharing to the community.

4.0 RESPONSE TO THE PRAYERS OF THE PETITIONERS

In response to the prayers that the National Assembly, through the Departmental Committee on Environment and Natural Resources investigates circumstances under which the Water Resources Management Authority has been issuing water extraction and abstraction permits to upstream users in breach of sections 29(4) and 32 (2) of the water act 2002; and Intervenes with the relevant authorities to ensure that any permits issued contrary to provisions of the water Act 2002 are revoked forthwith with a view to alleviating the acute shortage caused to downstream users.

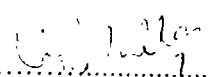
The Committee responds as follows:

To these Prayers, the Committee responds as follows:

1. Following its investigation, the Committee established that the Water Resources Management Authority follows due process when issuing abstraction licenses. However, illegal abstractions and encroachment on the upstream side of the River EwasoNyiroNorth Basin were a major problem in the area. The Committee also established the WRMA was facing challenges in stopping illegal abstractions. Following this finding, the Committee recommends that the Water Resources Management Authority should collaborate with security agencies to stop all illegal abstractions. Any individual/company carrying out illegal abstractions should be arrested and prosecuted;

The Committee further recommends that:

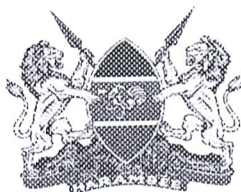
2. The Ministry of Water and Irrigation should construct a dam in the middle reaches of the EwasoNyiro North River. The Ministry should consider constructing the Nantudu Dam proposed by the EwasoNyiro North Development Authority. This will ensure flow of the river is regulated throughout the year; and
3. An inter-agency unit should be established to carry out a forensic audit of the land encroached on within the catchment areas both upstream and downstream in order to initiate the process of reclaiming the same.

Signed..........Date.....6/OCT/2016.....

Hon. Amina Abdalla, CBS, MP

Chairperson, Departmental Committee on Environment and Natural Resources

Appendix 1- MINUTES



DEPARTMENTAL COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES
PAYMENT SCHEDULE

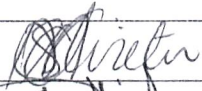
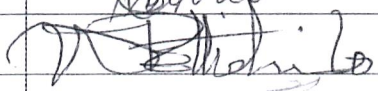
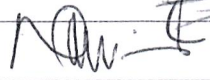
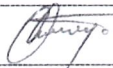
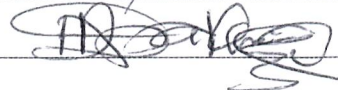
AGENDA: CONSIDERATION & ADOPTION OF THE REPORT ON THE PETITION
REGARDING THE MANAGEMENT OF EWASO NYIRO RIVER BY THE WATER
RESOURCES MANAGEMENT AUTHORITY

DATE: 06/10/2016

TIME: 10.00AM

VENUE: CPA ROOM

	NAME	SIGNATURE
1	Hon. Abdalla, Amina, CBS, MP-CHAIRPERSON	
2	Hon. Alexander Kosgey, MP Vice Chairperson	
3	Hon. Dukicha, Hassan Abdi, MP	
4	Hon. Emanikor, Joyce Akai, MP	
5	Hon. Ganya, Francis Chachu, MP	
6	Hon. Geni, Charles Mongare, MP	
7	Hon. Gure, Shukra Hussein, MP	
8	Hon. Ole Kenta, Richard Moitalel, MP	
9	Hon. Mohamed, Diriye Abdullahi, MP	
10	Hon. Murungi, Kathuri, MP	
11	Hon. Ogalo, George Oner, MP	
12	Hon. Sunjeev Kaur Birdi, MP	
13	Hon. Tonui, Ronald Kiprotich, MP	
14	Hon. Dr. Wanyonyi, Reginalda N, MP	
15	Hon. Farah, Abdulaziz Ali, MP	
16	Hon. Barua, Ejidius Njogu, MP	
17	Hon. Irea, Gideon Mwititi, MP	
18	Hon. Muluvi, Marcus Mutua, MP	
19	Hon. Isaac Mwaura, MP	

20	Hon. Ndiritu, Samuel Mathenge, MP	
21	Hon. Ottichilo, Wilber Khasilwa, MP	
22	Hon. Rop, Jackson Kipkorir, MP	
23	Hon. Abdinoor, Mohammed Ali, MP	
24	Hon. Ng'ang'a, Alice Wambui, MP	
25	Hon. Peter Kinyua, MP	
26	Hon. Richard Makenga, MP	
27	Hon. Zuleikha Hassan Juma, MP	
28	Hon. Jude Njomo, MP	
29	Hon. Joyce Lay, M.P	

CHEBET KOSKEI
FOR -CLERK OF THE NATIONAL ASSEMBLY

MINUTES OF THE 63RDSITTING OF THE DEPARTMENTAL COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES HELD ON TUESDAY 1ST SEPTEMBER, 2015 AT 10.00 AM C.P.A ROOM, MAIN PARLIAMENT BUILDINGS.

PRESENT

1. Hon. Abdalla Amina, M.P. – Chairperson
2. Hon. KathuriMurungi, M.P.
3. Hon. Wandayi James Opiyo, M.P.
4. Hon. Ole Kenta Richard Moitalel, M.P.
5. Hon. Geni Charles Mong'are, M.P.
6. Hon. Tonui Ronald Kiprotich, M.P.
7. Hon. Ottichilo Wilber Khasilwa, M.P.
8. Hon. Mohamed DiriyeAbdullahi, M.P.
9. Hon. Rop Jackson Kipkorir, M.P.
- 10.Hon. BaruaEjidiusNjogu, M.P.
- 11.Hon. Ganya Francis Chachu, M.P.

APOLOGIES

1. Hon. Alexander Kosgey, M.P. – Vice Chairperson
2. Hon. Sunjeev Kaur Birdi, M.P.
3. Hon. Abdinoor Mohammed Ali, M.P.
4. Hon. Farah Abdulaziz Ali, M.P.
5. Hon. Muluvi Marcus Mutua, M.P.
6. Hon. Ndiritu Samuel Mathenge, M.P.
7. Hon. MwashetaniKhatib, M.P.
8. Hon. Emanikor Joyce, M.P.
9. Hon. Jude Njomo, M.P.
- 10.Hon. Dukicha Hassan Abdi, M.P.
- 11.Hon. Ng'ang'a Alice Wambui, M.P.
- 12.Hon. GureShukra Hussein, M.P.
- 13.Hon. Irea Gideon Mwit, M.P.
- 14.Hon. Katana Aisha Jumwa, M.P.
- 15.Hon. Peter Kinyua, M.P.
- 16.Hon. Dr. WanyonyiReginalda N. M.P.
- 17.Hon. Ogalo George Oner, M.P.

IN-ATTENDANCE

THE NATIONAL ASSEMBLY

1. Mr. Joshua Ondari - Clerk Assistant III
2. Ms. Lynette Otieno - Legal Counsel II

MIN. NO. DC/ENR/274/2015 - PRELIMINARIES

The Chair called the meeting to order at 2.25 pm followed by a word of prayer.

MIN. NO. DC/ENR/275/2015 – MEETING WITH HON. ABDULLAHI DIRIYE ON THE PETITION REGARDING THE MANAGEMENT OF EWASO NYIRO RIVER BY WATER RESOURCES MANAGEMENT AUTHORITY

Hon. AbdullahiDiriye, MP informed the committee as follows: THAT

- a) The petition is about Ewaso Nyiro North catchment area;
- b) The river passes through Isiolo to Wajir;
- c) There has been no water in Wajir for the last fifteen years because the community in the upstream has blocked water and the river doesn't flow as it used to;
- d) The Water Resource Management Authority has been issuing permits for the extraction and abstraction of water in the upstream of Ewaso Nyiro without the consideration of the people living downstream; and
- e) The Authority has deliberately given priority to agricultural, industrial and other non-domestic uses of water.

COMMITTEE RESOLUTIONS

Following the presentation by Hon. Abdullahi Diriye, MP, and the Committee resolved to invite the Water Resources Management Authority and Ewaso Nyiro North Development Authority for a meeting on October 13th, 2015.

The water resources management authority will be responding to the following issues:

- a) What is the historical water data discharge in both dry and wet seasons? and
- b) Why has the discharge gone down?

The Ewaso Nyiro North will be responding to the following issues:

- a) What have they done to ensure the continuous flow of water is not interrupted?
- b) Is there any illegal water interruption? If any what have they done to stop it?
- c) What is the abstraction formula for the entire basin? And
- d) What are the destruction measures put in place?

MIN.NO. DC/ENR/276/2015 ADJOURNMENT

There being no other business the meeting was adjourned at Twenty Minutes past Twelve O'clock.

SIGNED.....



Deffaed

PP (Chairperson)

DATE.....

22nd october 2015

MINUTES OF THE 13TH SITTING OF THE DEPARTMENTAL COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES HELD ON TUESDAY MARCH 8TH, 2016 AT 10.30AM, CPA ROOM, MAIN PARLIAMENT BUILDINGS

PRESENT

1. Hon. Abdalla Amina, M.P., CBS – Chairperson.
2. Hon. Wandayi James Opiyo, M.P.
3. Hon. Dr. Wanyonyi Reginalda N. M.P.
4. Hon. Ole Kenta Richard Moitalel, M.P.
5. Hon. Muluvi Marcus Mutua, M.P.
6. Hon. Farah, Abdulaziz Ali, M.P.
7. Hon. Mohamed Diriye Abdullahi, M.P. ✓
8. Hon. Gure Shukra Hussein, M.P. ✓
9. Hon. Tonui Ronald Kiprotich, M.P. ✓
10. Hon. Irea Gideon Mwititi, M.P.

APOLOGIES

1. Hon. Alexander Kosgey, M.P. – Vice Chairperson.
2. Hon. Emanikor Joyce, M.P.
3. Hon. Ndiritu Samuel Mathenge, M.P.
4. Hon. Sunjeev Kaur Birdi, M.P.
5. Hon. Kathuri Murungi, M.P.
6. Hon. Ottichillo K. Wilber, M.P.
7. Hon. Abdinoor Mohammed Ali, M.P.
8. Hon. Ogalo George Oner, M.P.
9. Hon. Dukicha Hassan Abdi, M.P.
10. Hon. Geni Charles Mong'are, M.P.
11. Hon. Rop Jackson Kipkorir, M.P.
12. Hon. Ng'ang'a Alice Wambui, M.P.
13. Hon. Katana Aisha Jumwa, M.P.
14. Hon. Ganya Francis Chachu, M.P.
15. Hon. Peter Kinyua, M.P.
16. Hon. Jude Njomo, M.P.
17. Hon. Barua Ejidius Njogu, M.P.

THE NATIONAL ASSEMBLY

- | | |
|------------------------|-----------------------|
| 1. Ms. Chebet Koskei | - Clerk Assistant II |
| 2. Mr. Hassan A. Arale | - Clerk Assistant III |
| 3. Ms. Christine Maeri | - Audio officer. |

IN ATTENDANCE.

1. Mr. Omar M. Sheikh- Managing Director, Ewaso Nyiro North Development Authority(ENNDA)

2. Mr. David Omondi Ochillo - Regional Manager(ENNCA)-Water Resources Management Authority
3. Mr. David N.Oyosi MBS - Director Regional Development.
4. Mr. Maina Riondo - Deputy Director Regional Development.
5. Eng. Joseph M. Kinyua - Technical Manager – WRMA
6. Mr. James Ambiso - Finance and Administration Manager, WRMA.
7. Mr. Simon W. Wahgombe - DTCM-WRMA
8. Ms. Janet Olowe - Chief Legal Officer-WRMA
9. Mr. Josiah W. Mulwa - CSTSOM-ENNDA.

MIN.NO. DC/ENR/045/2016- PRELIMINARIES

The meeting was called to order at 10.30 am after which prayers were said. The chair then welcomed the members and the officials of Ewaso Ngiro North Development Authority and Water and Resources management Authority officials to the meeting after a round of introduction.

MIN.NO.DC/ENR/046/2016: MEETING WITH THE OF EWASO NYIRO NORTH DEVELOPMENT AUTHORITY AND WATER AND RESOURCES MANAGEMENT AUTHORITY OFFICIALS REGARDING PETITION BY THE RESIDENTS OF DOWNSTREAM EWASO NYIRO RIVER BASIN ON THE MANAGEMENT OF EWASO NYIRO RIVER BY THE WATER RESOURCES MANAGEMENT AUTHORITY.

In response to the petition by the residents of downstream Ewaso Nyiro River basin on the management of Ewaso Nyiro river water by the water resources management authority that the national assembly through the departmental committee on environment and natural resources.

- i. Investigates circumstances under which the water resources management Authority has been issuing water extraction and abstraction permits to upstream users in breach of sections 29(4) and 32(2) of the Act, 2002, and
- ii. Intervenes with the relevant authorities to ensure that many permits issued contrary to provisions of the water act 2002 are revoked forthwith with view to alleviating the acute shortage caused to downstream users.

The Managing Director of WRMA Mr. Omar M. Sheikh said the following.

That, the **Water Resources Management Authority (WRMA)** is a state corporation established pursuant to Section 7 of the Water Act, 2002 and was operationalized in 2005. As the lead agency in water resources management WRMA has decentralized its regional offices within the six catchment areas. For this reason, the Water Resources Management Authority (WRMA), being the country's lead agency in water resource management has a vital role to regulate, manage and equitably allocate this water resource nationally to all uses.

The Water Resources Management Authority has delineated the country into six catchment areas and the operations have been decentralized to: Lake Victoria North, Lake Victoria South, Rift Valley, Athi, Tana, and Ewaso Ng'iro North Catchment Areas.

Brief background on Ewaso Ng'iro North Catchment Area

The Ewaso Ng'iro North Catchment Area covers an area of about 210,226 km² which is about 36% of the total area of Kenya, spread over **ten Counties**:- *Garissa, Mandera, Wajir, Isiolo, Meru, Marsabit, Nyandarua, Samburu, Nyeri* and *Laikipia*.

Altitude ranges from 150m above sea level at the Lorian swamp to the Mount Kenya whose peak is 5,199m above sea level.

Most of the catchment lies below 1,000m above sea level. The catchment neighbours Somalia in the East and Ethiopia to the North. Rift Valley internal drainage to the west and Tana catchment to the south.

According to National Water Master Plan 2030, renewable surface water in the catchment is 1,725 MCM/year, while that for ground water is 18,197 MCM/year giving a total 19,922 MCM/year. Consequently, it is estimated that Ewaso Ngiro North Catchment Area has a per capita water availability of 5,534 m³ way above the global benchmark of 1,000 m³ per year.

Therefore to address the issues raised through a Petition the National Assembly Committee on Environment and Natural Resources has condensed these issues into three for purposes of the hearing. As follows:

- i) The historical water data discharge by Ewaso Ng'iro River during the dry and wet seasons and why the water discharge has reduced;
- ii) Measures being put in place to ensure the continuous flow of water is not interrupted and to mitigate the destruction of the River;
- iii) The abstraction formula for the entire basin.

These issues are individually addressed below,

1.The Historical Water Data Discharge by Ewaso Ng'iro River During the Dry and Wet Seasons and Why the Water Discharge has Reduced

WRMA addressed this issue in two parts:

- i) the historical water data discharge; and
- ii) the reasons why the water discharge has reduced

i) The historical water data discharge

Ewaso Ngiro River sources are at a very high altitude of above 4000 metres above mean sea level at Mt. Kenya and Abardare Mountain ranges and by time it is traversing Isiolo County the altitude drops to 800 meters (*Amal*) while at *Harbaswein* the altitude ranges to 150 meters (*Amal*). This implies that at lower limits of *Harbaswein* the river has completely lost its velocity

and erosional ability. At this point the river attains deposition characteristic forming levy and sand deltas while spreading apart.

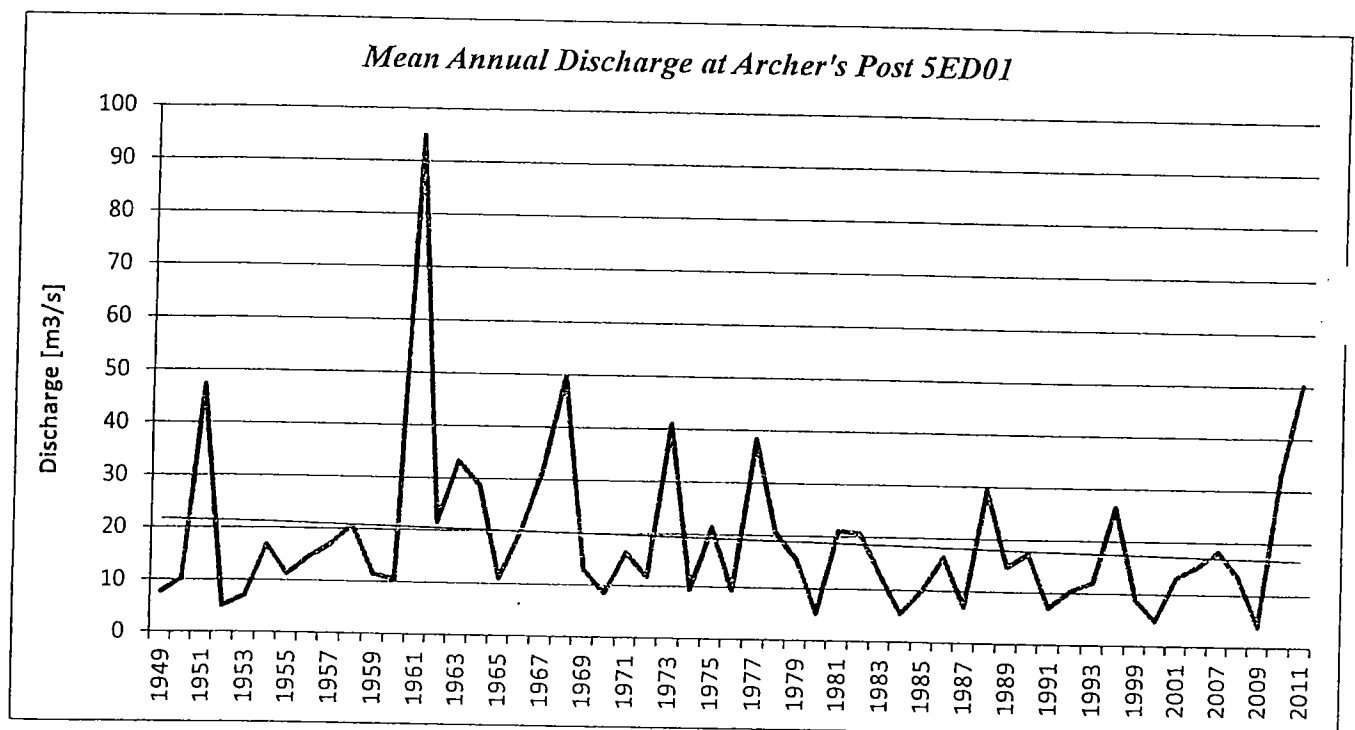
The river is further burdened by huge sand deposits of Rivers *Bhogal* and *Balal* whose source is Ethiopian highlands. Consequently, its flow is interrupted to infiltrate and percolate underground forming a long stretch of *Mert* aquifer which extends all the way to Somalia.

Merti aquifer is a blessing of Ewaso Ngiro River disappearance into the *Lorian* Swamp where it gets underground to recharge the aquifer. This phenomenon of the river is natural and may not be changed forever as it is dictated by the geology and the land geomorphology.

Surface Water Resources

Approximately 90% of the surface water resources originate from the Mt. Kenya and Aberdare water towers and are concentrated in Upper Ewaso Ngiro and the southern part of Engare Narok Melghis Sub Regions. These form the headwaters of the Ewaso Ngiro North River that flows eastward to disappear into the Lorian Swamp.

The drainage from the Upper Ewaso Ngiro North catchment area is concentrated at the Archer's Post National Station which is used to gauge the discharge from this area. The station was installed in 1949 and has been operational since then though with some data gaps occasioned by destruction of the station by natural or human causes. From the available data, the river has the following discharges:



Based on hydrological analysis, the above results indicate the following:

- i). The river exhibits regular peaks in the annual discharge which recurred in 1951, 1961 and 1968 (duration of almost 10 years apart). However, after 1971, the peaks are recurring with less intensity and more frequently;

- ii). Between 1949 and 2011, the trend shows a reduction in the discharge volume of almost 200 MCM of water. Considering the water use and demand within the upper Ewaso Ngiro North Catchment area, the drop is very high and is not solely as a result of abstractions. The causes attributed to the drop have been discussed on the second part below.

At the start of the monitoring for Archer's Post Gauging Station, the mean discharge was 18.04825 m³ per second and a minimum discharge of 0.636909 m³ per second.

Over time, the mean annual discharge has not changed much, slightly increasing to 18.95127 m³ per second. However, when this is viewed against the minimum flow recorded during the period, it shows a sharp drop from 0.637 m³ per second to 0.076 m³ per second.

In terms of the maximum discharge which was recorded at 865.285 m³ per second during the early 1950s, the maximum discharge has significantly increased to 1,754.319 m³ per second.

In terms of the total discharge through the station, the values vary from year to year with a maximum annual discharge of 2,992 Mm³ realized in 1961.

Due to the limited finances available for putting mechanisms in place for the efficient resources management, WRMA has endeavored to look for financial support from various partners. One of the support partners approached, CETRAD, has taken up financing the rehabilitation of a weir which is key to data collection within the area. The weir's rehabilitation has substantively progressed and data collection and analysis will be less cumbersome.

ii) Some causes of water discharge reduction overtime in Ewaso Ngiro River

- a). Changes in land use and land cover in the upper areas/water towers.
- b). Allocation Title Deeds over Catchment Areas, wetlands and riparian land
- c). The Mt Kenya, Aberdares and the Nyambene hills are the main water towers for the Ewaso Ngiro North River.
- d). Effects of Climate Change

Measures being put in place to Ensure the Continuous Flow of Water is not interrupted and to Mitigate the Destruction of the River

Section 15 of the Water Act, 2002 places an obligation of formulation of Catchment Management Strategy on WRMA. The Act requires that this be undertaken through a process of public consultation.

For the management, use, development, conservation, protection and control of water resources in Ewaso Ngiro North Catchment Area (ENNCA), WRMA has formulated **Catchment Management Strategy (CMS)** for the Ewaso Ngiro North Catchment Area.

Through the ENNCA –CMS 2014 to 2022, WRMA undertakes the following activities:

- i). **Regulation and enforcement of water resources uses that involves:**

- a) Receiving and processing applications and issuance of water use permits;
- b) Enforcing permit conditions;
- c) Surveillance of water resources bodies to stop illegal abstractions/interferences with water resources bodies;
- d) Carrying out abstraction surveys (Isiolo sub basin, Narumoro sub basin, Timau sub basin and Ewaso Narok sub basin on going)
- e) Development of water allocation plans (Narumoro sub basin and Isiolo sub basin-5DA).

ii). Catchment Protection and conservation that involves:

- a) Protection of springs for improved water resources availability;
- b) Gazettement of water catchment areas and wetlands.
- c) Riparian land delineation and demarcation.
- d) Tree planting especially on the riparian lands and water catchment areas;

iii). Participatory Management of Water Resources that involves:

- a) The establishment of WRUAs.
- b) Development of sub catchment management plans (SCMP).
- c) Stakeholders' collaboration.
- d) Sensitization, capacity building and technical assistance to WRUAs and stakeholders;

iv). Water Resources monitoring, assessment and data management that includes:

- a) 23 Regular Gauging Stations collecting daily water levels on the perennial rivers are rated and the water levels are converted into discharges for planning and management purposes;
- b) 8 No weather stations out of which 5 are full weather stations, 1 is a sub-meteorological station and 2 are rainfall stations (Archer's Post, Gataragwa Chief's Camp, Lamuria, Nanyuki MoW, Rumuruti MoW, Marsabit Lodge, AMS Nyahururu and Ndaragwa Forest Station)
- c) 16 No Groundwater monitoring boreholes;
- d) 56 No Water Quality Monitoring Stations composed of 40 No stations for surface water and 16 No for groundwater;
- e) Water resources assessment (Isiolo County, Wajir County and Marsbit Groundwater aquifer mapping);

The Abstraction Formula for The Entire Basin

The abstraction formula for the entire basin is water allocation by WRMA through issuance of water permits with permit conditions for abstractions as guided by the Catchment Management Strategy, Water Allocation Guidelines and Water Allocation Thresholds.

While exercising the mandate for water allocation, WRMA gives preference/ priority to water for domestic use which is part of the reserve.

Prior to issuance of permits and Authorizations for Category C and D, WRMA takes into account views of various stakeholders, including members of the public, Catchment Area Advisory Committees and Water Resources Users Associations amongst others.

As part of its mandate, and in collaboration with other stakeholders, WRMA has identified some potential water storage infrastructure which will greatly assist in flow regulation and water demand management, to ensuring that no deficit is experienced during the dry season. Some of the facilities that will benefit from this kind of investment include:

Dam sites, rivers and capacity

<i>Dam Name</i>	<i>River</i>	<i>Capacity (Mm3)</i>
Archer's Post	Ewaso Ngiro	214
Crocodile Jaws	Ewaso Ngiro	120
Ewaso Narok	Ewaso Narok	13
Kihoto	Ewaso Ngiro	443
Minns	Ewaso Ngiro	15
Nanyuki	Nanyuki	5.5
Naro Moru	Naro Moru	2.5
Ngadurumoto	Ewaso Ngiro	74
Nyahururu	Nyahururu	9.8
Pesi	Pesi	25
Randall	Ewaso Ngiro	8.9
Timau	Timau	2.34
<i>Total</i>		<i>933.04</i>

According to the assessment made in the ENNCA CMS 2014 – 2022, ENNCA already has a water deficit of 68 MCM per year and which is expected to be widened as socio-economic growth increases.

With the potential to develop 933 MCM of storage all within the upper Ewaso Ngiro North catchment will eliminate the water shortage/deficit experienced in the area.

In addition, mapping and protection and conservation of groundwater recharge areas such as swamps and wetlands and artificial groundwater recharge will reduce the water shortages.

In conclusion, for the catchment to attain maximum water availability against the militating environmental challenges, parliament must vote for more budgetary allocation for water resources management as opposed to the current status.

ENNCA Development Budget for the last three years

Financial Year	Approved Budget	Disbursement	% Allocation
2012/2013	41,150,000.00	2,014,337.60	4.9%
2013/2014	54,272,000.00	21,805,169.00	40.2%
2014/2015	64,640,000.00	13,967,091.15	21.6%
2015/2016	61,500,000.00	4,777,568.00	7.8%

THE AFFIDAVIT

The Authority wishes to clarify some of the issues contained in the Affidavit presented to the Committee on Environment and Natural Resources. THAT:

1. From the foregoing background, it is evident that due consideration is made by the Authority in water allocations through public consultations before issuance of permits. The Authority has on various occasions convened consultation forums before issuance of water use permits or authorizations for development of works.
2. Specifically, the Authority has ensured that compliance to Section 29 of the Water Act, 2002 is not only in respect to public consultations, but also, are subjected to an Environmental Impact Assessment where applicable, as required under Section 29(4) of the Act.
3. At no given time has there been rejection of an application for water use for domestic purposes. This is a right guaranteed by law and under the Constitution.
4. In undertaking water allocations as mandated by law, the Authority gives consideration to Domestic users. Indeed, the Authority is guided by the Water Allocation Guidelines as currently in place.

5. The Authority has also sought intervention of the Ministry of Water and Irrigation in the Gazettment of Catchment Area Advisory Committees whose advisory role is key to the applications for water uses within any catchment area.
6. The Committee is invited to interrogate the contents of this report with the annexes and confirm that the water allocation permits are issued in accordance with the Water Act, 2002, particularly, Section 29(4).
7. No complaints have been received by the Authority on the subject of hearing before the Committee. Any permits found to have been issued contrary to the provisions of the Water Act should be specifically identified to the Authority and steps towards their review will be initiated as contemplated under the Water Act.

SUBMISSION BY MR. SHEIKH OMAR, MANAGING DIRECTOR, EWASO NYIRO NORTH DEVELOPMENT AUTHORITY

Mr. Sheikh Omar informed the Committee that:

- i. The area was facing water shortage and if not checked could result into conflict;
- ii. There was need to construct a borehole upstream to reduce water usage and save water for people downstream;
- iii. In an effort to protect the catchment area, the Agency had planted four (4) million trees upstream;
- iv. Construction of dams would help mitigate floods
- v. Education visit should be organized for people both upstream and downstream to understand the issues going on at both ends;
- vi. Constitute a water Parliament that would ensure consultation on water allocation; and
- vii. Initiate other economic activities such as abattoir, camel milk commercialization; this would ease pressure on water.

SUBMISSION BY MR. DAVID OYOSI, A DIRECTOR, REGIONAL DEVELOPMENT, MINISTRY OF ENVIRONMENT, NATURAL RESOURCES & REGIONAL DEVELOPMENT AUTHORITIES

Mr. David Oyosi informed the Committee that:

- i. The main problem in River Ewaso Nyiro was encroachment of the water catchment areas by private developers;
- ii. Construction of surface dams, water pans and water harvesting initiatives such as roof catchment would help in dealing with water shortage in the area;
- iii. WRMA was underfunded and there was need to supplement the agency's budget to enhance its capacity to execute its mandate;

- iv. The licences issued by the National Environment Management Authority should be assessed by WRMA, this will help in protection of catchment areas;
- v. Reclamation of catchment areas had begun in some areas such as Kikuyu springs and Kaberia springs, this is a difficult exercise that will involve various stakeholders for it to succeed.

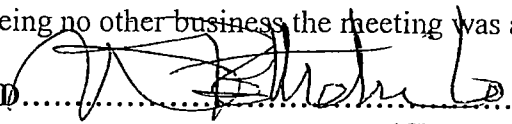
Observation

COMMITTEE RECOMMENDATIONS

1. The problem seems to be a catchment destruction issue rather than issuing of abstraction permits, therefore revocation of permits as prayed by Petitioners does not arise. The permits are based within the law;
2. There was need to take advantage of water harvesting and storage in order to meet water demands in the area.
3. The Ministry of Water and Irrigation should come up with a harvesting and storage policy in order to increase the water basket in the area;
4. An inter-agency unit should be established to carry out a forensic audit of the land encroaching the catchment areas both upstream and downstream and a report submitted to the Committee. Efforts to reclaim the catchments area should be initiated.

MIN.NO. DC/ENR/047/2016 ADJOURNMENT

There being no other business the meeting was adjourned at 12.10 pm.

SIGNED.....
(Chairperson)

DATE.....*14/4/16*.....

APPENDIX 2- PETITION

BY RESIDENTS OF DOWNSTREAM EWASO NYIRO RIVER BASIN
ON
THE MANAGEMENT OF EWASO NYIRO RIVER WATER BY THE WATER
RESOURCES MANAGEMENT AUTHORITY

I, THE UNDERSIGNED, on behalf of residents of the Ewaso Nyiro North Catchment Area in Wajir County;

DRAW the attention of the House to the following,

1. THAT, all rivers, lakes and other water bodies in the country fall under public land as contemplated under Article 62(1)(i) of the Constitution;
2. THAT, ownership in trust and management of water resources is a prerogative of the National Government through the National Land Commission and the Water Resources Management Authority as stipulated in article 62(3) of the Constitution and section 8 of the Water Act, 2002;
3. THAT, management of river Ewaso Nyiro North Catchment Area, which is classified as a water-scarce region falls under the National Land Commission and the Water Resources Management Authority;
4. THAT, the Water Resources Management Authority has been issuing permits for the extraction and abstraction of water in the upstream of Ewaso Nyiro river without due consideration of procedure outlined in section 29(4) of the Water Act, 2002;
5. THAT, by so doing, the Authority has deliberately given priority to agricultural, industrial and other non-domestic uses of water instead of giving precedence to domestic use as set out in section 32(2) of the Act;
6. THAT, in this regard the Authority has acted in abdication of its solemn duty of ensuring equitable use of water resources in the Ewaso Nyiro River basin, thereby jeopardizing livelihoods of downstream users in Wajir County;

Approved  NA
31/3/15

BY RESIDENTS OF DOWNSTREAM EWASO NYIRO RIVER BASIN
ON
THE MANAGEMENT OF EWASO NYIRO RIVER WATER BY THE WATER
RESOURCES MANAGEMENT AUTHORITY

7. THAT, even though the dire shortage of water resulting from flawed issuance of water usage permits to upstream users has been raised to the Water Resources Management Authority, no remedial measures have been initiated by the Authority;

8. THAT the issues raised in this petition are not pending before any court of law, administrative tribunal or any other constitutional or legal body.

THEREFORE your humble petitioners pray that the National Assembly, through the Departmental Committee on Environment and Natural Resources:

- (i) Investigates circumstances under which the Water Resources Management Authority has been issuing water extraction and abstraction permits to upstream users in breach of sections 29(4) and 32(2) of the Water Act, 2002; and
- (ii) Intervenes with the relevant authorities to ensure that any permits issued contrary to provisions of the Water Act 2002 are revoked forthwith with a view to alleviating the acute shortage caused to downstream users.

And your humble PETITIONERS will ever pray.

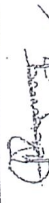
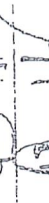
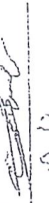
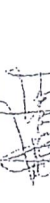
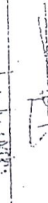
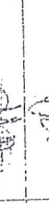
Presented by

Hon. Abdullahi. Mohamed Diriye
Member for Wajir South Constituency

Date: 30/3/2015



PETITION TO THE NATIONAL ASSEMBLY CONCERNING THE EWASO NYIRO RIVER DOWNSIDE FLOODING AND STREAM USERS
AND your humble petitioners will ever pray:-

No.	Name of the Petitioner		ID Number	CONTACTS	Signature/Thumb print
	SURNAME	FIRST NAME			
1.	SULEIMAN	BAHIR	29563474	0724617588	
2.	Iale	Gede Hassan	2788374	0729343606	
3.	OMAR	ABDINAHAT NOOR	29817354	0726094200	
4.	ABDI	AHMED MOHAMMED	3462502	0708366820	
5.	Shaffi Ahmed	ADOW MOHAMMED	31000038	0722950405	
6.		Salah Ibrahim	2261532	0725610150	
7.	Awsale	Abdirahman Farah	26725967	0710253875	
8.	Fatuma	Abdi Yussuf	28051836	0725443176	
9.	Ibrahim	Bare Muhammed	2467205	0722716992	
10.	Kahiye H.	Hassan Ali			
11.	MUHAMMAD	Sheikh Ahmed	26720017	0720858044	
12.	Ali	Abdinoor Sheikh	27654013	0723580685	
13.	Abdi	Ahmed Dawd	27100959	0720322968	
14.	Sulaiman	Sheikh Yussuf	28057805	0722326550	
15.	Abdirahman	Ali Osman	21655127	0720095100	

PETITION TO THE NATIONAL ASSEMBLY CONCERNING THE EWASO NYIRO RIVER DOWNSTREAM USERS
AND your humble petitioners will ever pray:-

No.	Name of the Petitioner		ID Number	CONTACTS	Signature/Thumb print
	SURNAME	FIRST NAME			
16.	ABDIKADIR	ABDIKADIR	26663239	0721925219	[Signature]
17.	MUSAFI	SHIGIRI	26506640	0722288617	[Signature]
18.	SOMANE	Nohamed	29799950	0720070511	[Signature]
19.	KUKIA	Fah	29297231	0711916584	[Signature]
20.	Mohamed Ahmed	Khair	1263162	712531065	[Signature]
21.	Mohamed	Muse	22776374	0720236277	[Signature]
22.	BAHIRA	ABDI	28325493	0710105777	[Signature]
23.	Gullia	Hassan	13331447	0726869135	[Signature]
24.	Hassan	Atala	23818400		
25.					
26.					
27.					
28.					
29.					
30.					

APPENDIX 3- SUBMISSIONS

MEMORUNDUM OF THE WAJIR SOUTH(HABASWEIN) COMMUNITY TO THE PARLIAMENTARY COMMITTEE ON WATER, ENVIRONMENT AND NATURAL RESOURCES DURING ITS PUBLIC HEARING ON THE STATUS OF EWASO NGIRO RIVER AT HABASWEIN ON THE 16TH APRIL 2016.

The waters of the Ewaso Ngiro river which has its source in the Abadare mountains in the central highlands of Kenya have been continuously getting depleted since the early 1970s.

The river last naturally flowed here in 1972, since then it has suffered continuous obstruction at various points along its course rendering it to become a seasonal stream only capable of bringing flood waters from upstream.

The biggest problem lies along the course in Nyandarua and Laikipia counties where giant mega dams have been put up for agricultural uses and electricity generation. This has grossly affected the already weak flow of water downstream.

The action of these upstream users contravenes the rights of others downstream affecting the environment and natural resource capacities of these users. We in Wajir South as the most affected and vulnerable in this scenarios have our resources grossly depleted making water availability perennially unsustainable. Its consequences include;

1. Perenial cycle of poverty.
2. Water resource conflict
3. Human wild life conflict
4. Catchment destruction
5. Poor water recharge levels among other issues.

As a consequence of the above, the following facts deserve a review. In 1936 when borehole one was drilled water was available at a depth of 70 metres, in 1985 when Habaswein borehole was drilled, water was realized at 120 metres. In 2016, a borehole was sunk at Kiwanja Ndege, water was realized at a depth 250 metres. This shows a steady and very fast increase in water resource depletion. It is also worsened by the over obstruction of water in the refugee camp in Dadaab which also lie in the same belt. The situation is exacerbated by the water resources management authority(WARMA), which havesardly issues drilling permits without caring and consulting with institutions of local communities such as environment protection agencies, water resources users association and other environmently friendly community organizations.

Devolution has brought a lot of resources closer where communities will want to actualize their long-term dreams including access of water and exploitation of the same by any means. This is in total disregard to sustainability issues the same might have on this already fragile situation. It is the sincere hope and prayer of the people of Wajir South that justice will be done to the satisfaction to the down stream users of the Ewaso Ngiro river.

Signed

Wajir South Professionals Association

Copied,

Water resource users Association,

HOPE Wajir South

Wajir South Elders /community



**WATER RESOURCES MANAGEMENT
AUTHORITY**

**EWASO NG'IRO NORTH
CATCHMENT AREA (ENNCA)**

**CATCHMENT MANAGEMENT
STRATEGY**

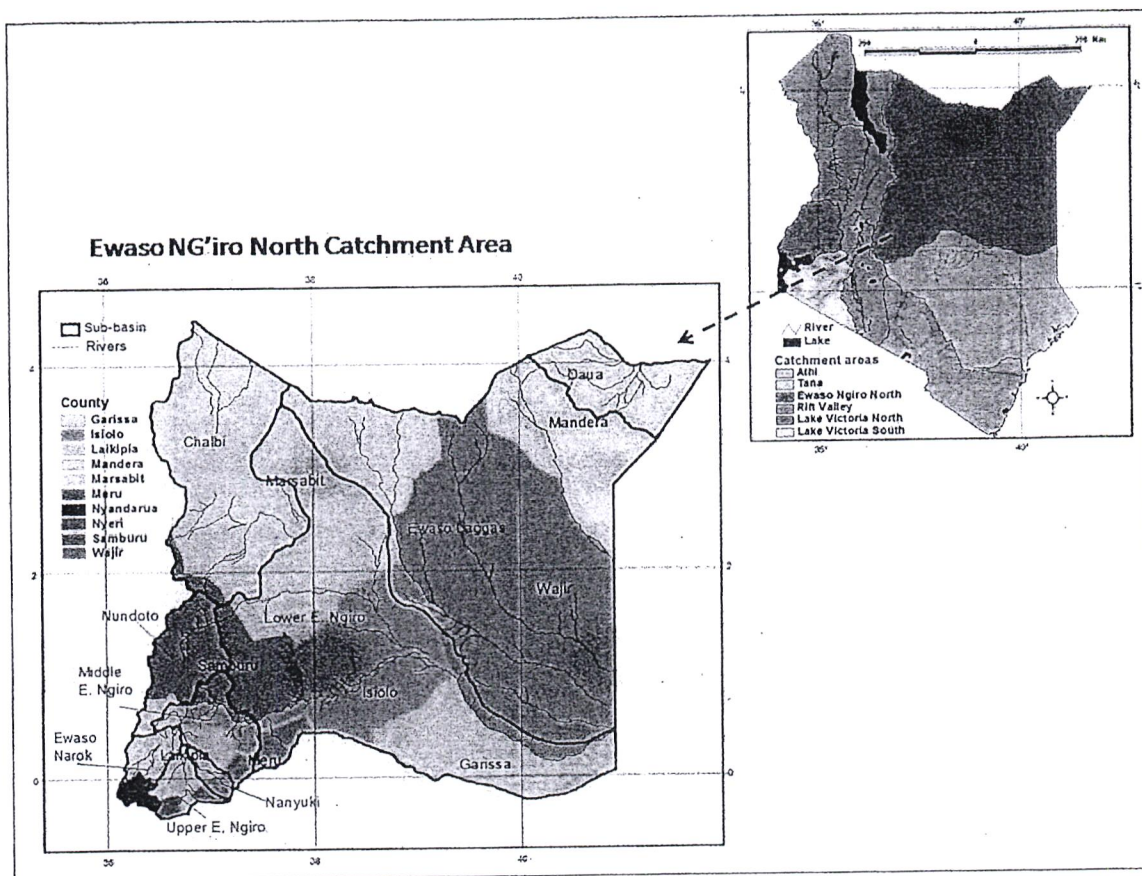
(2015-2022)



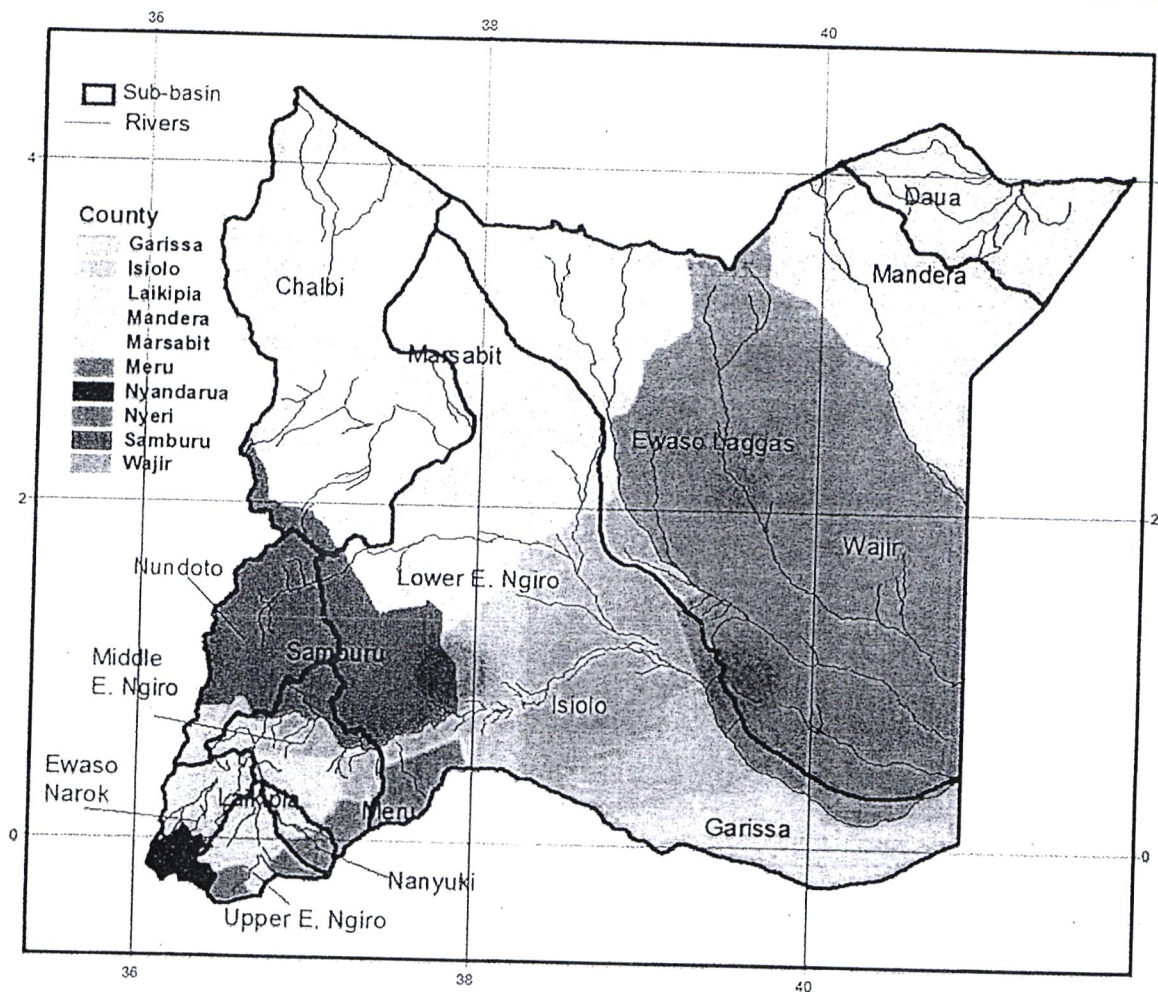
REPUBLIC OF KENYA

APRIL 2015

Catchment Management Strategy for Ewaso Ng'iro North Catchment Area



Location Map of Ewaso Ng'iro North Catchment Area



Counties in EwasoNg'iro North Catchment Area

TABLE OF CONTENTS

TABLE OF CONTENTS	4
LIST OF TABLES	5
LIST OF FIGURES	6
FOREWORD	7
ACRONYMS AND ABBREVIATIONS	8
PART I: BACKGROUND	12
CHAPTER 1: INTRODUCTION	13
CHAPTER 2: POLICY, VISION, MISSION AND PRINCIPLES	28
CHAPTER 3: BASIN CHARACTERIZATION	33
PART II: STRATEGIES FOR PROTECTION OF THE RIGHT TO WATER	40
CHAPTER 4: MANAGEMENT APPROACHES	41
CHAPTER 5: WATER BALANCE AND DEMAND MANAGEMENT	49
CHAPTER 6: WATER ALLOCATION AND USE MANAGEMENT	53
ISSUES THAT IMPACTED ON THE IMPLEMENTATION OF THE 2008-2013 CMS AND THOSE THAT EMERGED DURING IMPLEMENTATION INCLUDED:	54
PART III: STRATEGIES FOR RESOURCE PROTECTION	57
CHAPTER 7: WATER RESOURCES PROTECTION	58
CHAPTER 8: CATCHMENT PROTECTION AND CONSERVATION	61
PART IV: STRATEGIES FOR RESOURCE AUGMENTATION, ADAPTATION AND DEVELOPMENT	65
CHAPTER 9: FLOOD AND DROUGHT MANAGEMENT	66
CHAPTER 10: CLIMATE CHANGE ADAPTATION	72
CHAPTER 11: WATER RESOURCES INFRASTRUCTURE DEVELOPMENT	76
CHAPTER 12: RIGHTS BASED APPROACH	79
CHAPTER 13: LIVELIHOOD ENHANCEMENT	82
PART V: STRATEGIES FOR IMPLEMENTATION, INFORMATION MANAGEMENT AND FINANCING	85
CHAPTER 14: INSTITUTIONAL STRENGTHENING	86
CHAPTER 15: MONITORING AND INFORMATION MANAGEMENT	90
CHAPTER 16: FINANCING THE CMS	94

APPENDICES	99
------------------	----

LIST OF TABLES

TABLE 1-1: EVALUATING THE IMPLEMENTATION OF LAPSED CMS	15
TABLE 1-2: ELEMENTS OF STRATEGIES FOR CATCHMENT MANAGEMENT WITH DETAILS ON THE GOTA	ERROR!
BOOKMARK NOT DEFINED.	
TABLE 3-1: ANNUAL AVAILABLE WATER RESOURCES (ENNCA)	35
TABLE 3-2: WATER DEMANDS BY SUBSECTOR (ENNCA)	35
TABLE 3-2: POPULATION TREND (2014-2022)	38
TABLE 4-1: ENNCA SUB-REGIONS, MANAGEMENT UNITS AND SUB-REGIONAL OFFICES	42
TABLE 4.2: EWASO NGIRO NORTH CATCHMENT MANAGEMENT UNITS AND SUB-REGIONS	45
TABLE 9-1: MEASURES FOR FLOODS AND DROUGHT MANAGEMENT IN THE CATCHMENT	67

FOREWORD

Water is an important natural resource throughout the world; it is the source of life, the backbone of growth and prosperity. Kenya is a water stress country, whose water resource endowment is outstripped by the demand. For this reason, the Water Resources Management Authority (WRMA), being the country's lead agency that regulates and manages water resources nationally, has the vital role in equitably allocating water to all water uses. The economic and social development anticipated by Kenya Vision 2030 will require much more water resources than at present.

The National Water Resource Management Strategy (NWRMS) 2013 has provided a clear, accountable and transparent road map for assessing, maintaining, enhancing, developing and managing the limited available, renewable, fresh water. The Integrated Water Resources Management (IWRM) approach has been the most preferred in guiding the management of water resources globally. Kenya also has adopted the IWRM approach. WRMA has adopted strategies which include, among others, managing an effective water resources monitoring system for informed decision making and planning, ensuring access to information at all levels and linking water resources to a growing economy in attaining Kenya Vision 2030. Furthermore, WRMA will perform specific tasks which include protection of riparian land, water sources, water recharge areas and water bodies; infrastructure development for water harvesting and storage; real time water resources assessment and monitoring; water allocation, water use control; capacity building and institutional development of Water Resource Users Associations (WRUAs). Further, WRMA will create awareness and provide information to the public; and implement livelihood projects for income generation as a way of encouraging communities living in important water catchment areas to preserve, conserve and protect water resources. The tasks are in line with WRMA's mandate as provided in the Water Policy of 1999 and the Water Act of 2002.

Section 15 of the Water Act 2002 requires the WRMA in consultation with the public, to formulate a catchment management strategy for the management, use, development, conservation, protection and control of water resources within each catchment area in Kenya. In formulating this CMS WRMA involved stakeholders both at County and Regional levels. The importance of stakeholder involvement and partnerships in managing our water resources cannot be over emphasized. The Government, the academia, the NGOs and development partners should join hands in this direction so as to bring in synergies, and to avoid duplication and resource wastage. We all must appreciate that different stakeholders have different key inputs in these efforts. I wish to thank all stakeholders and development partners who have been involved in one way or the other in the formulation of this strategy. Your contributions are valuable and much appreciated.

HON. PETER L. N. KIILU, EBS.

CHAIRMAN, WATER RESOURCES MANAGEMENT AUTHORITY

•
•
•
•
•

ACRONYMS AND ABBREVIATIONS

ACA	Athi Catchment Area
ASAL	Arid and Semi Arid Land
CAAC	Catchment Area Advisory Committee
CBO	Community Based Organization
CCA	Climate Change Action
CDD	Community Driven Development
CDO	Community Development Officer
CDTF	Community Development Trust Fund
CG	County Government
CETRAD	Centre For Research and Arid Land Development
CMO	Catchment Management Officer
CMSs	Catchment Management Strategies
CMU	Catchment Management Unit
COD	Chemical Oxygen Demand
DEM	Digital Elevation Model
DMC	Disaster Management Committee
DO	Dissolved Oxygen
DOC	Disaster Operations Centre
EC	Electrical Conductivity
ED	Effluent Discharge
EDCP	Effluent Discharge Control Plan
EDP	Effluent Discharge Permit
EIA	Environmental Impact Assessment
ENNCA	EwasoNg'iro North Catchment Area
FMIS	Finance Management Information System
FMO	Flood Management Officer
GCM	Global Climate Model
GEF	Global Environmental Fund
GIS	Geographic Information System
GOK	Government Of Kenya
GW	Groundwater
GWO	Ground Water Officer

GIZ	German International Co-operation
HQ	Headquarter
ICT	Information Communication Technology
IFDMP	Integrated Flood and Drought Management Plan
IT	Information Technology
IWRM	Integrated Water Resources Management
IFM	Integrated Flood Management
IFMP	Intergrated Flood Management Plan
JICA	Japan International Cooperation Agency
KFS	Kenya Forest Service
KMD	Kenya Meteorological Department
KNBS	Kenya National Bureau of Statistics
LMG	Livelihood Micro Grand
LVIA	Lay Volunters International Association
LVNCA	Lake Victoria North Catchment Area
LVSCA	Lake Victoria South Catchment Area
LWF	Laikipia Wildlife Forum
MCM	Million Cubic Metres
MDG	Millenium Development Goals
M & E	Monitoring and Evaluation
MEWNR	Ministry of Environment, Water and Natural Resources
MTAP	Medium Term ASAL Programme
MTR	Medium Term Review
MOU	Memorandum of Understanding
MWI	Ministry of Water and Irrigation
NCCAP	National Climate Change Action Plan
NCF	Nordic Climate Facillity
NEMA	National Environment Management Authority
NGO	Non Governmental Organizations
NRM	Natural Resources Management
NWMP	National Water Master Plan
NWRMS	National Water Resources Management Strategy
OSHA	Occupational Safety and Health Act
GOTA	Goal, Objectives, Targets, Actions
PDB	Permit Data Base

PICD	Participatory Intergrated Community Development
PRSP	Poverty Reduction Strategic Paper
PPP	Public Private Partnership
RDM	Resource Directed Management
RGS	Regular Gauging Station
RM	Regional Manager
RO	Regional Office
RQOs	Resource Quality Objectives
RVCA	Rift Valley Catchment Area
SCMPs	Sub-Catchment Management Plans
SP	Service Providers
SRM	Sub-Regional Manager
SRO	Sub-Regional Office
SW	Surface Water
SWO	Surface Water Officer
TCA	Tana Catchment Area
TSS	Total Suspended Solids
UN	United Nations
UNDP	United Nations Development Programme
WAN	Wide Area Network
WAP	Water Allocation Plan
WDC	WRUA Development Cycle
WIDP	Water Investment Development Panel
WQ	Water Quality
WQPCO	Water Quality and Pollution Control Officer
WR	Water Resource
WRCS	Water Resources Classification System
WRIMS	Water Resources Information Management Systems
WRMA	Water Resources Management Authority
WRM	Water Resources Management
WRO	Water Rights Officer
WRUA	Water Resource Users Association
WSIP	Water Sector Investment Plan
WSP	Water Service Provider
WSTF	Water Services Trust Fund

PART I: BACKGROUND

This part contains the following three chapters:

Chapter 1: Introduction provides an overview, rationale of the CMS, its formulation process and structure. An evaluation of the lapsed CMS is included for the purpose of assessing its implementation achievements.

Chapter 2: Policy, Vision, Mission and Key Principles provide the policy and legal background for the development of this CMS. The fundamental principles of Integrated Water Resources Management (IWRM) are also included.

Chapter 3: Basin Characterization Provides an overview of baseline physiographical condition of the catchment and outlines key issues and challenges facing the region.

CHAPTER 1: INTRODUCTION

1.1 Overview

Kenya has a total area of 587,000 square kilometres of which 576,000 square kilometres is land and 11,000 square kilometres is water. With an estimated population of 39 million in 2009 and a projected population of 52 million by 2030, the country faces enormous challenges in the management of its limited water resources. The challenges are associated with water resources data collection and information generation; water scarcity and variability; water pollution; enforcement of water laws; catchment degradation; and climate change impacts. The magnitude of the issues, challenges and the severity of the water crisis that face Kenya cut across most sectors of the economy; hence, making water resources management a high priority.

In recognition of the above issues and challenges, the water sector in Kenya has undergone comprehensive and fundamental reforms. Since 2005, the Water Resources Management Sub Sector has implemented the reforms as envisaged in the National Water Policy on Management and Development of Water Resources in Kenya of 1999 and the Water Act 2002. One key activity undertaken was the development and implementation of six Catchment Management Strategies (CMS) in line with the requirements of Water Act 2002.

The main objective of a CMS is to facilitate the management of water resources in order to achieve equitable, efficient and sustainable use of water for the benefit of all users. Therefore, WRMA is developing a mediumterm CMS for protecting and improving water quality in all the catchments.

1.2 National Water Resources Management Strategy

The National Water Resources Management Strategy (NWRMS) 2013 outlines the objectives and strategies that address the major issues and challenges facing the country. It recognizes that integrated water resources management must be elevated and recognized as a national priority, which underpins Kenya's social and economic development, and requires substantial investment.

The fundamental objectives for managing water resources in Kenya are enshrined in the Water Act 2002. Sections 11(1) and 11(2) of the Act, define the NWRMS in accordance with which the water resources of Kenya shall be managed, protected, used, developed, conserved and controlled. Section 11(3) of the Act provides that the strategy should prescribe the principles, objectives, procedures and institutional arrangements for the conservation and control of water resources including;

- Classifying water resources;
- Determining the requirements of the reserve for each water resource;
- Development and implementation of water allocation plans
- Identifying areas to be designated as protected areas and groundwater conservation areas;
- Facilitating development of WRUAs;
- Water conservation (through regulation of water retaining infrastructure design, construction and operational dam safety surveys);

In pursuant to Section 14 of the Water Act 2002, the Water Resources Management Authority has delineated the country into six catchment areas, namely: Lake Victoria North Catchment Area, Lake Victoria South Catchment Area, Rift Valley Catchment Area, Athi River Catchment Area, Tana River Catchment Area, and EwasoNg'iro North Catchment Area

1.3 The Catchment Management Strategy (CMS)

1.3.1 Rationale of the CMS

Catchment Management Strategy (CMS) is a tool that describes the framework for the management of the water resources and related land resources in the catchment. It outlines how the concept of integrated water resources management is to be implemented at the catchment level.

The strategy provides an opportunity for water resources management institutions and stakeholders to formulate a coherent approach and focus for managing the water resources in a catchment. As such, the CMS is both a process and a framework for management binding the Authority, the water users, other stakeholders and their representative structures in a social and/or legal union.

The time horizon for this CMS is up to the year 2022 and harmonizes with the timelines for the Water Resources Management Plan for ENNCA as contained in the National Water Master Plan 2030.

1.3.2 CMS Formulation Process and Structure

In reviewing and updating the lapsed CMS, some of the key considerations included:

- Assessing the extent of implementation of various strategic actions in the lapsed CMS.
- Evaluating the outlined strategic actions in the lapsed CMS and their relevance in addressing the intended objectives. This exercise provided an opportunity to address other specific issues that WRMA considered important for inclusion in the revised CMS.
- Developing strategic actions up to the year 2022 to take cognizance of the Water Resources Management Plan developed under the National Water Master Plan 2030.

The review process involved:

- Technical meeting with WRMA's National staff to review and develop an agreeable CMS structure;
- data collection and development of guidelines for the technical working session at ENNCA regional office ;
- A technical working session held at ENNCA regional office Nanyuki;
- Collating the various inputs from the technical workshop and developing a draft CMS document;
- Presenting the draft to the County Governments for their comments. After collating their inputs, a zero draft was developed;
- Presentation of the draft CMS to Regional stakeholder's workshop for validation. The selection of stakeholders within the Region was broad-based and inclusive;

- Holding a national workshop for all the major stakeholders for validation and adoption of the catchment management strategy;
- Presentation of the final CMS to the Ministry of Environment, Water and Natural Resources for gazettelement.

1.3.3 Evaluation of the lapsed CMS

The lapsed ENNCA CMS 2009-2013 was reviewed to assess the achievements made in implementing the strategic actions. The relevant strategic actions and the status of implementation are presented in Table 1-1

Table 1-1: Evaluating the implementation of the lapsed CMS

Strategic Actions	Achievements	Actions still considered in this CMS
Chapter 4: Management Units and Classification		
Classify surface water resources spatially	GIS Layers of the surface water bodies available	☒
Classify ground water resources and springs spatially and tested in pilot areas	Implemented through Mapping of Marsabit-Turkana aquifer, ground water assessment of Isiolo County .	☒
Set the Resource Quality Objectives (RQOs) and have them tested in pilot areas	Not done	☒
Verify management units and use them as basis for water resources management	Done This informed the formation of the sub regional offices.	☒
Chapter 5: Water Balance & Water Demand Management		
Assess the available natural water resource	Assessment done. Report available in the NWMP 2030.	☒
Assess the actual use in detail for pilot areas	Done. Actual assessment/abstraction survey for the following WRUAs; Suguroi, Olkejuosira, Pesi, isiolo sub catchment 5DA (Maranis, Ngarendare, Ngarenaithi, likiundu and liliaba), Ngobit, Teleswani and Upper Ewasong'iro.	☒
Assess the actual demand in detail for pilot areas	WAPs developed for Isiolo 5DA subcatchment (Likiundu, liliaba, ngarenaithi, lewa) and Naromoru subcatchment.	☒
Develop future baseline scenarios	. Scenarios developed and report available NWMP 2030.	☒
Develop scenarios for reconciling water requirements with available resource to address deficits including transfer options	Done. Scenarios developed and report available NWMP 2030.	☒
Review and update the methodology for better water balancing	. Partially do through the WAPs mentioned above.	☒
Chapter 6: Water allocation and use management		
Assessment of water resources (SW&GW)	Assessment done and report available in NWMP 2030.	☒
Identification of major water use/users	. This has been done through permitting of Class C and D Categories.	☒
Development of thresholds and water	.	☒

Strategic Actions	Achievements	Actions still considered in this CMS
allocation plans	Thresholds guidelines developed and being implemented WAPs developed for the following subcatchments; Isiolo 5DA	
Operationalization of water abstraction permit system	.PDB system in place and operational at the regional office and the 5 subregions.	☒
Development of enforcement plan for action on point source and non-point source polluters	Done .Major polluters identified, 16 EDCPs developed and 12 EDCPs implemented.	☒ Chapter 14
Development of a roll out plan for water use charges	Done. Roll out plan developed and implemented.	☒
Promotion of water conservation measures and water use efficiency through awareness campaigns	Done. Awareness campaigns done for water use conservation and water use efficiency during the development of SCMPs, WAPs, and also during capacity building of WRUAs and stakeholders.	☒
Cross-checking implementation of ENNCA CMS activities.	Cross checked through monitoring of the implementation of the annual workplan, collaboration and partnership with other stakeholders.	☒
Staff training on permitting processes	Staff trained.	☒
Enforcement of installation of meters for water abstraction points	320 Abstractions have been installed with water master metre	☒
Putting in place Permit system and processing applications as soon as possible	Done PDB system in place and used for processing water use permits.	☒
Development of water allocation plan	This has been done for 2 subcatchments for Isiolo 5DA and Naromoru	☒
Chapter 7: Water Resources Protection and Reserve Management		
Define and interpret classification system and RQOs for ENNCA	. Not done	☒
Analysis of hydrological records	Partially done, analyzed records used in development of NWMP 2030	☒
Analysis of groundwater records & aquifer characteristics	Partially done, analyzed records used in development of NWMP 2030	☒
Develop collaborative arrangements to ensure category C and D polluters comply with regulations	Done. These are included as conditions in the EDP	☒
Capacity building of Sub-Counties Environmental Committees	Done by the Subregional Managers attending the committees in some of the Sub-counties and also committee members are involved in SCMP preparation.	☒ Chapter 8
Application of Reserve Quality system in pilot areas	. Not done	☒
Facilitate formulation codes of practice for effluent discharge	.Partially Done. Effluent Discharge standards developed and in use.	☒
Provide regional contributions to system of water use charges for effluent load	Done The system of Water use charges for effluent load is integrated with the PDB. Some dischargers are paying.	☒
Provide regional contributions and dissemination of codes of practice for effluent discharge	Not Done	☒

Catchment Management Strategy (2014-2022)

Strategic Actions	Achievements	Actions still considered in this CMS
Pollution prevention guidance	Implemented through WRM rules 2007	☒
Identify and prioritize stressed water resources	Done Subcatchments classified as alarm, Alert and Satisfactory	☒
Incorporating environmental impact assessment (EIA) in all development projects/programmes with significant impacts on water resources	Done. EIA licences are a condition for water use permitting	☒
Strengthening inspection, monitoring and data gathering on municipal wastewater and solid waste disposal	Partially done through EDCPs, water quality monitoring and water pollution surveys	☒
Carrying out public awareness campaigns on water, sanitation and hygiene	Done through river cleaning campaigns especially Nanyuki river and also provided for carwash oil separator for Nanyuki WRUA.	☒
Formulating water quality standards for different classes of water resource	Not Done	☒
Controlling nutrient, sediments and pollution discharge into water bodies	Not Done	☒
Strengthening inspection, monitoring and data gathering on municipal wastewater and solid waste disposal	Done through provision of oil separator for Nanyuki river WRUA and also catchment protection campaigns by implementation of SCMPs.	☒
Chapter 8: Catchment Protection and Conservation		
Complete inventory, surveys and maps for all protection and conservation areas	Masui springs for Muhotetu WRUA protected. Catchment 11 surveyed, Major wetlands mapped in the Kenya Wetland map, 147 No. Springs and 7 No. Wetlands identified. 5 No. Sand dams constructed (Terenkwe, Ilpoonyokie, Loriakorok, Njore, Oldonyonyiro). Pollution surveys conducted for the following WRUAs : Nanyuki, Isiolo, Nyahururu, Naromoro, and Ngusisi	☒
Prioritization and delineation of the strategic and major areas for conservation and protection	.Done Identified and documented in the NWMP 2030. Ground water conservational area identification and recommendation for protection is currently going on through Marsabit-Turkana aquifer mapping process. Odda well valley has also been prioritized as a ground water conservational area. Other areas prioritized as water catchment conservational areas for ENNCA are slopes of Mt. Kenya, Aberdares ranges, Lake Ol-bolosat, Ewaso Narok swamp, Oldonyonyiro mountains, Matthews's ranges, Mt. Marsabit, Mt. Kulal, Nyambene hills and Chalbi desert.	☒
Agreed zoning of the catchment areas for integrated protection and conservation management	Done 271 No. WRUA potential areas delineated for the catchment. 45 SCMPs formulated with zones for subcatchment management.	☒
Rehabilitation of groundwater conservation Areas	Implemented through the SCMPs.	☒

Strategic Actions	Achievements	Actions still considered in this CMS
Protect river bank reserves to maintain environmental flow	Implemented through the SCMPs.	☒
Initiate and support to rehabilitate and protect pilot water catchment areas	Implemented through the SCMPs.	☒
Harmonize programmes in rehabilitation of land use, agriculture, forests, wildlife and settlement	Done 45 No. SCMPs developed.	☒
To prevent the identified priority areas from being allocated against the public interest	Partially done at Lake Olbolosat and EwasoNarok swamp and Marsabit hills and on delineated riparian land.	☒
Develop incentive plans to encourage water and catchment management	Implemented for Nanyuki WRUA through provision of Car wash Ngusishi WRUA- fish ponds, drip irrigation kits provided to small scale farmers.	☒
Chapter 9: Institutional Development and Support		
Operate WRMA offices in the catchment effectively	Done One Regional and 5 Sub Regional offices operational	☒
Carry out training need assessment for next 5 years	Staff trained in various identified fields	☒
Carry out identified training	Trainings conducted in the following areas:- .PDB, IWRM ,Mike Basin Database, Prosecution, QMS(ISO 9001:2008)	☒
Identify hotspots and facilitate formation of WRUAs	Sub catchments classified as Alert, Alarm and Satisfactory 71No. WRUAs formed	☒
Capacity Build WRUAs to undertake water resource management	71No WRUAs capacity built.	☒ Considered as catchment forum
Development of SCMPs	45 No. SCMPs developed.	☒
WRMA supporting implementation of SCMPs	45No SCMPs developed and proposals formulated for implantation.	☒
Develop regional mechanisms for stakeholder participation (communication)	ENNCA Catchment WRUA forum, County and Inter County forums established,	☒
Implement communication mechanism between stakeholders	Implemented through Forums, meetins and workshops	☒
Develop and manage effective internal and external communication	The process is implemented through email,websites telephone and written correspondence communication mechanism. Other external means of commincation are electronic and print media ,banners,bronchures, posters ,Newsletters and billboards	☒
Active participation and effective inputs in integrated water resource management at sectoral cooperation	- Comments done on EIA reports from NEMA - EIA license required as a condition in water permit processing Implemented through public and Sectoral stakeholders participation in development	☒

Catchment Management Strategy (2014-2022)

Strategic Actions	Achievements	Actions still considered in this CMS
	and implementation of CMS and SCMPs. IWRM is also implemented through Secretarial stakeholders collaboration and Partnerships.	
Joint projects /studies /agreements with stakeholders	Water Resources Assessment , for Isiolo County through MTAP 1 , Water Resources Assessment for Garisa and, then Turkana-Marsabit aquifer mapping, implementation of SCMPs establishment, rehabilitation and Automation of monitoring stations collaboration between CETRAD, LWF , And WRMA. MOU Signed between ENNCA and LWF.	☒
Encourage research in water and catchment management	Implemented through provision of Surface water ,Groundwater, water quality data to researchers, Scholar and University students CETRAD incollaboration with WRMA and other stakeholders conduct research in water resource management in ENCCA.	☒
Chapter 10: Water Infrastructure Development. & mgt. Strategy		
Identification of priority areas for storage development and water transfers.	Feasibility for a dam of 351Mm ³ done along the Ewaso Ng'iro River. Storage to be enhanced by 809,355m ³ .	☒
Development and marketing of feasibility / business plans to meet key storage needs.	Supported the following WRUAs in the development of storage infrastructures : 1. Ngusisi WRUA 2. Nanyuki WRUA 3. Oldonyiro WRUA	-
Institutional capacity developed to initiate storage infrastructure development.	4No sand dams constructed namely Terenkwe, Ilpoonyoike, Loriakorok, Njoro dams.	☒
Capacity enhancement on regulatory and technical aspects of WR Infrastructure Development.	This has been implemented through evaluation and approval of storage structure design for the purposes of their security and approval. This is undertaken by the Conservation Officers.	☒
Support to stakeholders in constructing rainwater harvesting facilities, dams and pans, and exploring alternative water sources.	- . 10 No. WRUAs supported to develop proposals for rain water harvesting facilities. 1 No. WRUAs (Muhotetu) supported for spring protection. 6 No WRUAs supported for sand dams.	☒ Chapter 9
Support to planning, design and implementation of disaster control measures	. Flood mitigation plan for Isiolo sub catchment has been developed. This plan was finalized in August 2013. It took care of the early warning systems, structural measures, capacity building and formulation of IFMP.	☒
Identification of priority areas for groundwater storage development	Implemented by supporting 6No WRUAs for sand dam construction. This was taken care during the water resource assessment for Isiolo county. In process through the Turkana-Marsabit	☒

Strategic Actions	Achievements	Actions still considered in this CMS
	aquifer mapping project.	
Identification of priority areas for storage development and water transfers.	Areas for storage and transfer were identified under the NWMP2030	☒
WRUA capacity development to initiate groundwater storage infrastructure development.	Implemented through Identification of suitable sites, design and construction of sand dams for the WRUAs.	☒
Dam safety risk registration and classification	There is a guideline for classification of Dams as high, medium and low risk.	
Support to mechanisms for safe operation and effective maintenance of storage	This is implemented by the approval of dam design plan and inspection of dam safety by conservation officers.	
Support to establishment of information exchange system for water related disasters.	It is done through the implementation IFMP which include the early warning systems.	
Inventory of existing water storage infrastructure	An inventory developed for existing water storage infrastructure.	
Master plan for rainwater harvesting prepared	Not done	
Chapter 11: Rights Based Approach & Poverty Reduction		
Give priority to basic human needs in water allocation	Category A permits require just registration and exempted from payment of water use. NB: In water allocation Priority for domestic water use supersedes any other use.	☒
Capacity building for WRUA and gender balanced CAAC/WRUA	Done in the CAAC and all WRUAs. Gender mainstreaming is a requirement of the WDC framework	☒ Chapter 14
Establish complaint mechanism	Complaints handling mechanism is in existence and operational	
Capacity building of vulnerable groups in accessing water	WRUA sensitized to give priority to vulnerable groups in allocating water resources. Right Based Approach considers vulnerable groups for water allocation.	☒
Chapter 12: Monitoring and Information Management		
Develop an agreed framework for integrated monitoring of catchment condition	Water Resources monitoring network prioritized..	☒
Implement key water resource monitoring network.	Water Resources Monitoring network established and operational	☒
Implement key catchment monitoring network and provide maps.	28 monitoring stations operationalized and mapped.	☒
Develop and implement remaining monitoring network for water resources assessment.	New monitoring stations being established.	-
Procure modern monitoring equipment (SW, GW, WQ)	The following equipments have been procured:- Automatic weather stations, GW data loggers, SW level data loggers, ADV, ADCP, ADC3, Equipments for Ground water exploration, Early warning systems for river	☒ Chapter 6

Catchment Management Strategy (2014-2022)

Strategic Actions	Achievements	Actions still considered in this CMS
	gauging of Isiolo River and Rain Gauges.	
Operate and maintain the network as soon it is established	Monitoring network maintained.	☑Chapter 6
Consolidate data needed for database	Data migrated to MIKE BASIN - Regional database maintained. Data collection continuously done.	☑
Develop and carry out abstraction surveys	8 No. Abstraction survey conducted.	☑
Develop and implement laboratory facilities	Laboratory facilities partially developed and implemented at Regional office. Facilities existing at the Nyeri Laboratory..	☑
Develop and implement water resource information management system	WRIMS was established Water resources database in place	☑
Identify and agree on information needs of stakeholders and develop information dissemination and information exchange	Information needs identified (Water Quality Analysis, WQ data, Weather data GW exploration, Abstractions) Dissemination done through Performance Report, Progress Reports, Official Website, Print media	☑
Use water resource information management system for decision making (transform data into information)	Data used in the development of NWMP 2030 and in the Permitting process	☑
Training of staff & capacity building	Staff trained on IWRM at various levels such as Data management, M & E, EIA, SLDP, OSHA	☑
Provide services (reports, data, maps etc)	Contribution to Year book and Annual WR Situation, Production of GIS maps for WRUAs and WRMA performance report and WAPs.	☑
Design and establish a WRM Action Tracking System / Database (monitoring and evaluation)	M&E system established.	☑
Review from time to time the information needs of all stakeholders	SCMPS reviewed	☑
Chapter 13: Strategy For Finance Mobilization		
Develop 5 year work plan and budget, consistent with water sector investment plan (WSIP)	Achieved through annual work plans	☑
Develop roll-out plan for water use charges	WRM rules and regulations 2007 developed and rolled out	☑
Proposals prepared to support SCMPS	45 No proposals prepared.	☑Chapter 14
Resources mobilized to support SCMPS through WRUA development cycle and other sources	SCMPS implementation activities supported by WSTF,CDTF,GEF,LVIA,MTAP,UNDP,GIZ ,LWF,CETRAD,County Government and other Government Agencies..	☑Chapter 14
Piloting support through WDC to selected WRUAs	The WRUAs are formed on WDC framework which also guides the implementation of SCMPS.	☑Chapter 14
Identify and prepare 5 PPP projects	Not done	☑

Emerging issues:

During implementation of the lapsed CMS, some emerging issues were realised as affecting water resources management and which needed to be included in a CMS. They included:

- Constitution of Kenya, 2010
 - Section 6 (2): Introducing two levels of government
 - Section 42 : Right to clean and healthy environment
 - Section 43 (1) (d): Right to clean and safe water in adequate quantities
 - Section 62 (1) (i), (j) , (k) and (l): All water bodies defined as public land
- The National Water Master Plan 2030;
- Climate change;
- Flood and drought management; and
- Livelihood enhancement programs.

The emerging issues are incorporated in this CMS.

1.3.4 Structure of CMS

The following is a summary of the chapter the CMS:

Part One: Background

- **Chapter 1: Introduction** provides an overview, rationale of the CMS, its formulation process and structure. An evaluation of the lapsed CMS is included for the purpose of assessing its implementation achievements.
- **Chapter 2: Policy, Vision, Mission and Key Principles** provide the policy and legal background for the development of this CMS. The fundamental principles of Integrated Water Resources Management (IWRM) are also included.
- **Chapter 3: Basin Characterization** Provides an overview of baseline physiographical condition of the catchment and outlines key issues and challenges facing the region.

Part Two: Strategies for Protection of the Right to Water

- **Chapter 4: Management approaches** presents the basis for determining the management units for the CMS and catchment classification for equitable allocation of water for various uses
- **Chapter 5: Water balance and demand management** provides water balance status with respect to availability of the resources and the demand including the reserve, storage and transfers.
- **Chapter 6: Water allocation and use management** describes the approaches to ensure equitable and sustainable use of water. The related strategies for efficient and transparent allocation are included. Priority for allocation will be given to the reserve water, which includes domestic and environmental flows, before the other considerations.

Part Three :Strategies for Resource Protection

- **Chapter 7: Water resources protection** describes the approach and options adopted in order to protect the water bodies with respect to the quality and prevention of pollution.

- **Chapter 8: Catchment conservation and protection** deals with appropriate measures to control catchment degradation for sustainable yield of quality water.

Part Four: Strategies for Resource Augmentation, Adaptation and Development

- **Chapter 9: Flood and drought management** describes the general concept of water-related disaster management, which includes floods and droughts. The underlying issues of vulnerability, risks and community resilience to flooding and droughts are also highlighted.
- **Chapter 10: Climate change adaptation** provides strategies for mainstreaming climate change adaptation measures in the management of water resources and building climate change resilient communities. Emphasis is given to climate change information for purposes of decision making in water resources related development
- **Chapter 11: Water resources infrastructure development** provides the strategies for regulating development of infrastructure while ensuring safety.
- **Chapter 12: Rights based approaches** identifies water related rights issues for equitable water allocation planning. Consideration will be given to the vulnerable groups and the maintenance of the reserve
- **Chapter 13: Livelihood management** provides strategies to support projects that enhance the income for local groups engaged in water resources management.

Part Five: Strategies for Implementation, Information Management and Financing

- **Chapter 14: Institutional strengthening** presents strategies for enhancing the capacity of WRMA and stakeholders to effectively undertake water resources management in ENNCA.
- **Chapter 15: Monitoring and information management** presents the strategies for ensuring that water resources management and catchment monitoring systems provide accurate data, and that the CMS implementation is monitored continuously and periodically evaluated.
- **Chapter 16: Financing the CMS** outlines the strategies for sustainably financing the strategic actions contained in this CMS. It focuses on the budgetary requirements and the sources of funds.

1.3.5 Conceptual framework for CMS development

The conceptual framework for CMS development is guided by the vision which the region seeks to achieve within a span of eight years. The structural representation of this framework is shown below.

10

11

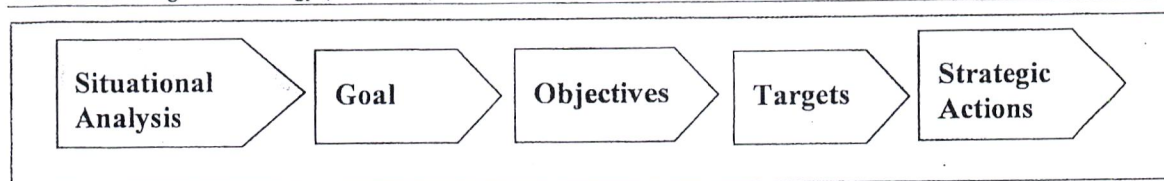


Figure 1-1: Conceptual framework for CMS development

The management of water resources is considered to be a cyclic process (Figure 1-2)

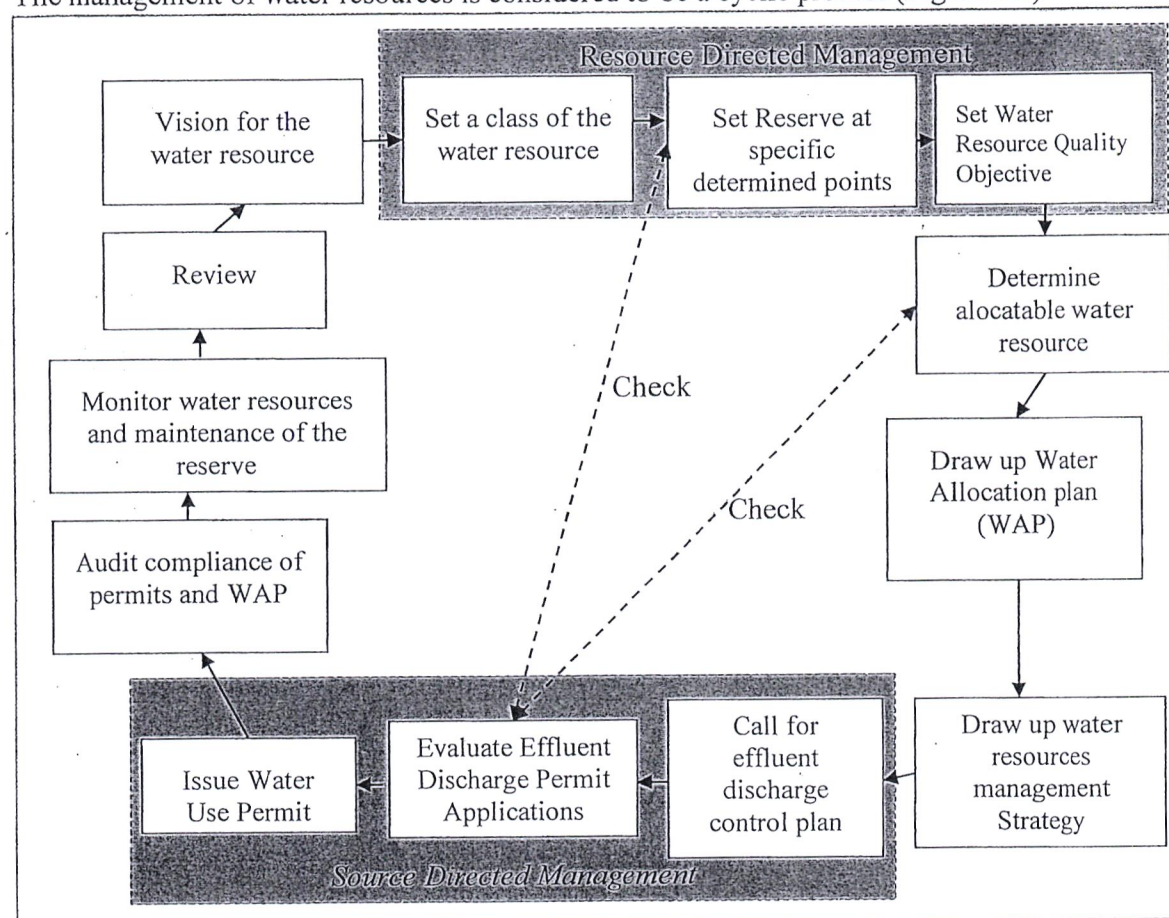


Figure 1-2: Water resources management cycle

As shown above, the process starts by first reviewing the water resources situation and setting the vision for the resource. Thereafter strategic actions for Resource Directed Management (RDM) are developed and linked to the strategic actions for Source Directed Management through intermediary processes.

The CMS at a glance is conceptualized to be consisting of foundation, pillars and a vision (Figure 1-3). This structure depicts the strategic approach to management of water resources.

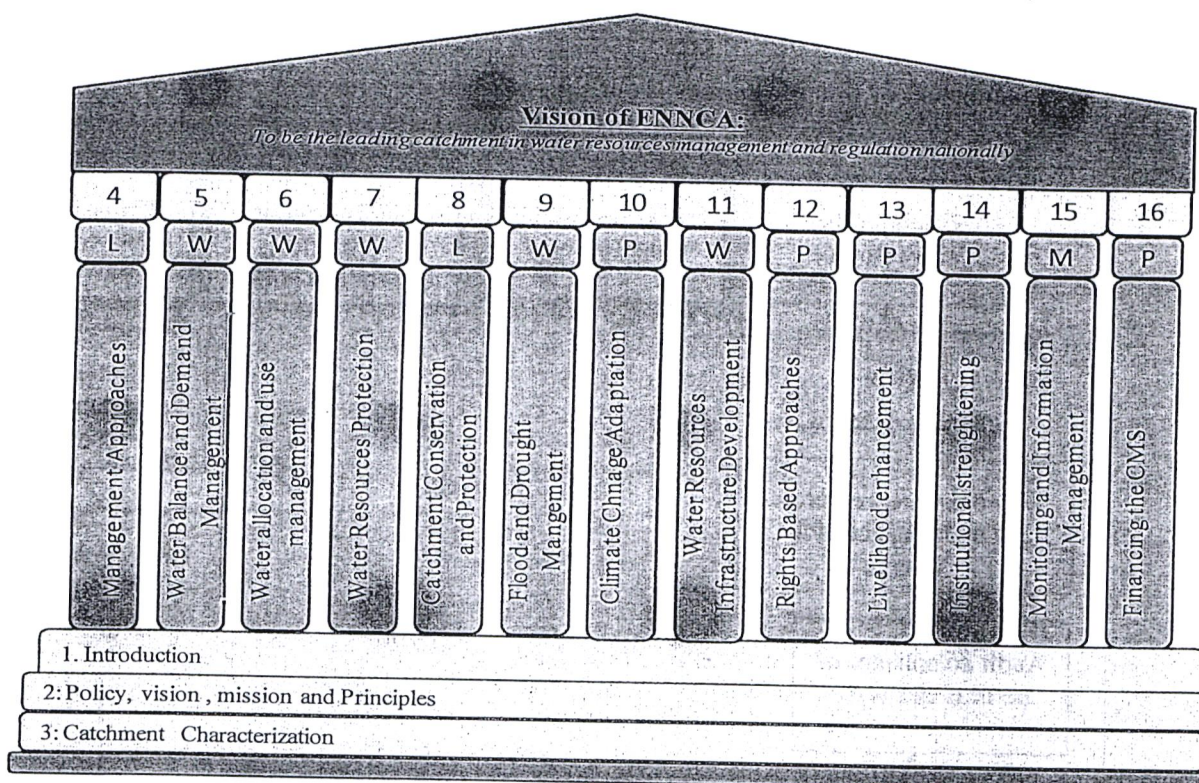


Figure 1-3: Structure of the CMS

In order to focus the Strategy, WRMA has adopted the approach of setting the Goal(G), broad objectives (O), specifying Targets (T) and developing Strategic Actions (A) for every strategy outlined in the CMS. The specified objectives are intended to achieve the goals of the specific strategy while the strategic actions aim at achieving the objectives. The targets or indicators are used to measure the extent to which the goals have been achieved. Table 1-2 below gives the details of the GOTA. Some actions will be replicated in different chapters. All those will be collapsed into one overall implementation matrix.

Table 1-2: Elements of strategies for catchment management with details on the GOTA

Chapters of the CMS		Goal (G)	Objectives (O)	Targets (T)	Actions (A)
4	Management Approaches (L)	To manage water resources effectively and sustainably involving stakeholders in the catchment management units	LO01-03	LT01-03	LA01-06
5	Water Balance and Demand Management (W)	Establish water resources potential and demand for effective management	WO01-04	WT01-04	WA01-10
6	Water Allocation and Use Management (W)	Equitable allocation of water resources to competing needs for sustainable use while maintaining the reserve	WO05-07	WT05-07	WA11-20
7	Water Resources Protection (W)	Water resources protected from adverse impacts for sustainability	WO08-11	WT08-11	WA21-34
8	Catchment Protection and Conservation (L)	A restored, protected and conserved catchment	LO04-06	LT04-06	LA07-19
9	Flood and Drought Management (W)	Develop and implement Integrated Flood and Drought management plans in Collaboration with Stakeholders	WO12-16	WT12-16	WA35-54
10	Climate Change Adaptation (P)	Integrate climate change adaptation measures into water resources management	PO01-04	PT01-04	PA01-13
11	Water Resources Infrastructure Development (W)	Regulate infrastructure development for safety while ensuring downstream water commitments	WO17-19	WT17-19	WA55-71
12	Rights Based Approaches (P)	Equitable access to water for all	PO05-06	PT05-06	PA14-20
13	Livelihood Enhancement (P)	To provide incentives for enhancing WRUA Livelihoods.	PO07-09	PT07-09	PA21-33
14	Institutional Strengthening (P)	Strengthen institutional capacity for effective and efficient water resources management	PO10-13	PT10-13	PA34-51
15	Monitoring and Information Management (M)	Provide reliable information to support proper planning and management of the water resources	MO01-04	MT01-04	MA01-24
16	Financing and Implementation (P)	Achieve financial stability to implement the CMS	PO14-17	PT14-17	PA52-65

Note: First letter: P = People; W = Water, L = Land and M = Monitoring

Second letter: O = Objective; T = Target and A = Strategic Action

CHAPTER 2: POLICY, VISION, MISSION AND PRINCIPLES

2.1 Policy Direction and Legal Framework

2.1.1 National Water Policy

The policy direction on water resources management and development is outlined in the National Water Policy, Sessional Paper No. 1 of 1999. The policy direction for water resources management and development is summarized as follows:

- 1) Preservation, conservation, and protection of available water resources;
- 2) Sustainable, rational, and economical allocations of water resources;
- 3) Supplying adequate amounts of water that meet acceptable water quality standards for various needs;
- 4) Ensuring safe wastewater disposal for environmental protection; and
- 5) Developing a sound and sustainable financial system, for effective and efficient water resources management, water supply and water borne sewage collection, treatment, and disposal.

To ensure integration with other sectors in managing water resources effectively and sustainably, the water policy is complemented by other policy documents such as Economic Recovery for Wealth and Employment Creation Strategy (2003-2007), Poverty Reduction Strategy Paper (PRSP-2000), the Investment Plan of 2003, MDGs and Vision 2030. These policy documents recognise water as an important catalyst for both social and economic development and that effective institutions are key to sustainable management of water resources and provision of services to the people.

;

Constitution of Kenya 2010

The Constitution of Kenya 2010 has placed the following water resources regulation and management functions on the National Government.

(I) Water Resources Management Functions allocated to the National Government

These are spelt out in sections 2, 11, 19, 22, 24 and 32 of the fourth Schedule, part 1, on distribution of functions as follows-

- ☞ **Section 2: the use of international waters and water resources**-implying control and regulation of water use everywhere in the Republic. This is irrespective of where the source is.
- ☞ **Section 11: National statistics and data on population, the economy and the society generally**-under this section WRMA will be required to provide information on water resources and water bodies.
- ☞ **Section 19: National Public works**. Water resource development; WRMA will regulate the development of water related infrastructure works on water bodies through permitting and ensure compliance to permit conditions.

➤ ***Section 22: Protection of the environment and natural resources with a view to establishing a durable and sustainable system development, including in particular:***

- Water protection, Securesufficient residual water, Hydraulic engineering and oversee the safety of dams

➤ ***Section 24: Disaster management.*** WRMA will institute integrated flood and drought management plans to address water related disasters such as floods, droughts and landslides.

➤ ***Section 32: Capacity building and technical assistance to counties-***WRMA will build the capacity of the county governments to undertake water resources management on behalf of the national government.

(II) Water Resources Management Functions devolved to the County Governments

The Constitution of Kenya 2010 has devolved the following water resources management functions to the County Governments as spelt out in sections 10, 11, and 12 together with sections 2 and 8 of the fourth schedule part 2.

➤ ***Section 10: implementation of specific national government policies on natural resources, and environmental conservation, including:***

Soil and water conservation. Through this CMS the specific strategies have been developed for implementation by the county governments, in collaboration with the WRUAs.

➤ ***Section 11: County public works and services, including:***

- (a) *Storm water management systems* in built-up areas;

➤ ***Section 12: Fire-fighting services and disaster management***

- especially on water related disasters

➤ ***Section 2: County health services, including:***

- (g) Refuse removal, refuse dumps and solid waste disposal- which have a bearing on pollution of water bodies if not properly handled

➤ ***Section 8: County Planning and Development, including:***

- (b) Land surveying and mapping- Demarcation of water bodies and water catchment areas (riparian land, wetlands, marsh lands and springs) for gazettelement as public lands.

WRMA recognizes that water resources will continue to be managed along river basins which are trans-county in nature in terms of aquifers and resource flow patterns. WRMA will continue to serve the counties from the established regional and sub-regional offices.

In reviewing the Catchment Management strategies WRMA, intends to collaborate with the county governments with a view to incorporate their views, enhance ownership, and harmonize provisions in the County Integrated Development Plans (CIDPs) with respect to water resources management functions.

The Authority will provide crucial water resources information to the county governments

which share common river basin or aquifer to enable harmonious resource management and development approach.

The Authority will also develop Annual Water Resource Situation Reports to be availed to the County Governments. Information will be disseminated through the Catchment Forums where county governments sharing common water bodies will be members.

2.1.2 The Water Act: Catchment Management Strategy

Section 15 of the Water Act 2002 stipulates that the CMS will coordinate the use, development, conservation, protection and control of the water resources within a catchment area. Subsection (1) provides for public involvement in the formulation of the CMS. WRMA shall review the CMS from time to time with accordance to subsection (2). The CMS should be consistent with The National Water Resources Management Strategy (Subsection (3) (b))

2.1.3 National Water Resources Management Strategy

The strategic objectives of the current NWRMS (2012-2017) are as follows:

- To strengthen monitoring networks to enhance data collection and improve information management system
- To improve the use of water resources management tools for effective water resources planning and allocation
- To strengthen stakeholder collaboration to enhance water storage and adaptation to climate change impacts
- To strengthen enforcement mechanism and collaboration for effective catchment protection and conservation
- To build staff capacity and improve work environment
- To enhance resource mobilization and effective use of finances

2.1.4 National Water Master Plan 2030

The objective of NWMP 2030 is to present a framework for water resources development and management consistent with the country's social and economic development activities as envisaged in the Kenya Vision 2030. It is divided into nine sub-plans namely: It provides for various sub-plans namely;

- Water supply development plan
- Sanitation development plan
- Irrigation development plan
- Hydropower development plan
- Water resources development plan
- Water resources management plan
- Flood and Drought Disaster management plan
- Environmental Management Plan
- Institutional Strengthening Plan for Water Resources Management

2.1.5 National Water Quality Management Strategy

The National Water Quality Management Strategy 2012-2016 was developed with the following goals;

- Improved water quality by reducing pollution from point and non-point sources,
- Enhanced water quality monitoring programmes, water quality data management, information management and sharing,
- Harmonized water quality management guidelines recognizing differences in institutional, social and natural conditions,

- Equipped laboratories at three levels with professional staff for improved water quality analysis,
- Enhanced trans-boundary water quality management by enacting Trans-boundary policies and protocols,
- Improved enforcement and compliance to water quality standards and guidelines,
- Establishment of applied water quality research programs for sustainable water quality management, and
- Introduction of biological water quality monitoring techniques.

2.2 Vision and Mission

2.2.1 The vision

“To be the leading catchment in water resources management and regulation nationally”

2.2.2 The mission

“To effectively regulate and manage water resources, in collaboration with stakeholders, for sustainable development”

2.3 Principles of Integrated Water Resources Management (IWRM)

This is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the economic and social welfare of citizens in an equitable manner without compromising the sustainability of vital ecosystems. The CMS is formulated within the fundamental principles of IWRM. These principles dubbed the Dublin Principles have been accepted internationally as providing the basis and development of the roadmap to ensure sustainable management of water resources. In order to domesticate the Dublin Principles, WRMA has adopted the following principles:

- **Water is a finite, vulnerable and an essential resource which should be managed in an integrated manner.** WRMA has thus adopted the River Basin approach to managing water resources
- **Water resources development and management should be based on participatory approach involving all relevant stakeholders.** WRMA works harmoniously with The County governments, Water Resource Users' Associations (WRUAs), Catchment Area Advisory Committees (CAACs) and the people of Kenya through public consultations.
- **Women play a central role in the provision, management and safeguarding of water.** This has been mainstreamed constitutionally through the 30% gender representation requirement and is well rooted in the water sector down to the grassroots level.
- **Water has an economic value and should be recognised as an economic good, taking into account affordability and equity criteria.** WRMA charges minimal tariff for abstraction permits and is also pursuing the user and polluter pays principle in collaboration with other lead agencies.

CHAPTER 3: BASIN CHARACTERIZATION

In this chapter, the CMS provides an overview of baseline physiographical condition of the catchment and outlines key issues and challenges facing it. The catchment is characterized in order to prioritize sub catchment areas for intervention together with stakeholders.

3.1 Catchment Characteristics

3.1.1 Location

The EwasoNg'iro North Catchment Area covers an area of about 210,226km²; it is about 36% of the total area of Kenya 576,000km². It is the largest of all the six catchment areas but with least population, this is because it falls in Arid and Semi-Arid (ASAL) parts of Kenya.

The catchment area extends from Latitude S 00° 25' to N 04° 29' and from Longitude E 36° 20' to E 41° 55'. Altitude ranges from 150m above sea level at the Lorian swamp to the Mount Kenya whose peak is 5,199m above sea level. Most of the catchment lies below 1,000m above sea level. The catchment neighbors Somalia to the East and Ethiopia to the North, Rift Valley to the West and Tana catchment to the South.

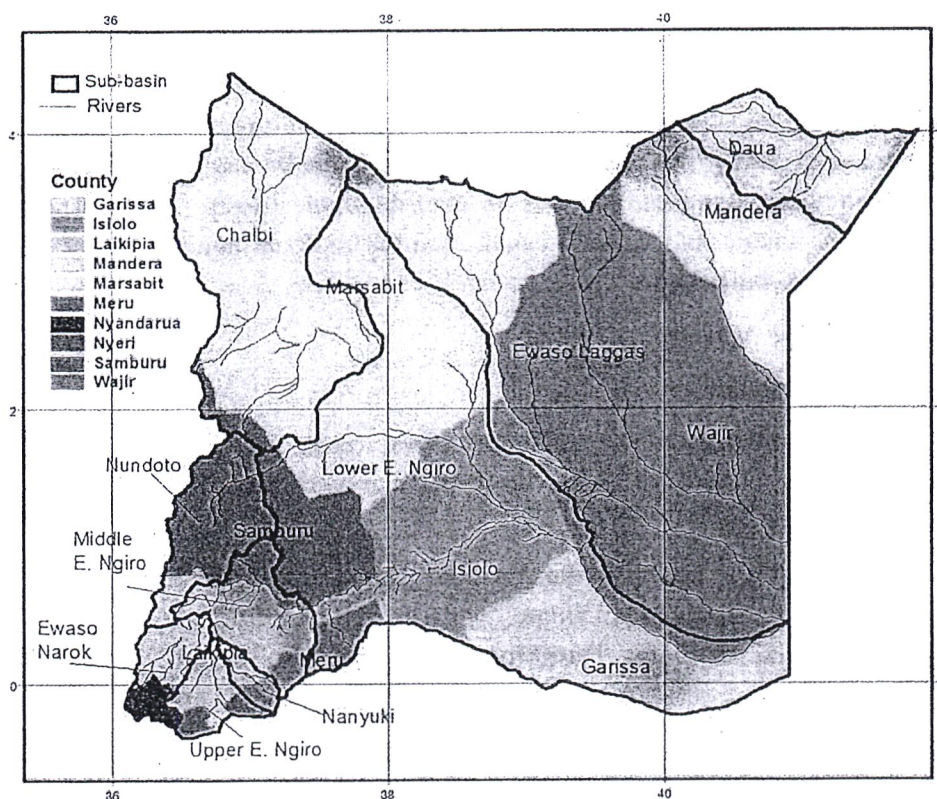


Figure 3-1: Map of ENNCA showing counties and Management Units.

3.1.2 Climatic Characterization

ENNCA lies in Kenya's dry corridor with double maxima of rainfall in March-May (long rains) and October-December (short rains). The rains are brought by the movements of two distinct air masses over the Inter-Tropical Convergence Zone (ITCZ). During the months of November to March dry winds dominate the eastern part of the country. By about the month

of April, the wind system has reversed and the ENNCA begins to experience the influence of the southeast trade winds from the Indian Ocean. The winds flow across a vast body of water through the Equator to become the south east monsoon, hence the source of the main rains in the ENNCA. This air mass persists more or less with the same vigour and consistency until about August. Convergence of the winds from southeast and northeast monsoons is generally widespread and records the peak of the short rains in November.

EwasoNg'iro North Catchment Area has a mean annual rainfall of 411 mm which ranges from over 800 mm in the highlands to less than 400 mm in the ASAL areas which comprise 90% of the total area of the catchment and where the rainfall is more erratic temporally and spatially.

3.1.3 Hydrogeology

The geology of the area is composed mainly of Volcanics, the Basement System and Sedimentary rocks. Groundwater yields are fair in the volcanic aquifers and the quality is normally good. The yields range from 5m³/hr to over 70m³/hr (NWMP, 2030). Sedimentary aquifers have fair yields given fact that there are no other sources of water in areas that they occur. The water struck levels in sedimentary rocks are normally low (average 50 m), therefore Chances of getting freshwater in EwasoLaggas, Chalbi and part of Daua system are very low. Groundwater is normally struck in deep borehole (depth of over 150 m). Such aquifers have large lateral and vertical extent forming regional aquifers hence chances of getting fresh water are fairly high.

3.1.4 River Drainage Network

EwasoNg'iro North River

This drains the southern part of the catchment (5AA, 5AB, 5AC, 5AD, 5BA, 5BB, 5BC, 5BD, 5BE, 5D) in an easterly direction, from the highlands around Mt. Kenya, Aberdare ranges and Nyambene hills.

The EwasoNg'iro North is the main river in this system and has the following tributaries: EwasoNarok, Likiudu, Liliaba, NgareNdare, Ngusishi, Timau, Sirimon, Teleswani, Ontulili, Likii, Nanyuki, Rongai, Burguret, NaroMoru, Isiolo, Moyok, Ngobit, Suguroi, Pesi and Mutara.

The river flows into the Lorian swamp where it is an important source of water for recharging the groundwater and maintaining of vegetation cover.

Daua system

It is a perennial river that drains the north east tip of the catchment (5GB, 5HA, 5HD) and originates from the Ethiopian highlands and forms the border between the two countries before draining into Somali.

Chalbi system

This is an internal drainage lake that drains the north-west part of the catchment (sub-catchment 5J). It is a shallow lake which forms seasonally in response to rainfall (including some run-off from the Ethiopian highlands).

3.1.5 Available Water Resources and Water Demand

Available water resources

The available water resources consisting of the surface water runoff and sustainable yield of groundwater were estimated in ENNCA for the years 2010 and 2030 as follows:

Table 3-1: Annual Available Water Resources (ENNCA)

Year	Available water Resources (MCM/year)		
	Surface Water	Groundwater	Total
2010	1,725	526	2,251
2030	2,536	475	3,011
Percentage of 2010 values	147%	90%	134%

- Source: NWMP 2030

The sustainable yield of groundwater was derived as 10% of the groundwater recharge in the catchment area excluding river courses and riparian areas with a width of 1 km.

Water demand

The annual water demands for 2010 and 2030 are summarized below.

Table 3-2: Water Demands by Subsector (ENNCA)

Year	Water Demands (MCM/year)						
	Domestic	Industrial	Irrigation	Livestock	Wildlife	Fisheries	Total
2010	58	1	92	57	0	4	212
2030	125	2	2,644	79	0	7	2,857

- Source: NWMP 2030

3.1.6 Major land use/cover types and degradation threats

Forest areas

Forest areas in ENNCA are mainly in Samburu, Laikipia, Meru, Nyeri, and Nyandarua Counties (Figure 3-1). These are the major water towers for the catchment and groundwater recharge areas. In Samburu County, the forest areas include Mt. Ng'iro, Ndotos Range, and Mathews Range forest reserves. In Laikipia County, they are Mukogodo, Lariak, Marmanet, and Rumuruti forest reserves. In Nyandarua, they are Uaso-Narok, Leshau, Ol-Bolossat, Bahati, and Abardare forest reserves. In Nyeri, they are South Laikipia and Abardare forest reserves. In Meru, they are Mt. Kenya, Ndere, and Timau forest reserves; and Marsabit forest reserve in Marsabit. In Mandera County, Dandu hills forms part of the forested areas and are a source of springs and also act as groundwater recharge zones.

These forest reserves have been threatened by human encroachment and there is a need to protect them. A comparison of the vegetation over change in Figure 8.1 and forest cover in Figure 3-1 reveals that some of the water towers in the catchment have had significant loss of vegetation cover between 2001 and 2013. They include the Marmanet, Mukogodo, and Rumuruti in Laikipia County; Mt. Kenya, Aberdare and Bahati in Nyandarua; Ndere in Meru County; and Mt. Ng'iro in Samburu.

Wetlands and riparian zones

The wetlands and riparian zones in the catchment are currently under pressure from human encroachment for settlement, expansion of crop production, and livestock grazing. In the

Lorian Swamp in Isiolo and Garissa Counties the wetlands are major groundwater recharge areas for the Merti aquifer.

Lake Ol-bolosab which is a high altitude lake in Nyandarua county is a home for a variety of bird species, other aquatic animals and wildlife. It is a source of Ewaso Narok river which supplies water to Nyahururu municipality, Rumuruti township and their environs. It also recharges the Ol-bolosat aquifer.

Other swamps of importance in the catchment are Ewaso-Narok in Laikipia county, Suguta Marmar in Samburu county.

However, the wetlands are under increased threat from human settlement, siltation, river siltation and encroachment due to livestock grazing and farming. In addition, the availability of water and vegetation in these swamps and other wetlands attract people and livestock particularly in the dry season when the swamp provides drinking water and forage. It's therefore of importance that these wetlands and riparian zones be protected from degradation to continue in order to restore their functional capacities.

Rangelands and grasslands

Rangelands and grasslands constitute the largest land use areas in the catchment (Figure 3-1). They are mainly used to provide pasture/fodder for livestock farmers in the catchment. Owing to climate variability and livestock overstocking by farmers the rangelands and grasslands have been over-stretched beyond their carrying capacities. Hence, there is always the risk of loss of vegetation cover and consequent soil erosion (Figure 3-2). In addition, there is increased risk of soil erosion due to conversion of rangelands to croplands. In the past few years, there has been a sustained pressure from many quarters' for livestock farmers to diversify their livelihood to include alternatives such as crop production.

Open/bare land

These areas are dominated by open spaces with very little vegetation or sand deposits for most parts of the year. They are mainly in Marsabit, Isiolo, Samburu, Wajir, Mandera and parts of Garissa county. The major ones being Chalbi and Kaisut deserts. These areas are used as wet-season grazing grounds. Lately (in the past few decades), some of them have been colonized by the invasive *Prosopis* species plants.

Cropland

Although the catchment is mainly arid and semi-arid, there are pockets of rainfed croplands. They are mainly in the upper parts of the catchment (in Nyandarua, Laikipia, Nyeri, and Meru Counties) and lower parts in Wajir and Garissa Counties, below the Lorian Swamp, in the flood recession areas.

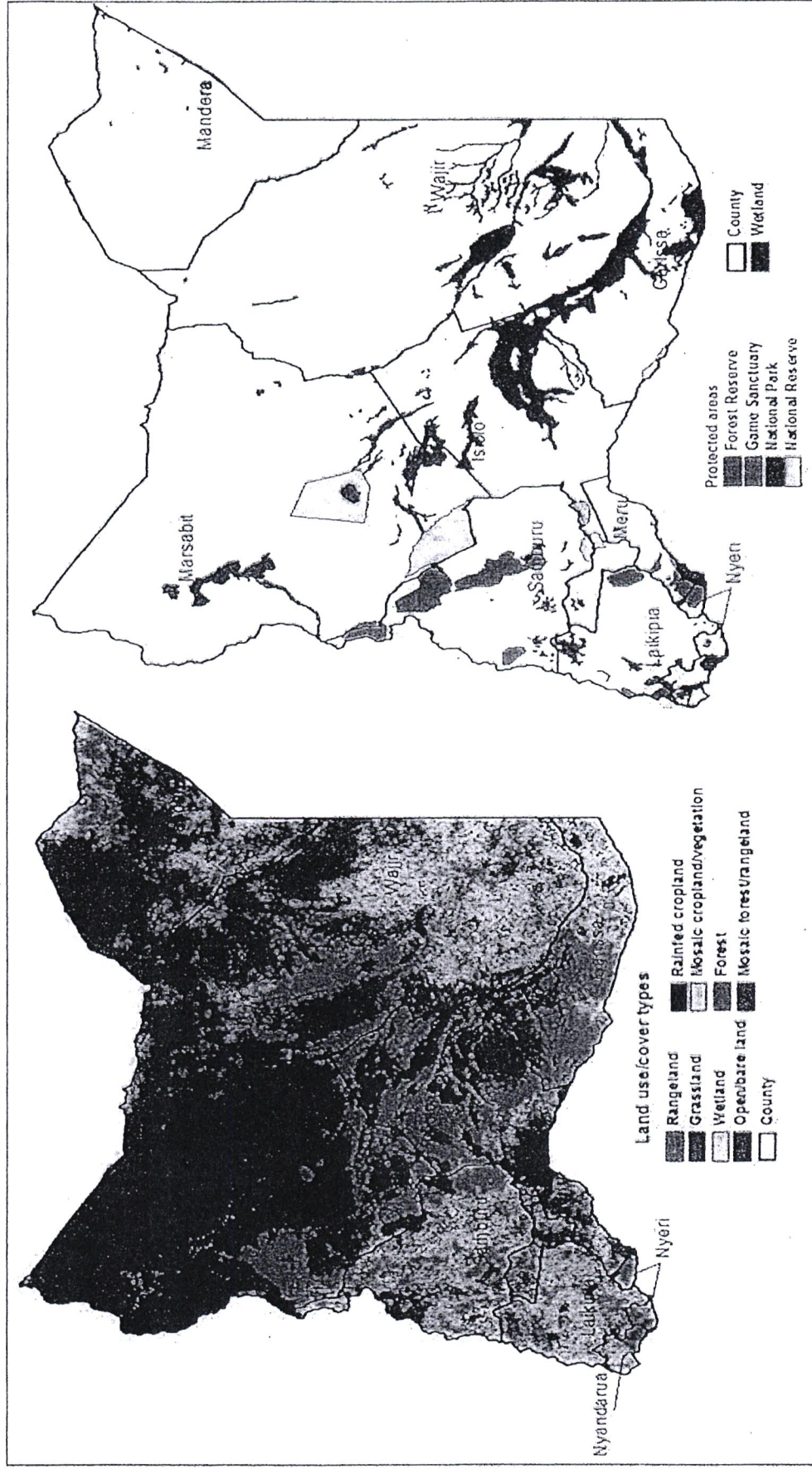


Figure 3-2: Major land use types and protected areas in ENNCA

3.1.7 Socio-economic characteristics

The socio-economic characteristics and land use that describe ENNCA are as follows:

Population

As per the National Population Census 2009, the population of ENNCA was estimated to be 3.82 million which is composed of 0.74 million of urban population and 3.07 million of rural population (KNBS, 2010).

The population trends projected as per the projections in the NWMP 2030 is as shown in Table 3-2.

Table 3-2: Population Trend (2014-2022)

Description	2014	2015	2016	2017	2018	2019	2020	2021	2022
Urban	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.27
Rural	2.99	2.96	2.94	2.92	2.90	2.87	2.85	2.83	2.81
Total	3.90	3.92	3.94	3.95	3.98	4.00	4.02	4.05	4.08

Pastoralism

Pastoralism dominates the socio-economic activities in the drier parts of ENNCA although agro-pastoralism and bee-keeping are coming up as important activities.

Pastoral populations live in temporary settlements consisting of traditional make-shift houses constructed of twisted and threaded thatch.

Agriculture

The area around Mt. Kenya and Aberdare ranges receives moderate to high rainfall that is adequate for agricultural activities. The main agricultural activities include:

- Commercial farming which involves horticulture, floriculture and wheat farming;
- Ranching involving the breeding and rearing of beef and dairy animals;
- Subsistence farming involving small-holder farmers practicing both cultivation and livestock rearing.

The horticulture/floriculture and subsistence farmers engage in use of irrigation during the dry seasons. The method of irrigation is mainly the sprinkling and flooding with the large scale farmers is gradually changing to drip irrigation methods. The commercial farmers have boreholes and dams to supplement river water during the dry season.

The general characteristics of land use in the ENNCA by geographic conditions are described below:

- High potential areas (Nyandarua North, Nyeri North, Imenti North, Meru Central, Tigania and Igembe)
- Medium potential areas (Isiolo, Garbatulla, Laikipia East, Laikipia West, Laikipia North, Samburu)
- Low potential areas (Marsabit, Mandera, Wajir, Garissa counties)

3.2 Water Resources Management Challenges

- Salinity of groundwater mostly in areas covered by basement rocks and colluvial deposits in Daula and EwasoLaggas management units
- Over abstraction of water for irrigation purposes, especially during the dry season. This has negative impacts on maintenance of the reserve of flows
- High run off, soil erosion, incision of water courses due to overgrazing particularly in the lower zone of the region.
- Encroachment on springs e.g. Mt. Marsabit, Aberdare Ranges, Mt. Kenya and Kalacha in Marsabit
- Poor solid waste management in urban areas
- Pollution of water resources due to effluent discharges in the urban areas and agro-chemical in the agricultural areas
- Encroachment on riparian land and wetlands
- Water use conflicts between farmers, wildlife and pastoralists
- Water use conflict due to over abstraction especially in the upper zones of the catchment
- Illegal abstraction of water
- Undeveloped infrastructure
- Over dependency on ground water
- Changing climate and subsequent need for adaptation measures

PART II: STRATEGIES FOR PROTECTION OF THE RIGHT TO WATER

This part is on the strategies for protection of the right to water under the following chapters:

Chapter 4: Management approaches presents the basis for determining the management units for the CMS and catchment classification for equitable allocation of water for various uses

Chapter 5: Water balance and demand management provides water balance status with respect to availability of the resources and the demand including the reserve, storage and transfers.

Chapter 6: Water allocation and use management describes the approaches to ensure equitable and sustainable use of water. The related strategies for efficient and transparent allocation are included.

CHAPTER 4: MANAGEMENT APPROACHES

4.1 Overview

This chapter presents the basis for determining the management units for the CMS and catchment classification for equitable allocation of water for various uses.

4.2 Situation Analysis

WRMA was created by the Water Act 2002 to undertake water resources management functions in the country. For operational purposes, WRMA has decentralized into six major catchment areas of which Ewaso Ng'iro North Catchment Area is one of them.

The Authority adopted the river basin approach and sub-divided the catchments into management units.

The de-centralization helped in attaining the following:

- Improvement in the capacity of WRMA; In ENNCA a lot of improvements have been achieved in:
 - I. Staff capacity in terms of numbers and skills. Initial staff strength was 68 No. against current 95 No.
 - II. Work environment 3 no. New staff offices done and furnished in Rumuruti and Nanyuki sub regions and also at the region headquarters, Nanyuki.
 - III. Working tools. Modern equipment acquired.
- The delineation of potential WRUA coverage areas;
- Formation of WRUAs at sub-catchment level; WRUA potential for ENNCA has been mapped and found to be 271 No. Out of these 74 No. have been formed and 45 No. have SCMPs.
- The delineation of Catchment Management Units (CMUs).

4.3 Catchment Management Units

The geographical setting required the identification of suitable CMUs, as groups of catchments that share similar natural resource management issues.

In delineating the catchment management units, the Authority was guided by the following factors:

- The drainage network of the catchment;
- The type, scale and nature of the water demands and the severity of their impacts on the water resources;
- The status of the water resources with respect to the risk to the Reserve and stress on the water resource quality;
- The vulnerability of the water resource quality and the need for protection (ecological importance and sensitivity);
- The land use.
- Convenience in management.

Based on the above criteria, the Ewaso Ng'iro North Catchment Area (ENNCA) was delineated into nine (9) CMUs as shown in Figure 4-1. The CMUs are managed through five (5) sub-regional offices as shown in Table 4.1.

Table 4-1: ENNCA sub-regions, management units and sub-regional offices

Sub-region	Management Unit	Sub-regional Office
Engare Narok/Merghis (ENM)	Ewaso Narok	Rumuruti
Upper Ewaso Ngiro (UEN)	Upper Ewaso Ngiro	Nanyuki
Upper Ewaso Ngiro (UEN)	Nanyuki	Nanyuki
Upper Ewaso Ngiro (ENM)	Nundoto	Rumuruti
Middle Ewaso Ngiro (MEN)	Middle Ewaso Ngiro	Isiolo
North Ewaso Ngiro Laggas (NEL)	Lower Ewaso Ngiro	Isiolo
Middle Ewaso Ngiro(MEN)		Isiolo
Ewaso Daa (ED)		Mandera
Ewaso Daa (ED)	Ewaso laggas	Mandera
North Ewaso Laggas (NEL)		Marsabit
Ewaso Daa (ED)		Mandera
Ewaso Daa (ED)		Mandera
North Ewaso Laggas (NEL)	Chalbi	Marsabit
North Ewaso Laggas (NEL)	Daa	Marsabit
Ewaso Daa (ED)		Mandera

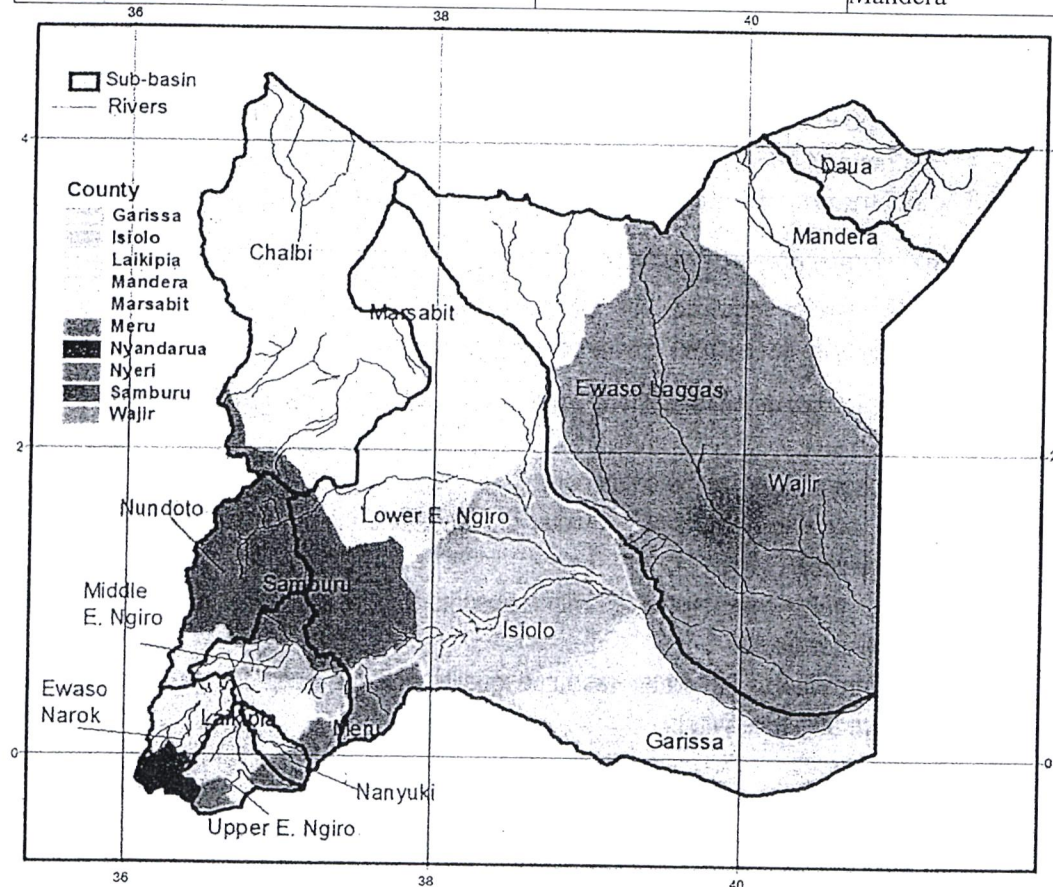


Figure 4-1: ENNCA Catchment Management Units

4.4 Classification of Catchment Management Units

Following the delineation of the catchment area into CMUs, a Water Resource Classification System (WRCS) was introduced to capture the level of importance attributed to the resource in the management unit with respect to three broad types of demands, namely; ecological, livelihood and commercial.

The classification system is mandated under Section 12 of the Water Act 2002 and is a measure of the relative importance attributed to the three competing types of uses: – Ecological, Livelihood and Commercial. The class of the resource imposes certain conditions on the utilization of the resource with respect to the Reserve and the Resource Quality Objectives (RQOs). The water resources classification is a set of guidelines and procedures that, when applied to a specific management unit, will ultimately assist in the process of maintaining a balance between protecting the water resources and using them to meet economic and social goals.

The Water Resources Classification System enhances water resources management in which the Reserve water criteria and the Resource Quality Objectives (RQOs) shall be specified for each class of resource based on parameters that will be determined and monitored.

The Class of the Resource is a measure of the relative importance attributed to the three competing types of uses-commercial, livelihood and environmental, which imposes certain conditions on the utilization of the resource with respect to the Reserve and Resource Quality Objectives (RQOs).

The three major demands are further categorised into three sub-classes of importance, namely: high (1), medium (2) and low (3) as shown in Figure 4-1. The catchment management units comprise a combination of the three classes but the main management focus is based on the major classification.

Ecological (E) CMUs

These are areas with almost natural ecological characteristics. The focus for water resources management is the protection of the natural ecological characteristics for ecological, recreational and development of tourism with economic importance.

This class is divided into three sub-classes, namely;

- **E1 – High ecological importance:** Areas with almost natural ecological characteristics or areas which are protected by legislation due to their ecological importance (e.g. National Parks, Ramsar Sites, International Bird Areas, wetlands etc.). Livelihood and commercial demands are of insignificant importance.
- **E2 - Medium ecological importance:** These are areas with minor modifications to the natural ecological characteristics.
- **E3 – Low ecological importance:** Areas with significant modifications to the natural characteristics Sustainable regional water resources management of these units would require cooperation collaboration and synergy with WRUAs, the Kenya Forest Service, the Kenya

Wildlife Service, County Governments and other stakeholders.

Livelihood (L) CMUs

These are areas with predominant rural characteristics i.e. scattered settlements with varying population density and small scale subsistence-orientated economic activities that include irrigation, fisheries and livestock. This category targets protection of water resources to ensure livelihood of rural population.

This class is also divided into three sub-classes, namely:

- **L1 – High livelihood importance:** Areas where small scale subsistence oriented economic activities dominate.
- **L2 – Medium livelihood importance:** Areas where small scale subsistence oriented economic activities dominate and over 40% of the population depend on the water resources in the unit for their livelihood.
- **L3 – Low livelihood importance:** Areas where less than 40% of the population depend directly on the water resources for their livelihood. Ecological or commercial demands on the resource are more significant.

The sustainable management of these units focus on cooperation with WRUAs and other stakeholders within the management unit.

Commercial (C) CMUs

These are typically urban and/or industrial agglomeration areas including their peripheral areas which could be commercial. The target is to ensure good quality of water resources to develop economic prosperity in urban areas/industrial centres. Other target are economical use of water (reduce, reuse, recycle) and safe disposal of effluent (treatment and natural purification).

- **C1 – High commercial importance:** Areas where the level of commercial activities predominate. The level of commercial activities in these areas is of national significance.
- **C2 - Medium importance:** Areas where the level of commercial activities are significant at the management unit level
- **C3 – Low importance:** Areas where the level of commercial activities might be significant at the inter-management unit level

Sustainable management of these areas will focus on cooperation with the commercial stakeholders, hence the need to have the Kenya National Chamber of Commerce and Industry represented in the Catchment Area Advisory Committees to safeguard the interests of industrialists and business community. Water quality management is a crucial consideration in dealing with effluent discharge management from these areas.

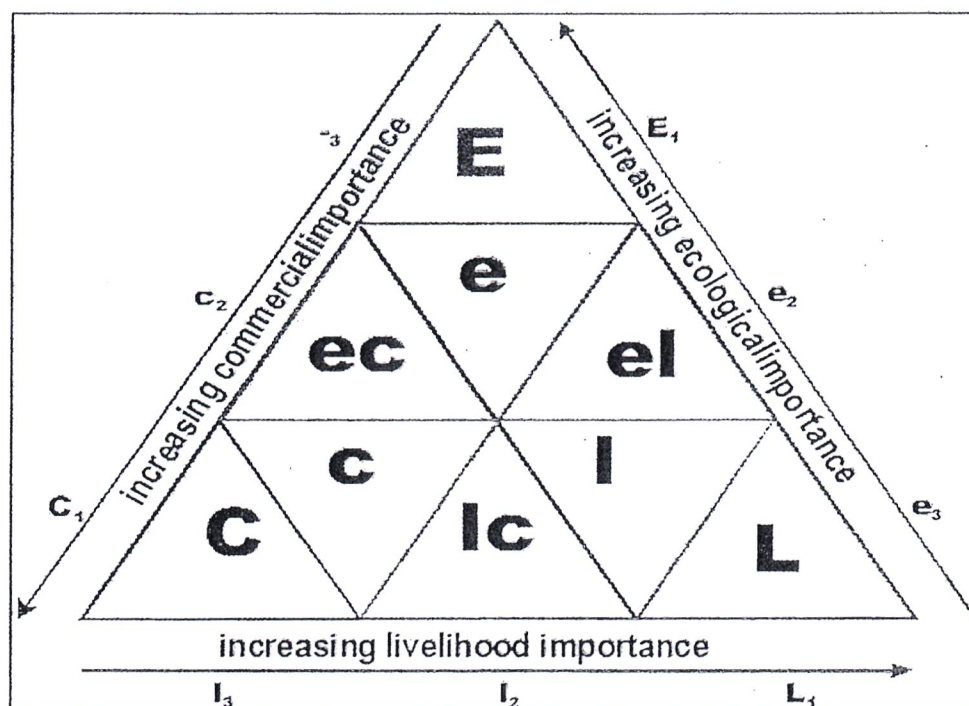


Figure 4-2: Management Units Classification

Based on the above classification system, the Ewaso Ng'iro North Catchment Management Units are summarized in Table 4-2.

Table 4.2: Ewaso Ng'iro North Catchment Management Units and Sub-regions

Catchment Management Unit	Hydrological Unit	Sub-region	WRM Focus
Ewaso Narok	5AA, 5AB, 5AC, 5AD	Engare Narok/Merghis (ENM)	Ecology
Upper Ewaso Ng'iro	5BA, 5BB, 5BC, 5BD	Upper Ewaso Ng'iro (UEN)	Ecology
Nanyuki	5BE	Upper Ewaso Ng'iro (UEN)	Ecology
Nundoto	5CA, 5CB, 5CC	Upper Ewaso Ng'iro (ENM)	Livelihood
Middle Ewaso Ng'iro	5DA, 5DB, 5DC, 5DD	Middle Ewaso Ng'iro (MEN)	Livelihood
Lower Ewaso Ng'iro	5EC	North Ewaso Ng'iro Laggas (NEL)	Livelihood
	5ED	Middle Ewaso Ng'iro (MEN)	
	5FA	Ewaso Daa (ED)	
Ewaso laggas	5EA	Ewaso Daa (ED)	Livelihood
	5EB	North Ewaso Laggas (NEL)	
	5FB	Ewaso Daa (ED)	
	5GA	Ewaso Daa (ED)	
Chalbi	5J	North Ewaso Laggas (NEL)	Ecology
Daa	5GB	North Ewaso Laggas (NEL)	Ecology
	5H	Ewaso Daa (ED)	

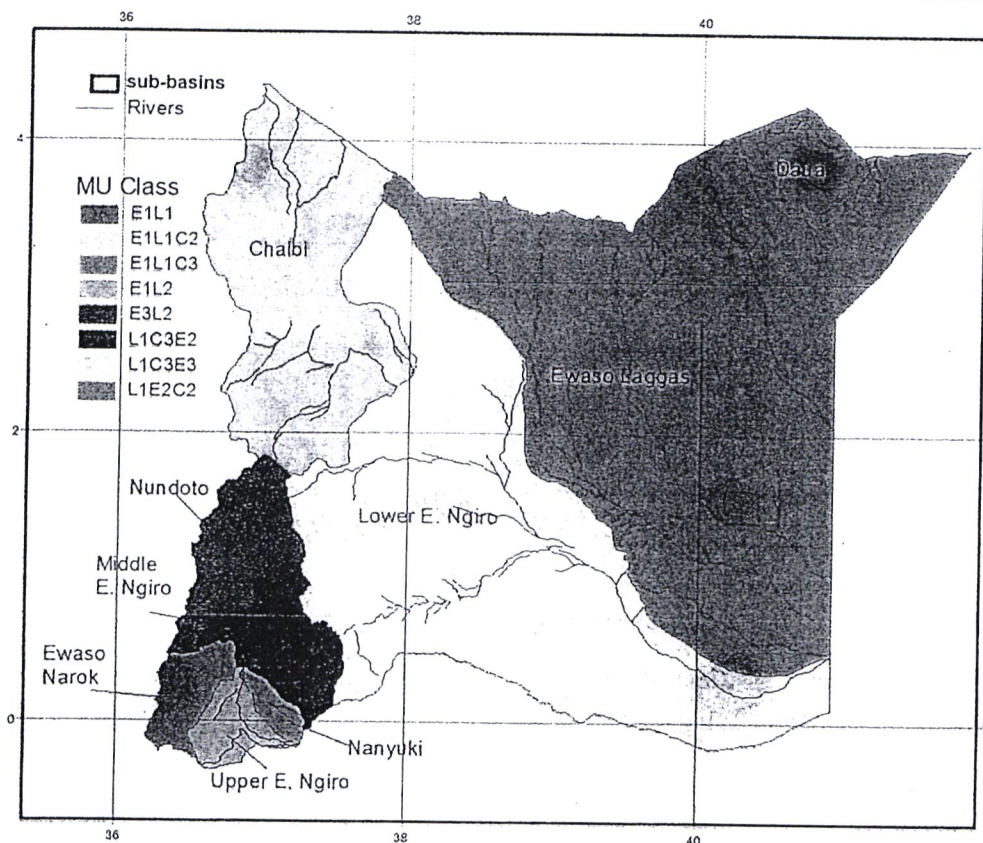


Figure 4-3: Ewaso Ng'iro North Catchment Management Units (CMUs)

4.5 The Reserve

The Reserve Quantity refers to that quantity of water required to:

- Satisfy basic human needs for all people who are or may be supplied from the water resource downstream of a selected point, and,
- Protect the aquatic ecosystems in order to secure ecologically sustainable development and use of water resource.

Determination of the Reserve

In establishing the Reserve in each CMU, the following shall be considered:-

- Ecological vulnerability;
- Vulnerability of local populations dependent on that water resource;
- Local observations with respect to the naturalized flows or water levels of minimum values observed during periods of prolonged droughts;
- In all instances where water flow is known to be normally perennial, then the Reserve Quantity shall be sufficient to ensure perennial flow;
- Consultations with WRUAs.
- Downstream water commitments

4.6 Resource Quality Objectives (RQOs)

The Resource Quality Objectives represent the desired status of the resource, covering all aspects of quantity, quality, timing and aquatic biota. The RQOs are different for different classes of the resource. The objectives generally relate to the extent to which the water body is allowed to be adversely impacted by water use with respect to its natural state. Conceptually, the RQOs provide a “target” condition of the resources. Management decisions should be made such that the condition of the resource is progressively trending towards the RQO. The status of the resource is a measure of how far the condition of the resource is from the RQO. They shall use agreed criteria at the specific nodes in the water body.

4.7 Implementation status of the lapsed CMS

In the lapsed CMS, the following strategic actions were not undertaken:

- Classification of surface water resources
- Classification of groundwater resources
- Setting of the Resource Quality Objectives (RQOs)
- Management units satisfy management requirements

The above actions have been considered in this CMS.

4.8 Implementation Requirements

- Capacity to undertake classification and setting of RQOs;
- Land use maps for ENNCA drainage region;
- Surface and groundwater data;
- Water quality data/information for rivers in the ENNCA basin.

4.9 Goal, Objectives, Targets and Strategic Actions

Goal: To achieve sustainable water resources management in quantity and quality while involving the stakeholders the catchment management units	
Objectives	
LO01	Classify water resources in order to develop appropriate management responses towards water allocation
LO02	Determine the Reserve at identified nodes
LO03	Set the RQOs for water bodies

Targets		Relevant Objective
LT01	Water resources classified	LO01
LT02	Reserve determined	LO02
LT03	Resource Quality Objectives set	LO03

Target	Strategic Actions		Relevant Objective
LT01	LA01	Classify ground water resources	LO01
	LA02	Classify surface water resources	
LT02	LA03	Identify the nodes for determining the reserve and set the reserve for identified nodes	LO02
LT03	LA04	Set the Resource Quality Objectives	LO03
	LA05	Determine criteria for monitoring the RQOs.	
	LA06	Develop management plan for achieving the RQOs	

CHAPTER 5: WATER BALANCE AND DEMAND MANAGEMENT

5.1 Overview

Water balance and demand management as discussed in this chapter focuses on how water resources in ENNCA can be sustainably used for meeting the demand. The strategies outlined therefore center on actions for managing demand deficits.

The projected available water resources volume for ENNCA was estimated at 2,251 MCM/year, rising to 3,011 MCM by 2030. By contrast, the demand in the year 2010 was 212 MCM and projected to increase to 2,857 MCM by 2030 driven partly by population increase, but mainly by planned 20-fold increase in irrigated acreage. Clearly, the water balance condition in ENNCA will require prudent demand management measures going forward to 2022.

5.2 Situation analysis

According to the NWMP 2030, ENNCA has an annual average rainfall of 510 mm, which is the lowest among the six WRMA catchment areas. The annual rainfall varies spatially within the catchment area, ranging from around 200 mm in the northeastern and northwestern part to 1,400 mm in the southwestern part. The renewable surface water in this catchment area is 1725 MCM per year while that for ground water is 18197 MCM per year giving a total of 19922 MCM per year renewable water resources as per NWMP 2030. Based on these per capita water resources in this catchment area is 5435 MCM. Most of the demand is by irrigation, domestic and livestock and uses. Irrigation is mostly in the upper catchment but as irrigation expands it is likely to leave less and less water for downstream water demands. The residual flow of the Ewaso Ng'iro is thus under threat and its protection shall be central to any demand management scheme in ENNCA.

Poor groundwater quality remains a major drawback to demand management. Whereas groundwater is the most readily available source in some ENNCA sub-basins, the available water has such poor quality that it is unfit for domestic or irrigation use.

5.2.1 Water Transfer and Storage

Water availability and reconciliation shall be achieved in the ENNCA through inter-basin water transfer. Surface water stored in dams shall be used to regulate residual flow and to hold water for transfer to other sub-basins. Areas in need of transfer are those where (i) there is a net deficit of actual available water resources and (ii) there are water resources available but the water quality is unsuitable for domestic use. Water transfer schemes in ENNCA must have strategies for addressing the problem of social resistance to water transfer schemes.

Artificial groundwater recharge in ENNCA can address the problem of high evapotranspiration rates, which diminishes the recharge quantities. Strategies to enhance natural recharge rates shall be developed. These include construction of check-dams, recharge barrages, percolation or water spreading structures at suitable locations to increase depth of water (thus reducing evaporation). WRMA's role is to map out such locations and oversee implementation in collaboration with other stakeholders.

Studies in arid and semi-arid regions have shown that a threshold value of rainfall of between

28mm and 82mm will produce 1mm of recharge depth through percolation tanks or check-dams. Artificial groundwater recharge in this manner may result to a recharge rate of approximately 3%. Furthermore, the water quality in shallow groundwater between 0 – 100m around these structures improves through dilution of salts.

Specific information shall be collected for areas in need of groundwater recharge. Specifically, the following areas qualify for recharge schemes:

- Where ground water levels are declining due to over-exploitation;
- Where a substantial part of the aquifer has already been dewatered; e.g., Korr in Marsabit could be assessed for such a scheme.
- Where availability of water from wells and hand pumps is inadequate towards the end of the dry season; most of the EwasoLaggas aquifer areas fall into this category.

It is necessary to conduct surveys along the laggas to identify suitable sections; older alluvium, buried channels, alluvial fans and dune sands are favourable for recharge. Collection of data on infiltration rates will help to distinguish suitable zones

5.2.2 Key Issues

ENNCA is faced with the following issues with regard to balancing water availability and demand:-

- The largest part of the catchment depends on groundwater, which is distributed unevenly;
- Reduced water resources availability due to marginal groundwater quality;
- Seasonal variation in availability – few perennial streams;
- Social resistance to water transfer schemes;
- The planned Isiolo Resort City – “Junction City” with a projected 45,000 visitors and total stay of 120,000 days/ year will put additional demand on the water resources;
- Inadequate information sharing and awareness in water resources management

5.3.2 Implementation status of the lapsed CMS

Overall, the ENNCA region made progress in implementation of the strategic actions outlined in the lapsed CMS, as summarised below:

- Demand determined for some sub-catchments
- A water resource assessment project was undertaken in Isiolo County;
- 40 surface and groundwater monitoring stations operated and provided data for calculation of available water
- Water deficit determined for 1 sub-catchment
- WAP development initiated for seven sub-catchments
- Seven areas of known potential water use conflicts were identified
- Completion of eight abstraction surveys
- Prioritization of water demand by water use category with priority uses being ecology, domestic, irrigation and industrial use in order of importance
- WRMA authorized construction of pans, dams, and boreholes. No Artificial Groundwater Recharge sites were identified.

5.2.3 Challenges

The challenges encountered include

- Increase in subsistence irrigation activities in the upper catchment, leading to greater stress on available water resources;
- Limited public education on the Bill of Rights and what it means for individuals and communities with regard to access to water;
- Inadequate technical report writing skills among the staff;
- High resource inputs in terms of time, logistics, equipment required for realizing the actions;
- Vandalism of gauging stations for metal components monitoring activities.

5.2.4 Lessons learned

- The use of pre-cast concrete reduced cases of vandalism of regular gauging stations;
- In the sub-catchments with intensive competition for water resources regular enforcement activities reduced the incidence of conflict.

5.3 Implementation requirements

The main hydro-meteorological data required for design of the recharge systems are:

- Minimum annual rainfall during the previous 10 years;
- Number of rainy spells in a rainy season and duration of each spell;
- Amount of rainfall in each rainy spell
- Rainfall intensity: 3-hourly or 6 hourly.
- Hydrogeological units demarcated on the basis of their water bearing capabilities at both shallow and deeper levels;
- Ground water contours to determine the form of the water table and hydraulic connection of groundwater with laggas;
- Depth to water table;
- Amplitude of water level fluctuations;
- Piezometric head in deeper aquifers;
- Groundwater potential of different hydrogeological units;
- Quality of water in different aquifers.

5.4 Goal, Objectives, Targets and Strategic Actions

Goal: Establish water resources potential and demand for effective management	
Objectives	
WO01	To determine water demand at sub-catchment level
WO02	To determine available water resources at sub-catchment level
WO03	Implement strategies to balance water demand and availability.
WO04	To establish mechanism for information sharing and awareness creation

Targets		Relevant Objective
WT01	Water demand determined for all sub catchments	WO01
WT02	Available water resources determined	WO02
WT03	Strategies to balance water demand and availability implemented	WO03
WT04	Mechanisms for information sharing and awareness established.	WO04

Target		Strategic Actions		Relevant Objective
WT01	Water demand determined for all sub catchments	WA01	Identify all water users by sub-catchments	WO01
		WA02	Classify all water use by sub-catchments and calculate demand by Sub-catchment	
WT02	Available water resources determined	WA03	Calculate water resource availability in each Sub-catchment	WO02
WT03	Strategies to balance water demand and availability implemented	WA04	Determine the sub-basin catchment water balance	WO03
		WA05	Determine areas of water deficits and surplus	
		WA06	Conduct detailed aquifer mapping to establish hydrogeological units.	
		WA07	Identify and map five areas of groundwater recharge	
		WA08	Identify and map 2 strategic areas for surface water storage	
WT04	Mechanisms for information sharing and awareness established.	WA09	Establish mechanisms for information sharing	WO04
		WA10	Formulate programmes for awareness creation	

CHAPTER 6: WATER ALLOCATION AND USE MANAGEMENT

6.1 Overview

The allocation of water resources is an important and increasing challenge for the society. The particular challenge is to ensure sufficient water of appropriate quality is reserved for the maintenance of ecosystems through an "environmental flow allocation" and for basic human requirements while maintaining equitable allocation for domestic, agriculture and industrial use. The figure below is the water tank model of illustrating the water allocation principle.

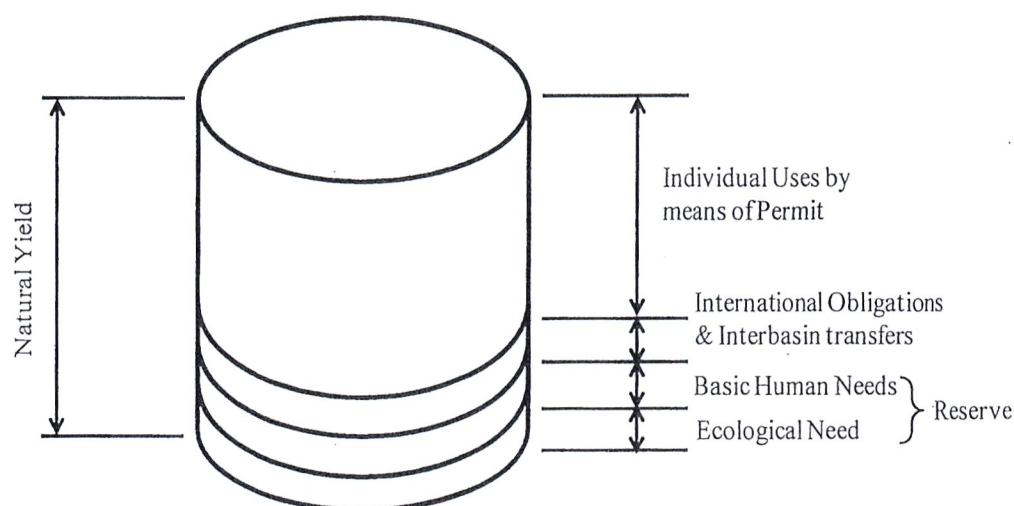


Figure 6-1: The water tank concept for allocating water between various uses

6.2 Situation analysis

Water allocation and use management in ENNCA has unique challenges because of the huge spatial imbalance in water availability. Data on water allocation is usually gathered through abstraction surveys and development of water allocation plans. In the region sixteen water abstraction surveys have been carried out and one water allocation plan developed. The catchment's water resources are concentrated in the southwestern part of the catchment where two of Kenya's water towers- Mt. Kenya and Aberdare Ranges are found. Correspondingly there is high population density and settlement in this part of the catchment. Most of the water resources are therefore intensively utilized in the upper part of the catchment with the net effect of high competition and conflict. It is in this region that the largest portion of enforcement resources is required.

The NWMP 2030 sets the Reserve at the reference point in the Middle of the Ewaso Ng'iro North 5EDO1 1.6 m³/s. The rest of the catchment (over 90%) depends on intermittent streams (*laggas*) and groundwater resources. The Reserve on the Ewaso Ng'iro North River is therefore critical for the management of water resources in the catchment.

An element of water use management that requires more attention is the water quality. The Ewaso Ng'iro North River is heavily utilized and is the main recharge source for the Merti Aquifer, so far the largest aquifer in the catchment. Resource Quality Objectives have not been set for this river. There are other uses like livestock watering that may withstand more

mineralized water. Such distinctions will be important in use management, given the deficit in water availability.

6.2.1 Key Issues

Issues that impacted on the implementation of the 2008-2013 CMS and those that emerged during implementation included:

- Inadequate information on water allocatable and level of utilization (only 16 rivers/sub catchments covered);
- Low enforcement capacity (staffing, knowledge & skills, equipment, conflicting mandates, insecurity, hostility);
- Inadequate support for implementation of WAPs by stakeholders who see them as restrictive;
- Inappropriate water use infrastructure (wasteful irrigation methods, unsecure control devices);
- Water scarcity (competition, conflicts);
- Uneven spatial and temporal distribution of water resources;
- Over abstraction and illegal abstraction.

6.2.2 Implementation status of the lapsed CMS

The 2008-2013 CMS strategic actions were implemented and various outputs achieved, as outlined below:

- The process of determining the Reserve was initiated for 8 rivers;
- The Q95 and allocatable amount was determined at specific reference points for the following rivers: Marania West; Marania East; Timau; Liliaba; Likiundu; Ngare Mara; NgareNdare; NgareNything.
- Sixteen Abstraction surveys were completed in sub-catchments and a water allocation plan was developed for one sub-catchment.
- Enforcement improved substantially during the period and was enhanced by training of paralegal prosecutors.

6.2.3 Challenges

Notable challenges to implementing the lapsed CMS were:-

- Enforcement.
- Data gaps.
- Inability to form WRUAs in all sub drainage basins
- Limited resources for monitoring water resources network
- water resource not meeting basic human needs (High Flouride levels and high cost of treatment).
- Some monitoring stations were destroyed by floods and vandalism

Areas of enforcement such as the 90-day storage for applicants of flood storage have been

difficult to streamline. There is better data availability now, but data gaps occur in the monitoring program due to vandalism of regular gauging stations.

6.3 Implementation Requirements

- Data on allocatable water resources;
- Water allocation plans;
- Enforcement plans;
- Resources for implementing enforcement plans;
- Resource Quality Objectives (RQOs);
- Education and awareness campaigns

6.4 Goal, Objectives, Targets and Strategic Actions

Goal Equitable allocation of water resources to competing needs for sustainable use while maintaining the reserve	
Objectives	
WO05	To set and maintain the Reserve
WO06	To allocate water resources equitably
WO07	To enhance water use efficiency

Targets		Relevant Objective
WT05	Reserve for all water bodies set and maintained	WO05
WT06	Water resources allocated to all uses equitably	WO06
WT07	Water use efficiency enhanced.	WO07

Strategic Actions			Relevant Objective
WT05	WA11	Set the reserve for each identified node on a water body (see chapter 4)	WO05
	WA12	Conserve and recharge water body to maintain set reserve .	
WT06	WA13	Determine allocatable surface water for all sub-catchments	WO06
	WA14	Determine allocatable ground water	
	WA15	Carry out 15 abstraction surveys	
	WA16	Develop 10 No. water allocation plans (WAPs)	
WT07	WA17	Collect water use charges 100%	WO07
	WA18	Carry out 15 No. awareness campaigns on water conservation and water use efficiency	
	WA19	Prepare and implement an annual enforcement plan for permit conditions	
	WA20	Monitor and enforce compliance	

PART III: STRATEGIES FOR RESOURCE PROTECTION

This part provides the strategies for resources protection in the following chapters:

Chapter 7: Water resources protection:-This chapter describes the approach and options adopted in order to protect the water bodies with respect to their holistic characteristics namely the quantity, quality, hydrological pattern and aquatic biota. Emphasis in this section leans towards discussing and assessing the strategy to safeguard the quantity and the quality of the Reserve. Particular focus is given on water quality and pollution prevention.

Chapter 8: Catchment conservation and protection: - This chapter provides details regarding the strategy for catchment protection and conservation with an aim of achieving yield of good quality water. The main focus is to control catchment degradation in order to safeguard water quality and quantity.

CHAPTER 7: WATER RESOURCES PROTECTION

7.1 Overview

This chapter describes the approach and options adopted in order to protect the water bodies with respect to the quality and prevention of pollution. The strategy describes the necessary actions in order to:-

- Ensure good water quality and adequate quantity for basic human needs and aquatic health.
- Ensure sustainable water sources for socio-economic development.
- Protect and secure sufficient residual water.

To fully realize the above, the strategy will be implemented by WRMA in collaboration with CGs, WRUAs and other stakeholders.

7.2 Situational Analysis

The water quality status varies across the catchment. The quality of water resources has deteriorated due to increased anthropogenic activities. Both point and non-point sources of pollution are prevalent in the area. The point sources include:

- Raw sewage from urban areas e in some sub-counties
- Effluent from agro based industries particularly Tea and Coffee
- Effluent from livestock based industries (milk plants, abattoirs)
- Leachates and solids from solid waste dumps majorly from markets and town centers
- Car washing
- *Jua kali* garages in urban and peri-urban areas.

Non-point pollution comprises atmospheric deposition, storm runoff from farms and soil erosion from areas devoid of vegetation cover.

Overall, only about 50 % of the water quality stations were monitored.

ENNCA has continued to carry out water pollution activities and has issued ten effluent discharge permits.

7.2.1 Key Issues

- Low level of compliance to the effluent discharge requirements
- Increasing pollution from urban areas
- Catchment degradation of the catchment area
- Inconsistency in monitoring water quality
- Increasing pollution from agro-chemicals
- Low level of abstraction and pollution
- Inadequate dedicated monitoring wells.
- Illegal effluent discharges
- The water resources not classified
- The RQOs not set

7.2.2 Implementation status of the lapsed CMS

- 60 No. dischargers identified; 30 No. polluters categorized as major
- 13 EDCPs approved; compliance level achieved on EDCPs is 72%
- Inspections of waste water and solid waste disposal sites done
- Effluent dischargers sensitized on discharge regulation
- Marking and pegging the river riparian areas
- River clean-up campaigns conducted
- Water quality monitored in 28 out of 56 stations.

7.2.3 Challenges

- Inadequate facilitation to carry out inspections, monitoring and enforcement.
- Delays in procurement of new equipment
- Delay in repair of analytical equipment.
- Lack of accreditation of the laboratory which has discouraged some clients from using the lab.

7.3 Goal, Objectives, Targets and Strategic Actions

Goal: Water resources protected from adverse impacts	
Objectives	
WO08	To ensure effluent dischargers comply with permitting conditions
WO09	To classify water resources and set the RQOs
WO10	To collaborate with County Governments and other stakeholders on sanitation and solid waste management
WO11	To develop and implement a programme for urban river clean up in collaboration with the CG

Targets		Relevant Objective
WT08	Permit conditions complied with by all dischargers.	WO08
WT09	All water resources classified and RQOs set	WO09
WT10	To manage solid waste and sanitation	WO10
WT11	To develop and implement a programme for urban centres and river clean up in collaboration with the CG	WO11

Strategic Actions			Relevant Objective
WT08	WA21	Carry out fifteen pollution surveys	WO08
	WA22	Sensitize effluent dischargers on effluent permit conditions annually	
	WA23	Identify and enforce compliance to water use permit conditions on all major dischargers	
WT09	WA24	Establish a water resources register	WO09
	WA25	Define desired classes	
	WA26	Set RQOs	
	WA27	Specify criteria (requirements and effective dates)	
	WA28	Determine monitoring points	
	WA29	Formulate and implement a management plan towards attaining the RQOs in collaboration with County Governments and stakeholders	
WT10	WA30	Collaborate with County Governments WRUAs, and other stakeholders	WO10
	WA31	Actively participate in planning for sanitation and solid waste management within the counties	
	WA32	Identify and map out pollution hotspots for urban centres and river cleaning	
WT11	WA33	Develop a programme for urban river clean up	WO11
	WA34	Implement the programme on urban centre and river clean-up in collaboration with the County Government, WRUAs and other stakeholders	

CHAPTER 8: CATCHMENT PROTECTION AND CONSERVATION

8.1 Introduction

This chapter deals with appropriate measures to control catchment degradation for sustainable yield of quality water. According to the Constitution of Kenya 2010, the function of catchment management, including soil and water conservation, is shared between national government and County governments. This is an activity which will be implemented through WRUAs in collaboration with the county governments..

8.2 Situation Analysis

Due to demand for agricultural land, the vegetation cover has been reducing, wetlands and riparian lands have been encroached and siltation has been on the rise. Change in land use pattern and overgrazing have also contributed to catchment degradation and reduction in forest cover. All these negative attributes have led to frequent droughts and flash floods in the catchment.

8.2.1 Key issues

The key catchment protection issues are:

- Loss of wetlands
- Soil erosion
- Loss of vegetation cover
- Sedimentation
- Pollution from solid waste disposal
- Need for stronger collaboration with the County Governments
- Need for more WRUAs to be formed, existing SCMPs to be reviewed, and new SCMPs to be developed and implemented
- Need for capacity building of staff (staff numbers, skills, and equipment-computer, GIS software, GIS data) Information on emerging issues on transboundary

A spatial distribution of loss of vegetation cover and soil erosion between 2001 and 2013 is shown in Figure 8.1.

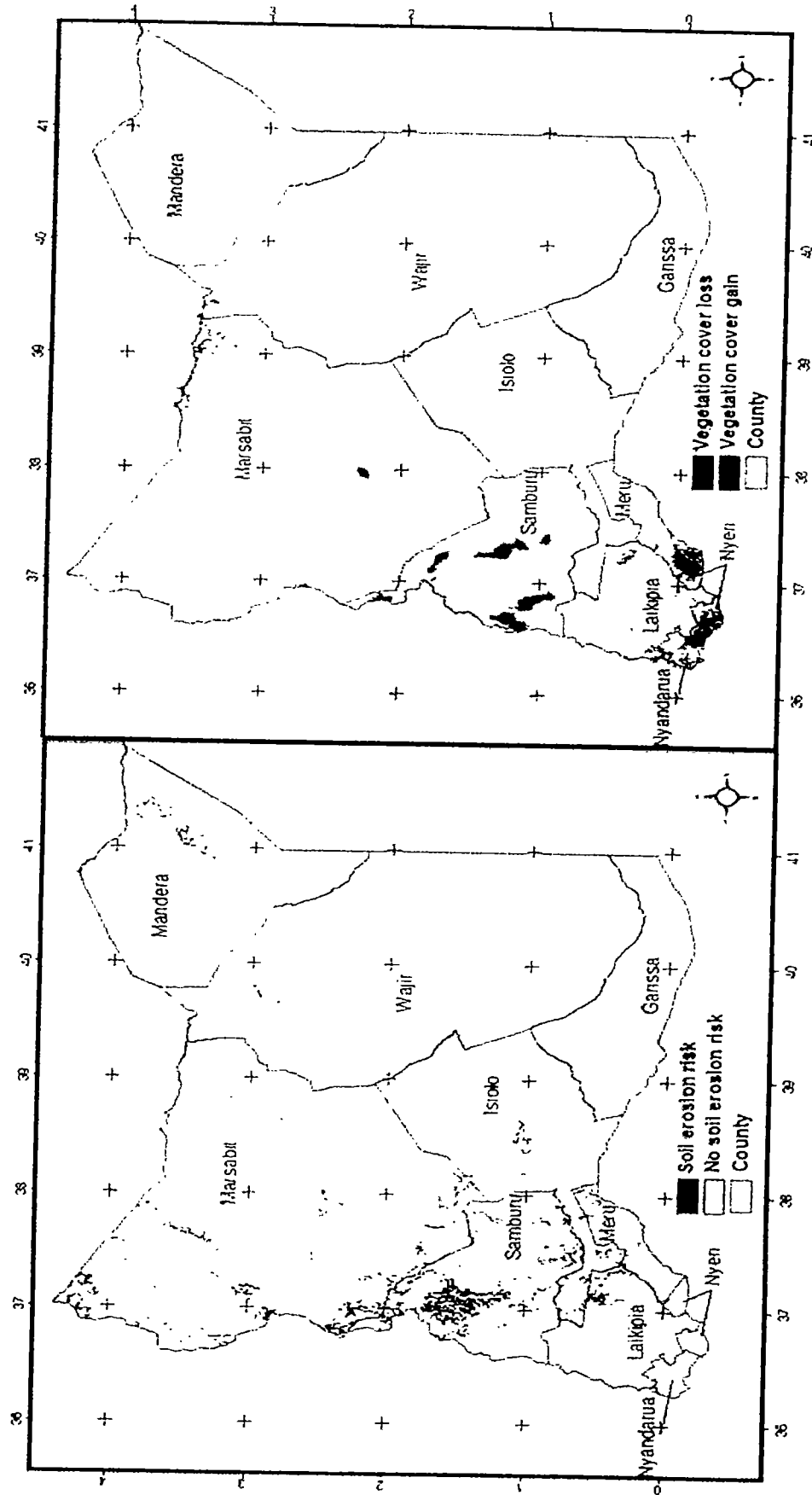


Figure 8-1: Soil erosion risk and vegetation cover change between 2001 and 2013

8.2.2 Implementation status of lapsed CMS

- A list of groundwater conservation areas was developed.
- Inventory of wetlands and springs developed but not complete
- A map of 8No. Wetlands whose size is 10 ha and above was prepared.
- 60 WRUAS have been formed and sensitized through WDC
- 60No. Sub catchments delineated and mapped.
- 5 areas for ground water conservation have been proposed
- 10 areas proposed for catchment gazettement
- 60No. SCMPs developed for implementation with stakeholders

In addition to the achievements, there were also lessons learnt during the implementation of the previous CMS. These lessons were:

- Catchment protection requires a multi-sectoral approach in order to be successful.
- Identification of hotspot areas is an important initial step towards successful catchment protection and conservation.

8.3 Goal, objectives, targets and strategic actions

Goal: Improved condition of the water catchment areas in collaboration with stakeholders	
Objectives	
LO04	To restore and protect degraded water catchments
LO05	To identify and gazette water conservation areas
LO06	To collaborate with County Governments in soil and water conservation efforts.

Targets		Relevant Objective (s)
LT04	Degraded water catchments restored and protected	LO04
LT05	Water conservation areas identified and gazetted	LO05
LT06	Collaboration with county government on soil and water conservation enhanced	LO06

Target	Strategic Actions		Relevant Objective
LT04	LA07	Review and update catchment degradation hotspots	LO04
	LA08	Develop new and review existing SCMPs starting with identified hotspot areas	
	LA09	Implement reviewed SCMPs	
LT05	LA10	Map out and inventorize protection and conservation areas, wetlands, and catchment water towers	LO05
	LA11	Protect and gazette the identified protected areas, catchment water towers, and wetlands	
	LA12	Continue supporting WRUAs formation and implementation of IWRM	
	LA13	Increase/maintain relevant vegetation cover in protected, wetlands, and riparian lands with stakeholders	
LT06	LA14	Carry out stakeholder analysis	LO06
	LA15	Carry out river clean-up activities in identified hotspots areas in collaboration with the County Government and other stakeholders	
	LA16	Support WRUAs in soil and water conservation activities funded in SCMPs	
	LA17	Identify and map solid waste hotspots	LO03
	LA18	Engage county governments and other stakeholders in identification of alternative solid waste management	
	LA19	Liaise with county governments and other stakeholders in solid waste management using the identified alternatives	

PART IV: STRATEGIES FOR RESOURCE AUGMENTATION, ADAPTATION AND DEVELOPMENT

This part provides the strategies for Resource Augmentation, Adaptation and Development under the following chapters:

Chapter 9: Flood and drought management describes the general concept of water-related disaster management, which includes floods and droughts. The underlying issues of vulnerability and risks to flooding and droughts are also highlighted.

Chapter 10: Climate change adaptation provides strategies for mainstreaming climate change adaptation measures in the management of water resources and building climate change resilient communities.

Chapter 11: Water resources infrastructure development provides the strategies for regulating development of infrastructure while ensuring safety.

Chapter 12: Rights based approaches identifies water related rights issues for equitable water allocation planning.

Chapter 13: Livelihood management provides strategies to support projects that enhance the income for local groups engaged in water resources management.

CHAPTER 9: FLOOD AND DROUGHT MANAGEMENT

9.1 Overview

This chapter outlines the general concept of water-related disaster management, which includes floods and droughts. The underlying issues of vulnerability and risks to flooding and droughts are also highlighted.

The approach to manage floods and droughts is through capacity building to minimize disaster impacts and implementation of some structural and non-structural measures. A conceptual framework for flood and drought management shown in Figure 9.1

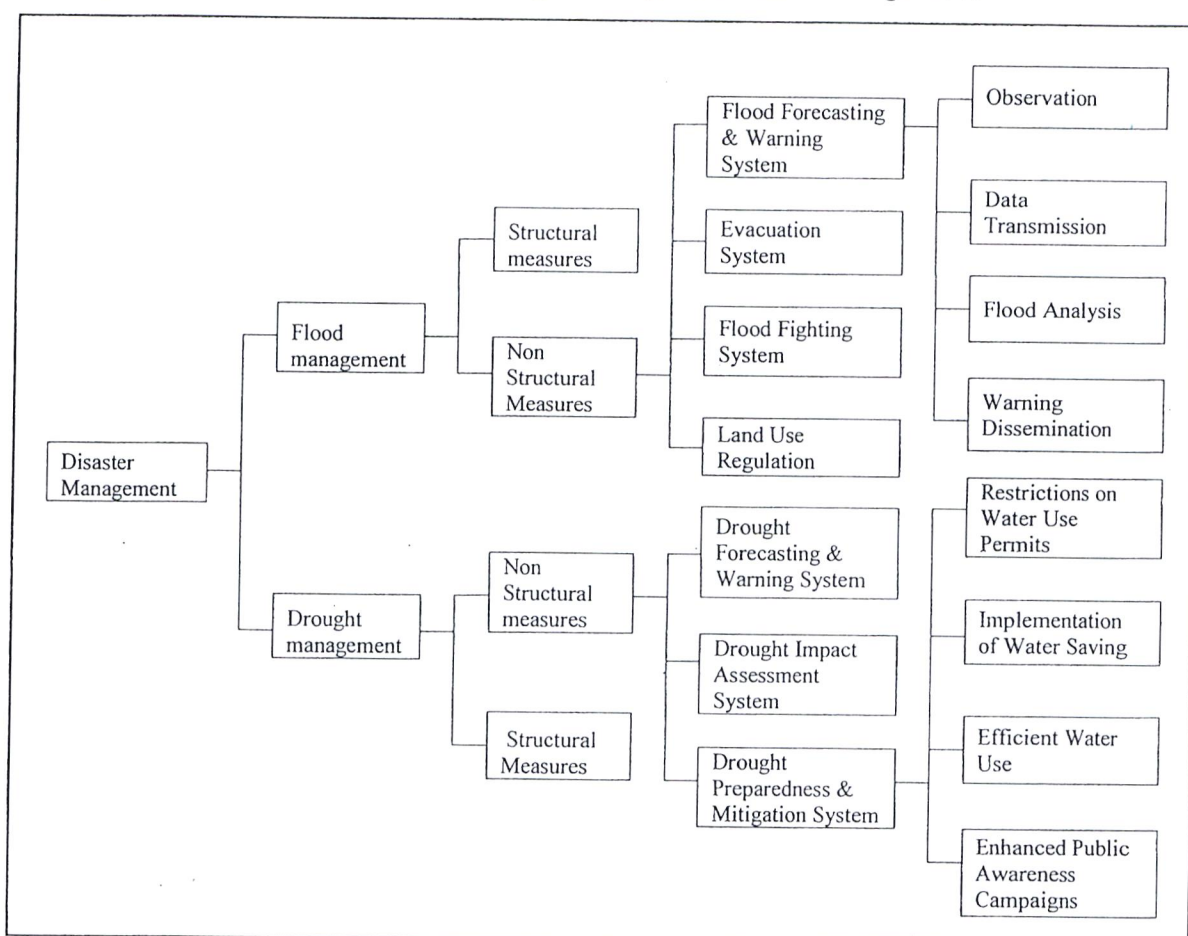


Figure 9-1: Framework for Flood and Drought Management (Modified from: NWMP 2030)

In this CMS, five levels of capacity building have been envisaged: regional, sub regional, county governments, WRUAs and local communities. The focus in these five levels is outlined in Table 9-1. In addition, the following considerations have been included in strategy development for capacity building:

- Capacity needs assessment of WRMA, County Governments and WRUA levels
- Assessment and mapping of areas that are vulnerable to floods and droughts
- Collaboration with stakeholders

Some of the proposed flood and drought management plans include:

- Flood management plans for Mandera
- Implementation of Isiolo Integrated Flood Management Plans

Table 9-1 below presents a summary of the measures for floods and disaster management in the catchment.

Table 9-1: Measures for floods and drought management in the catchment

Focus at the regional level		Focus at the local level	
<i>Structural</i>	<i>Non-structural</i>	<i>Structural</i>	<i>Non-structural</i>
Development of large-scale infrastructure for flow regulation and storage	Data collection, analysis and dissemination	Development of small scale infrastructure like raise roads, evacuation centres, culverts, etc.	Flood and drought management activities mainstreamed in SCMPseg early warning at local level, evacuation drills, flood risk maps, public information on flood inundation
	Development of analytical products such as inundation maps, drought hazard maps	Development of rainwater harvesting such as water pans and roof-catchment for water storage	Community flood and drought management committees formed to coordinate climate related issues

9.2 Situation analysis

Flood Disaster Management

For the purpose of this strategy, the flood prone counties within ENNCA include Wajir, Mandera, Isiolo, Laikipia and parts of Garissa.

One of the most affected areas in ENNCA is Isiolo which has both river-induced flood and urban drainage issues. In consideration of the high population density in Isiolo, the area can be protected by river structural measures. It is more effective to adopt a strategy that will mitigate damages to properties and loss of lives. In addition hazard maps and evacuation plans will be prepared. The drainage system should also be improved as a measure to deal with urban drainage.

In Mandera, there are two causes of flood. One is the overflow from the Dawa River that is in the national boundary of Ethiopia, and another is its two tributaries flowing from Somalia into the Dawa River through the built-up areas in Mandera. Thus any development that relates to the implementation of floods and drought management plans will require consultation with the Ethiopian Government.

The urban area of Mandera is protected through river improvement works, retarding basin or a combination of both.

Some of the large multi-purpose dams that have been proposed are in Kihoto in Nyeri and Archer's post in Laikipia. It is more effective to adopt a non-structural strategy that will

mitigate damages to properties and loss of lives. Therefore hazard maps and evacuation plans should be prepared.

Integrated river basin flood management plans

At WRMA level, focus will be given to:

- Capacity building to support non-structural measures for flood and drought management;
- Information gathering, analysis and dissemination which will inform Regional planning;
- Development of analytical products like inundation maps, drought hazard maps, cost estimates of flood and drought disasters/damage;
- Development of large infrastructure for flow regulation and storage by WRMA or through collaboration with partners.

At WRUA level; it is expected that:

- Flood and drought management activities will be mainstreamed in SCMPs
- WRUAs will set up a committee to implement flood and drought issues in SCMPs
- WRUAs will concentrate on non-structural measures as well as small scale infrastructure development like raise roads, evacuation centres, culverts etc.

Drought Disaster Management

Most of ENNCA, except for very limited parts in and around Mount Kenya and the Aberdares, the other areas are categorized as arid and semi-aridlands affected by drought.

To mitigate drought in ENNCA the following strategies are proposed;

- Implementation of water use restriction rules for existing and proposed reservoir;
- Establishment of the Basin Drought Conciliation Council; and
- Establishment of drought early warning system.

Water use restriction should be considered at the early stages of drought taking into account the weather conditions, water storage in the reservoirs, social impacts in the worst case scenarios, etc.

Currently, the KMD issues rainfall forecast of 4-day, 7-day, 1-month, and 3-month (seasonal), which are officially released on the website of the KMD or published in the newspaper. This information can be utilized to commence timely water use restriction.

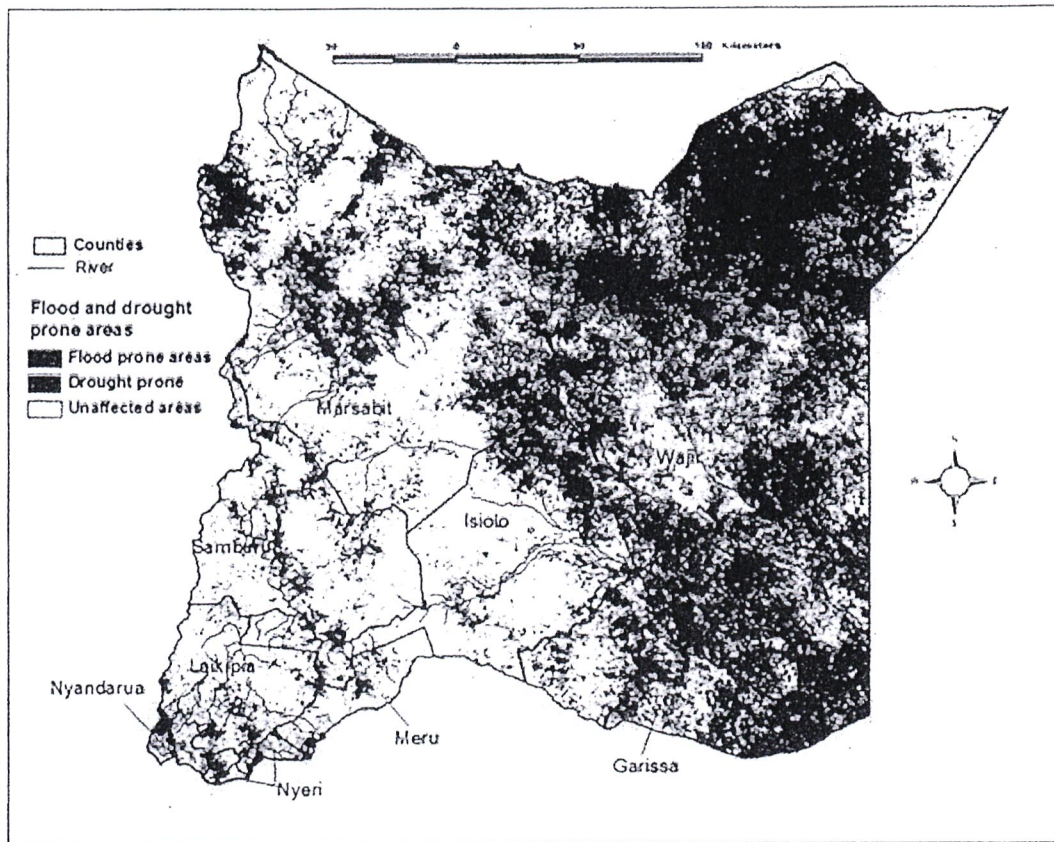


Figure 9-2:Drought and flood prone areas in ENNCA

Any measures aimed at addressing floods and drought management in ENNCA must take cognizance of the following points:

- Community flood and drought management committees as effective route for building community capacity to deal with flood and drought related disasters;
- Improvement in timely hydro-metrological data collection through installation of automatic stations and use of data loggers. This will subsequently improve the setting up of effective early warning systems;
- Adequate training of more personnel in floods and drought management to coordinate capacity building activities under floods and drought management.

9.3 Goals, Objectives and Strategic Actions

GOAL: Develop and implement Integrated Flood and Drought management plans in Collaboration with Stakeholders	
Objectives	
WO12	To adopt best practices on Integrated Flood and Drought Management (IFDM)
WO13	To develop and operationalize framework for collaboration with County Governments (CGs) and other Stakeholders on IFDM
WO14	To enhance capacity on IFDM (CGs, WRUAs, WRMA staff); on monitoring skills, use of Information Systems and Flood Control centers.
WO15	To mainstream Flood and Drought management in SCMPs
WO16	To Enforce the Reserve with respect to drought management

Targets		Relevant Objective
WT12	Best practices on IFDM adopted	WO12
WT13	Existing framework for collaboration with CGs and Other Stakeholders on IF&DM operationalized	WO13
WT14	Capacity on IFDM enhanced	WO14
WT15	Flood and Drought management in SCMPs mainstreamed	WO15
WT16	Reserve Maintained	WO16

Strategic Actions			Relevant objective
WT12	WA35	Establish community based 4 No. Flood & 8 No Drought Management committees from CGs, stakeholders and existing WRUAs	WO12
	WA36	Develop 4 No flood and 8No drought hazard maps;	
	WA37	Establish 4No flood evacuation centers and 4 No evacuation routes	
	WA38	Collaborate with the County Governments and other Stakeholder to undertake structural and non-structural measures including FEWS early warning systems for floods managements	WO12
	WA39	Promote rain water harvesting	
	WA40	Customize existing schools, community awareness campaigns and education programs on floods and drought management	WO12
	WA41	Promote efficient water use and storage	
	WA42	Develop 4 No and implement 8 No IF&DM plans	
WT13	WA43	Identify areas of collaboration with County Governments and other stakeholders	WO13
	WA44	Create awareness through joint forums and enter into MOU	

WT14	WA45	Carry out 3 No. training needs assessment for WRMA, WRUAs and County Governments	WO14
	WA46	Prepare and Implement 3 No. training plans	
	WA47	Upgrade existing monitoring networks and equipment for real time data transmission	
	WA48	Upgrade assorted equipment	
	WA49	Upscale Integrated 4 No. Flood and 8 No. drought management early warning systems	
	WA50	Establish and operationalize 6 No. Flood and Drought forecasting centre	
WT15	WA51	Review the existing SCMPs to include Flood and Drought Management (FDM)	WO15
	WA52	Develop new 230 No SCMPs to include Flood and Drought Management	
	WA53	Implement FDM activities in the SCMPs	
WT16	WA54	Develop and implement Enforcement Plan for drought situations	WO16

CHAPTER 10: CLIMATE CHANGE ADAPTATION

10.1 Overview

This chapter presents strategies for mainstreaming climate change adaptation measures in the management of water resources and building climate change resilient communities.

The National Climate Change Action Plan (NCCAP) proposes:

- Mainstreaming of CCA into all water resource management plans and actions;
- Water conservation efforts of the main water towers, both rehabilitation and restoration of the water catchments areas; Carrying out effective trans-boundary water resources management;
- Carrying out water resources assessment, documentation and dissemination of necessary information to stakeholders.

10.2 Situation Analysis

The climate in the catchment varies from sub-humid in the upper zone, semi-arid in the middle zone and arid in the coastal zone. The mean annual rainfall in the catchment is 733 mm/year.

WRMA together with other partners and with support from the Nordic Climate Facility (NCF) implemented a project on “Building adaptive capacity to climate change in Kenya” in 2012. The outcome of the project was to build capacity under three components:

1. Improved knowledge on the impacts of climate change on water resources;
2. Robust strategies for climate change adaptation;
3. Implementation of climate change measures.

Pilot activities under component 3 were conducted in 6 sub-catchments that became the model for WRMA climate change adaptation programs. This CMS provides an opportunity to mainstream these adaptation programs, making their implementation a priority in all sub catchments.

In terms of climate analysis, the Global Climate Model (GCM) is used. In Kenya, the downscaled GCMs indicate that the country is likely to experience the following climate changes between the late 2020s and 2100.

- Average annual temperature will rise by between 1°C and 5°C, typically 1°C by 2020s and 4°C by 2100.
- Climate is likely to become wetter in both rainy seasons, but particularly in the Short Rains (October to December).
- The rainfall seasonality i.e. Short and Long Rains are likely to remain the same.
- Rainfall events during the wet seasons will become more extreme by 2100. Consequently flood events are likely to increase in frequency and severity.
- Droughts are likely to occur with similar frequency as at present, but to increase in severity.

In effect, there will be more intense rainfall in the short rains, with likely acceleration in soil erosion especially following a dry spell. With good water harvesting structures it will be

possible to impound water supplies that should be able to carry through the dry period. Such wet periods will cyclically be followed by even more severe droughts.

10.2.1 Key issues

The key Climate Change Adaptation issues in ENNCA are:-

- Reduction in base flows; which can support diminishing surface water
- Limited water storage infrastructure;
- Increased sedimentation;
- Changing river regimes (perennial rivers to seasonal streams);
- Increasing evaporation rates;
- Increase in mean annual rainfall;
- Changes in rainfall seasonality (shifting seasons);
- Water quality changes (salinization, sediment load);
- Need to downscale Regional Circulation Modelling (RCM) results.

In general, the key highlights in terms of climate change adaptation, includes but not limited to the following points:

- Any adaptation measures to climate change must take cognizance of the available water resources in terms of quantity and quality.
- To militate against drought, for example, will require that you store or is able to harness enough water to meet the demand during the drought period.
- Flood control to avoid disasters, on the other hand, will require some storage in form of dams in addition to catchment conservation measures. The stored water can also be used during droughts.
- In terms of catchment conservation, soil eroded from upper reaches are often carried by the surface run-off and deposited in rivers, lakes and dams, resulting in reduced storage capacity.
- Increased surface run-off increases flood frequency and its associated impacts;
- Communities in the area have been adapting to changes in weather and climate for a long time, and have demonstrated that adaptation is possible. However, with changing climate, the scale of adaptation efforts has to increase.
- Augment indigenous coping strategies with science-based knowledge and introduce various modern technologies for adaptation.
- Link adaptation to local development in order to encourage active stakeholder participation.
- The key to effective community based adaptation to climate change is proper utilization of weather and climate information (which needs to be communicated in a meaningful way and in a timely manner).

10.2.2 Lessons on climate change adaptation practice from the catchment area

In order to realize the adaptation priorities within the catchment area, it is expected that:

- (i) At WRMA level, the following will be undertaken:

- Data collection, analysis and dissemination;
 - Prediction on the future climate scenarios;
 - Carryout rainfall-runoff modelling using climate scenarios;
 - Use the information to inform decision making such as water allocation plans.
- (ii) At the local level; WRUA members who are directly affected need to prepare and adapt to the impacts of climate change through:
- Mainstreaming Climate change adaptation projects in the SCMPs and implementing them with a view to developing a climate change resilient community
 - Use the already developed climate change adaptation guidelines to inform project planning

10.3 Goals, Objectives and Strategic Actions

Goal: Integrate climate change adaptation measures into water resources management	
Objectives	
PO01	To strengthen monitoring systems for enhanced data collection
PO02	To enhance capacity and create awareness on climate change effects
PO03	To develop scenarios to support decision making
PO04	To identify and map water storage areas.

Targets		Relevant objective
PT01	Monitoring networks optimized/ rationalize for enhanced data collection	PO01
PT02	Capacity and awareness on climate change enhanced	PO02
PT03	Climate scenarios generated to support decision making	PO03
PT04	Water storage areas identified and mapped	PO04

Strategic Actions			Relevant Objectives
PT01	PA01	Review water resources monitoring requirements	PO01
	PA02	Establish, rehabilitate 100 No, relocate and upgrade 5 No monitoring stations (refer to Chapter 15)	
	PA03	Enhance staff capacity in data collection	
	PA04	Enhance capacity for gauge readers	
	PA05	Automate 5No and modernize 20No monitoring stations	
	PA06	Set and implement data quality control procedures	
	PA07	Enhance partnership on data collection and sharing	
PT02	PA08	Create awareness on effects and adaptation of climate change (WRUAs, schools)	PO02
	PA09	Enhance capacity and create awareness to WRMA staff on climate change adaptation (CCA) measures	
	PA10	Review 40No SCMPs to incorporate climate change adaptation (CCAs) in accordance to WDC	
PT03	PA11	Downscale regional climate models to generate sub-catchment climate scenarios	PO03
PT04	PA12	Assess and map out Aquifer Recharge areas	PO04
	PA13	Assess and map storage areas	

CHAPTER 11: WATER RESOURCES INFRASTRUCTURE DEVELOPMENT

11.1 Overview

This chapter provides the strategies for regulating development of infrastructure while ensuring safety. The main types of infrastructure to be considered for development include storage schemes and associated components; i.e., inter-basin water transfer and groundwater storage. WRMA has a clear mandate on water storage based on the Water Act 2002. The mandate charges WRMA with:-

- Regulation of the development and operation of storage infrastructure through permits and other regulatory instruments, including the inspection of storage facilities either during or after construction;
- Support WRUAs on the development of water storage infrastructure;
- Identification of storage facility sites including feasibility studies to determine potential storage capacity;
- Development of business plans showing the investment potentials and share with the county governments and other stakeholders
- Identification of storage requirements to ensure downstream baseflow.

11.2 Situation analysis

ENNCA has limited water availability due to the small volume of existing storage capacity. In 2010, ENNCA the resource potential for surface water development was 1,578 MCM, but the existing storage facilities totaled only 10 MCM. There was no major dam account for this storage, with all of it coming from small dams and pans averaging 17,000 m³ each. There exists significant potential for additional storage capacity, but this will have to be weighed against the scarcity of suitable dam sites, the seasonality of streams and high evapotranspiration rates.

11.2.1 Key Issues

Some of the reasons behind this dismal water storage in an otherwise largely semi-arid catchment in need of storage are:

- Lifespan of the infrastructure;
- Socio-economic/ environmental concerns;
- Limited number of sites for dam construction;
- Dam safety/ security issues due to sporadic episodic rainfall accompanied by flash flooding;
- Maintenance of Reserve – note that the Reserve on the Ewaso Ng'iro at Archer's Post was only 1.6 m³/sec in 2010;
- Inadequate data availability for design infrastructure;
- Regulation and enforcement issues;
- Insufficient consultation between stakeholders.

11.2.2 Challenges

Progress in implementation was impacted on by:

- Mobilization of adequate financing for assessment activities for storage development;

11.2.3 Implementation status of lapsed CMS

The ENNCA region made progress in implementation of water resources infrastructure strategic actions outlined in the lapsed CMSas follows:

- Feasibility for a dam of 351MCM done along the Ewaso Ng'iro River;
- Storage enhanced by 809,355m³
- 8No. sand dams done in collaboration with stakeholders
- Enforcement done for water resources infrastructure under construction and all applications vetted for compliance
- Sensitization partially conducted
- Guidelines for water storage structures classification developed in July 2009

11.3 Implementation Requirements

- Staff of adequate capacity (numbers, skills and equipment)
- Adequate secondary data – SRTM (30m DEM of the basin), topographic maps, river basin maps;
- Adequate hydrometeorological network;
- Collaboration between WRMA and relevant stakeholders in the basin – these include County governments and other stakeholders.

There have been instances where two storage projects are designed in the same sub-catchment/ river section on the premise that the available resources are exclusively for a single project. Unsuitable sites have been developed in the past yet consultation with the relevant stakeholders would have corrected the situation.

11.4 Goal, Objectives, Targets and Strategic Actions

Goal:	
Regulate infrastructure development for safety while ensuring downstream water commitments	
Objectives	
WO17	To regulate water resources infrastructure development for safety and sustainability
WO18	To identify potential sites for water resources infrastructure development
WO19	To enforce Codes for practice for surface water Infrastructure Development

Targets		Relevant Objective
WT17	Water resources infrastructure development regulated for dam safety and sustainable use	WO17
WT18	Potential sites for water resources infrastructure development identified and downstream base flow maintained.	WO18
WT19	Codes for practice for surface water Infrastructure Development enforced	WO19

Strategic Actions			Relevant Objective
WT17	WA55	Enforce conditions attached to authorizations	WO17
	WA56	Inspect development of infrastructure according to schedules contained in authorisation	
	WA57	Build capacity of WRMA staff on infrastructure permitting	
	WA58	Establish, train and operationalize a Water Infrastructure Development Panel (WIDP)	
	WA59	Carry out the required periodic safety inspections and submit reports	
	WA60	Incorporate early warning procedures by the infrastructure operator in the permit conditions	
	WA61	Enforce early warning procedural requirements for dam operators	
	WA62	Monitor compensation flows	
	WA63	Enforce water releases to meet downstream commitments	
WT18	WA64	Select sites for pre-feasibility studies	WO18
	WA65	Compile assessment reports for 40 identified sites	
	WA66	Share reports with County Governments and other stakeholders	
	WA67	Identify 15 suitable sites for river flow regulation infrastructure	
	WA68	Carry out feasibility studies for the identified sites	
	WA69	Design and construct water flow regulation infrastructure	
WT19	WA70	Develop Codes of Practice	WO19
	WA71	Enforce Codes of practice for surface water infrastructure development and operation	

CHAPTER 12: RIGHTS BASED APPROACH

12.1 Overview

This chapter deals with the aspects of rights based issues that are water related and which should be taken into account. The focus for a rights based approach is based on equity in water allocation. To achieve this, efforts will be made towards the determination and maintenance of the reserve.

12.2 Situation Analysis

In accordance with Section 42 of the Constitution of Kenya, 2010, “every person has the right to a clean and healthy environment”, while Section 43 (d) of the Constitution guarantees the “right to clean and safe water in adequate quantities to every person”.

Vision 2030 Social Pillar focuses on community participation in ensuring that there is gender equity, youth participation and vulnerable and marginalized groups’ participation in development activities in the target areas. This is achieved through the Participatory Integrated Community Development Process (PICD).

The Water Resources Management Authority intends to achieve the above constitutional requirement through the maintenance of the Reserve.

The Ewaso Ng’iro North catchment Area CMS subscribes to the rights-based approach to the equitable access to water, giving allocation priority to the Reserve (basic human needs and the environment needs).

The management of water resources is potentially sustainable if all stakeholders and interested parties are involved. Stakeholder participation should therefore take cognizance of gender and vulnerable groups within ENNCA.

The water reserve (water necessary for basic human needs and for environmental sustainability) is clearly defined and takes into account the water quantity and quality needs of all users, with special emphasis on the vulnerable groups. Ensuring an adequate water Reserve is also an important first step to reducing the potential for water related conflicts. In water allocation, thresholds have been introduced where applicants of Class A permits are exempted from paying water use charges.

To strengthen the resource management at the catchment level, the WRMA regional office will support the formation of Catchment Forum which is intended to assume a major role in catchment management through promoting exchange of information, experiences and perspectives among the stakeholders with the ultimate goal of advising WRMA on strategic direction in improving catchment management and conflict resolutions.

12.3 Key Issues

12.3.1 Implementation status of the lapsed CMS

- Sub-basins mapped into alarm, alert and satisfactory classes;
- Water allocation thresholds set and class A water users exempted from water use charge;

- Nodes for determination of the reserve identified;
- Data collected from the nodes to update the rating curves;
- WRUAs formed and capacity build;
- 30% gender balance maintained in CAAC/WRUA management committees;
- Staff sensitized on HIV/AIDS;
- Condoms dispensers installed at sub-regional offices;
- Complaints desks established at the regional and sub-regional offices;
- Complaints committees established at regional and sub-regional offices;
- Complaints boxes put in place at regional and sub-regional offices;
- Awareness creation conducted on accessibility of water;

12.3.2 Challenges

- Inadequate technical capacity for WRUAs to assist in allocation and maintenance of the reserve.
- Inadequate resources (financial, equipment, personnel).

12.3.3 Opportunities

- Good WRUA coverage and active participation in the catchment area;
- Presence of other stakeholders involved in water resources management activities.

12.4 Implementation Requirements

- Adequate technical capacity of WRUAs;
- Adequate financial resources;
- Determined and maintained reserve flow WAPs

12.5 Goals, Management Objectives, Targets and Strategic Actions

Goal: Equitable access to water for all	
Objectives	
PO05	To enhance access to water resources for the vulnerable groups through reserve maintenance
PO06	To promote exchange of information and experiences

Targets		Relevant Objective
PT05	Access to water resources for vulnerable groups enhanced through maintenance of the reserve	PO05
PT06	Exchange of information and experiences promoted	PO06

Strategic Actions			Relevant Objective
PT05	PA14	Maintain Reserve flow	PO05
	PA15	Continuously identify and access their water demands for the vulnerable and disadvantaged communities	
	PA16	Build capacity and ensure gender balance for WRUAs and CAAC	
	PA17	Promote mechanisms that support vulnerable groups access to water (water pans, spring protection etc.)	
PT06	PA18	Carry out stakeholders analysis and establish ENNCA Catchment Forum	PO06
	PA19	Promote gender and generational representation in decision making in the catchment forums	
	PA20	Use catchment forum to promote water use conflict resolution	

CHAPTER 13: LIVELIHOOD ENHANCEMENT

13.1 Overview

This chapter provides strategies to support projects that enhance the income for local groups engaged in water resources management. Livelihood enhancement will be done through the provision of Livelihood Micro Grants, which is an additional element within the WDC framework. Groups who are members of a WRUA will be able to make an application for a livelihood enhancement project. This application will be endorsed by the WRUA for funding. Once funds are received, the project will be implemented by the group under the supervision of the WRUA. WRMA will provide quality assurance.

13.2 Situation Analysis

The Livelihood Enhancement component provides investments in community projects, and provides a demand driven window of funding for livelihood investments in the ENNCA. WRMA has incorporated livelihood enhancement into the WDC manual which comprises the following:

- Livelihood Manual;
- LMG Operations Manual;
- Livelihood Training Module.

The Livelihood Enhancement is also recognised in the three pillars of Vision 2030 as described below:

- **Economic Pillar:** Focusing on increasing community participation in initiating their own economic activities through community driven investments where emphasis is on community participation, inclusion, empowerment and gender equity;
- **Social Pillar:** Focuses on community participation in ensuring that there is gender equity, youth participation and vulnerable and marginalized groups' participation in development activities in the target areas. This is achieved through the Participatory Integrated Community Development Process (PICD).
- **Political Pillar:** Adopts a people focused strategy of implementation which is well articulated in the Community Driven Development (CDD) Component where the democratically elected Community Development Committees are the key decision making organs for community investments.

13.3 Key issues

The key issues of consideration in livelihood enhancement are:

1. WRUA Sustainability;
2. Diversification of livelihood for the WRUA members and vulnerable groups;
3. Making land productive while undertaking water resources management;
4. Empowering members of the WRUAs both socially and economically – e.g., through revolving loans;
5. Raising the standards of living through alternative livelihoods that enhance catchment protection.

The target group for the livelihood enhancement are members of WRUAs located within the catchment area. They receive small grants to invest in their own income generating projects or projects which have a beneficial impact on the management of the natural resources base of the catchment area.

13.4 Implementation Requirements

To enhance the livelihoods in the catchment there is need for:

- Capacity building of WRUAs, CBOs to identify and prepare sellable alternative livelihood project proposals;
- Capacity building for Service Providers to the WRUA groups
- Diverse funding sources for the identified projects;
- Training of WRUAs on internal governance, accountability and transparency.

13.5 Goal, Objectives, Targets and Strategic Actions

Goal: Promote catchment management through livelihoods enhancement	
Objectives	
PO07	To build capacity in Livelihood activities of WRUAs, CBOs and Service Providers geared towards WRM
PO08	To enhance the collaboration and Partnership with the CGs and other development partners to support LMGs
PO09	To enhance the management of LMGs (sensitization, plans, oversight, SCMPs)

Targets		Relevant Objective
PT07	WRUAs, CBOs and other stakeholders capacity built/enhanced on livelihood projects	PO07
PT08	Management of the LMGs enhanced	PO08
PT09	Collaboration and partnership with County Governments and other development partners in support to WDC- LMGs established and enhanced	PO09

Target	Strategic Actions		Relevant objective
PT07	PA21	Assess Capacity and Training needs for the WRUAs, CBOS, SPs and other stakeholders	PO07
	PA22	Capacity build the WRUAs, CBOS, SPs and other stakeholders on provisions of LMGs	
	PA23	Develop a Consultancy framework for support service providers	
PT08	PA24	Sensitize WRUAs on LMGs	PO08
	PA25	Develop benefit sharing plans	
	PA26	Evaluate and prioritize the proposals	
	PA27	Provide oversight and quality control on LMGs implementation	
	PA28	Incorporate livelihood component in the SCMPs	
	PA29	Develop a manual for management of LMGs	
	PA30	Develop a Data base on WDC LMGs on funding and implementation	
PT09	PA31	Capacity build the Support Service Providers of specialized services to WRUAs on livelihood component	PO09
	PA32	Identify the areas of collaboration	
	PA33	Operationalize the framework for collaboration with County Governments and other development partners in support to WDC- LMGs	

PART V: STRATEGIES FOR IMPLEMENTATION, INFORMATION MANAGEMENT AND FINANCING

This part provides the strategies for implementation, information management and financing under the following chapters:

Chapter 14: Institutional Strengthening;-This chapter lays out the means and ways of enhancing the capacity of WRMA and other water resource related institutions and organs to effectively undertake water resources management in ENNCA. This involves ensuring optimum capacity for the region office, the sub-regional offices as well as the Catchment Area Advisory Committee (CAAC). At a lower local level of implementation, the Water Resources Users Associations (WRUAs) are involved in co-management of WR.

The chapter also deals with strengthening coordination, collaborations and partnerships between WRMA and the County Governments and other stakeholders to promote integrated water resource management (IWRM) in ENNCA.

Chapter 15: Monitoring and information management;- This chapter presents the strategy for establishing water resources management and catchment monitoring systems to provide accurate data, and that the implementation process is monitored periodically evaluated. Monitoring of water resources requires regular and systematic recording of measurements from a network of surface water and groundwater stations, meteorological monitoring stations and pollution surveillance.

Chapter 16: Financing the CMS- This chapter outlines the means and ways of sustainably financing the strategic actions contained in this CMS. It focuses on the costs (Budgetary needs) and the revenues/income (the sources of the funds). To sustainably implement the CMS, there will be need to enhance resource mobilization.

CHAPTER 14: INSTITUTIONAL STRENGTHENING

14.1 Overview

This chapter presents strategies for enhancing the capacity of WRMA and stakeholders to effectively undertake water resources management in the catchment. It also deals with strengthening coordination, collaborations and partnerships between WRMA, the County Governments and other stakeholders to promote integrated water resource management (IWRM) in catchment area.

Situation analysis WRMA as the lead agency, in water resources management, was operationalised in 2004 as per the Water Act 2002. There are various institutions that catchment area works with in the process of implementing its mandate. Some of these are the CAAC, WRUAs and other stakeholders. Following the devolution, county governments have become important stakeholder to support WRMA in executing its mandate. It is anticipated that all these institutions including WRMA itself will require to be strengthened. Currently catchment is working with an established CAAC and about 74 WRUAs out of a potential of 271 WRUAs. The catchment has 1 regional office and 5 sub-regional offices. Catchment WRUA forum has been established as an umbrella body for existing WRUAs in the catchment.

Key Issues

- Inadequate infrastructural and financial resources of WRMA
- Inadequate technical skills of WRMA staff
- Need to enhance CAAC capacity
- Inadequate capacity of WRUAs which inhibits them from effectively performing their role in WRM.
- Need to enhance capacity in County Governments in WRM
- Low level of public awareness on the mandate of WRMA

14.1.1 Achievements in the lapsed CMS implementation

The following achievements were realised in ENNCA to various degree over the period of the last CMS and have made a good base for way forward for the next phase:

- Established and operational WRMA offices
 - One regional office in Nanyuki town in a new one-storey block which also houses the laboratory.
 - The 5 No. sub-regional offices are housed in:
 - 1) Nanyuki (Upper EwasoNgiro);
 - 2) Isiolo (Middle EwasoNgiro);
 - 3) Rumuruti (EngareNarokMelghis);

- 4) Marsabit (North EwasoLaggas) and;
- 5) Mandera (EwasoDaua).
- The Nanyuki and Rumuruti sub regional offices also have modern office blocks. Mandera, Marsabit and Isiolo sub regional offices are however in need of more conducive office space.
- The Region has 9 motor vehicles against a requirement of 17 No and 6 No motorbikes against requirement of 10 No.
- Permit Data Base (PDB) is in operation and has been updated in all the sub-regions and the region office. Mike-Basin and Ground Water database are also in place.
- Capacity building and training of staff done as various opportunities arose
 - Staff rationalization has been carried out though there is still a big deficit especially in the technical skills in the SROs.
 - Training needs assessment done internally on an annual basis to inform career development
 - Trainings done on permitting processing and water resource data management
- The catchment was delineated into alert, alarm and satisfactory.
 - 74 No WRUAs formed so far.
 - Capacity building and training WRUA officials in water sector reforms, water allocation, WDC process and financial management undertaken
- Collaborations on WRM projects with:
 - DANIDA in water resource development,
 - Laikipia Wildlife Forum in WRUA capacity building and SCMP development,
 - Medium Term ASAL Programme (MTAP), WVI, AWF in WRUA capacity building and SCMP development
 - County governments in catchment protection

14.2 Goal, Objectives, Targets and Strategic Actions

Goal: Strengthen institutional capacity for effective and efficient water resources management	
Objectives	
PO10	To enhance the capacity of RO and SROs and CAAC to effectively undertake IWRM
PO11	To build capacity for the County Governments to effectively participate in water resources management
PO12	To enhance capacity of WRUAs to undertake IWRM activities
PO13	To enhance collaboration with stakeholders on WRM issues

Target		Relevant Objective
PT10	Capacity of RO, SRO and CAAC to effectively undertake IWRM enhanced.	PO10
PT11	Capacity for the County Governments to effectively participate in water resources management built	PO11

Catchment Management Strategy (2014-2022)

PT12	Capacity of WRUAs to undertake IWRM activities enhanced	PO12
PT13	Collaboration with stakeholders on IWRM issues enhanced	PO13

Target	Strategic Actions		Relevant Objective
PT10	PA34	Determine the required number of technical staff in Regional and Sub-regional offices	PO10
	PA35	Deploy staff in line with the required number	
	PA36	Enhance staff training and manpower development	
	PA37	Improve work environment (e.g. provision of tools & equipment, office space, transport facilities, ICT infrastructure)	
	PA38	Construct 3 SROs in Isiolo, Wajir and Marsabit	
PT11	PA39	Train County Governments staff in IWRM	PO11
	PA40	Give technical support to CGs in formulating water related laws	
	PA41	Harmonise CGs' legislation with water resources related activities with SCMPs	
PT12	PA42	Ensure WRUAs,CGs are represented in CAAC	PO12
	PA43	Collaborate withWRUAs in implementation of their IWRM activities	
	PA44	Undertake IWRM awareness campaigns among water users to encourage WRUA formation and membership	
	PA45	Support WRUAs to develop proposals for funding SCMPs	
	PA46	Train WRUAs on WDC Framework	
PT13	PA47	Enhance WRUA capacity to be effective agents of IWRM	PO13
	PA48	Build capacity of CAAC	
	PA49	Ensure CAAC hold quarterly meetings on related activities	
	PA50	Undertake IWRM awareness campaigns among stakeholders	
	PA51	Ensure that structured catchment forum meetings are held annually	

CHAPTER 15: MONITORING AND INFORMATION MANAGEMENT

15.1 Overview

This chapter presents the strategies for ensuring that water resources management and catchment monitoring systems provide accurate data, and that the CMS implementation is monitored continuously and periodically evaluated. Monitoring of water resources involves data management. This includes establishing monitoring networks, data collection, analysis, storage, archiving and dissemination. Implementation of the CMS will be monitored and evaluated according to a monitoring plan. A mid-term and terminal evaluation will be undertaken. The information will be packaged and disseminated to all stakeholders.

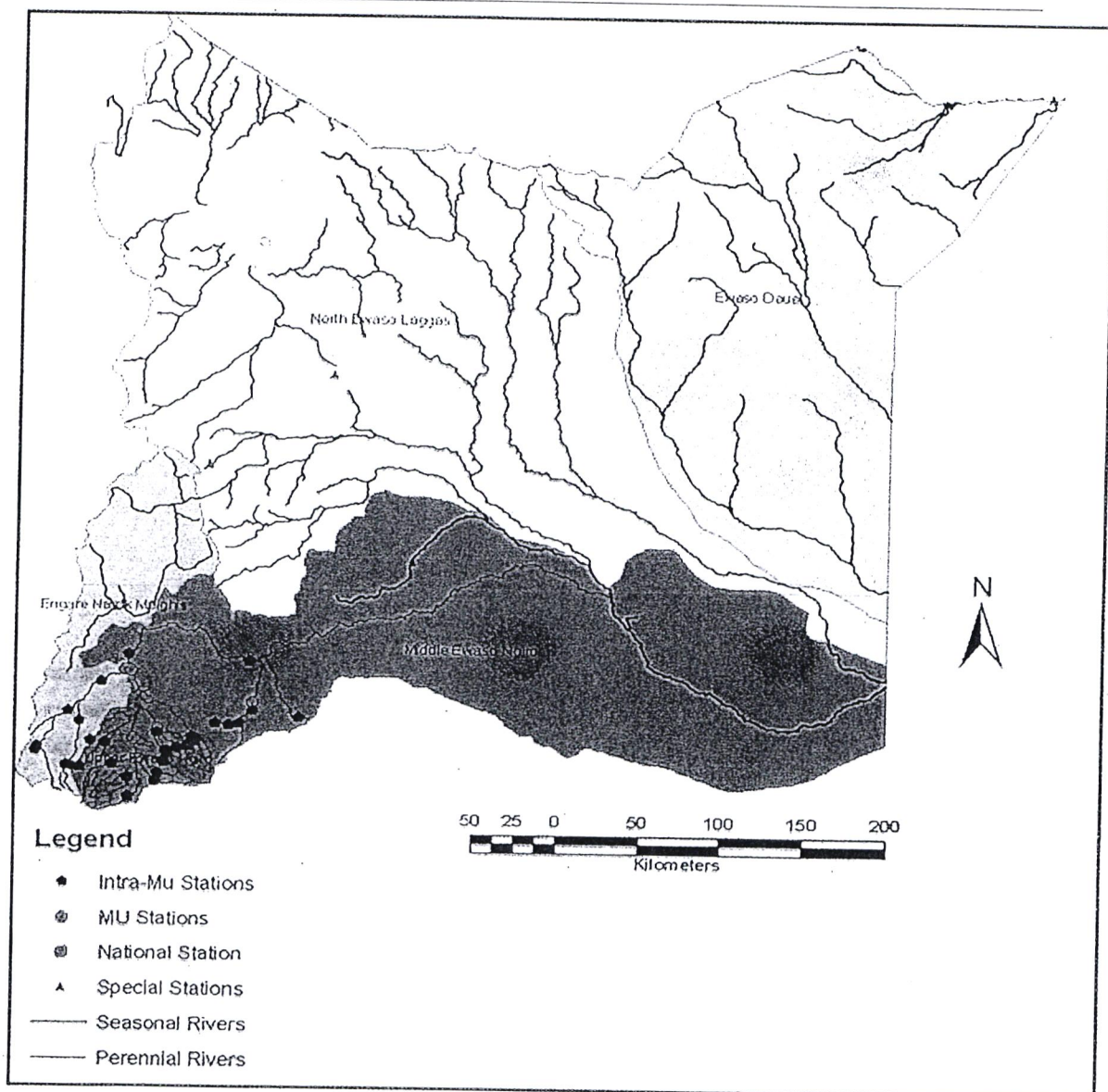
The implementation of the CMS will be monitored and evaluated according to a monitoring and evaluation plan included in matrix form in the document.

15.2 Situation Analysis

Surface water monitoring network rationalised; with 40 river gauging stations. Groundwater monitoring boreholes classified as strategic (5No), major (3No.), minor (4No.) and special boreholes. Water quality monitoring established and operationalized.

- Rainfall monitoring network rationalized with 65 stations
26 climatic stations with less than 50% in operation i.e. 26 rainfall stations which are operating at 38%; 9 evaporation pans operating at 44%. And 8 automatic weather stations operating at 67%.
- Low level automation of monitoring stations

Map showing groundwater monitoring stations



Map showing RGS distribution

15.2.1 Key Issues

The key issues that affected or are in need of monitoring interventions include:-

- ⊖ Incomplete monitoring network rationalization;
- ⊖ Inadequate monitoring equipment;
- ⊖ Inadequate data quality;
- ⊖ Data Gaps
- ⊖ Low water resources monitoring capacity;
- ⊖ Data management and sharing platforms are not well established;

- Implementation monitoring and evaluation not captured in previous CMS;
- Scheduling of actions and expected outcomes not captured in the previous CMS.
- Insufficient analysis of data for information processing and dissemination.
- Low level automation of monitoring stations Data gaps;
- Inadequate laboratory facilities;
- Inadequate financial resources to operate and maintain monitoring stations.

15.2.2 Implementation status of lapsed CMS

The ENNCA region made progress in implementation of monitoring and information management strategic actions outlined in the lapsed CMS, as summarized below:

- A water resources monitoring network was established.
- 28 monitoring stations were operationalized
- Water levels are monitored at some RGSs
- Water resources data collection and analysis were partially done. Data collection is irregular and incomplete. The software for WQ analysis not developed (see 5.2.1)
- 16No. Water Abstraction surveys were conducted
- WRMIS was partly implemented; Mike Basin database in place.
- Information needs of stakeholders and information dissemination and exchange mechanisms were not developed
- WRMA staff trained on the electronic Permit Database and financial management systems

15.2.3 Challenges

- Inadequate staff capacity for monitoring at the sub-regional level;
- Lack of laboratory facility at regional office;
- Inadequate monitoring equipment;
- Inadequate funding.

15.3 Implementation requirements

The proposed monitoring and information management strategies require the following technical resources:-

- Trained technical personnel (surface water, groundwater, water quality, database management);
- Monitoring equipment (surface water, groundwater, water quality);
- Data analysis software.

15.4 Goals, Objectives, Targets and Strategic Actions

Goal: Provide reliable information to support planning and management of the water resources	
Objectives	
MO01	To optimize water resources monitoring network
MO02	To enhance data management system (data collection, analysis, storage and dissemination)
MO03	To upgrade water resource information system
MO04	To establish an effective monitoring and evaluation system for CMS implementation.

Target		Relevant Objective
MT01	Water resources monitoring network optimized	MO01
MT02	Data management system enhanced	MO02
MT03	Water resource information system upgraded	MO03
MT04	Effective monitoring and evaluation system for the CMS implementation established	MO04

Strategic Actions			Relevant Objective
MT01	MA01	Assess status of monitoring stations	MO01
	MA02	Train 8No. staff at the region on water resources monitoring	
	MA03	Develop a water resources monitoring plan and protocols	
	MA04	Implement the Water Resources monitoring plan and protocols	
	MA05	Undertake quarterly assessment of status of monitoring stations	
	MA06	Prepare updated monitoring network maps	
	MA07	Establishment, rehabilitation and upgrade 100No.stations	
MT02	MA08	Automate 10 No. stations	MO02
	MA09	Procure and install new data software compatible with WRMA information requirements	
	MA10	Train 15 No. staff on new equipment and software	
	MA11	Train and facilitate 45 No. gauge readers	
	MA12	Improve data storage, sharing and security (cloud backup, security systems, WAN)	
	MA13	Identify data gaps	
	MA14	Identify and adopt models for gap-filling	
	MA15	Disseminate quarterly information through publications and website releases	
MT03	MA16	Carry out quarterly information quality control	MO03
	MA17	Operationalize information access levels	
	MA18	Develop CMS implementation plan	
	MA19	Monitor and evaluate the CMS implementation plan	
	MA20	Prepare monitoring and evaluation reports	
	MA21	Disseminate information on CMS implementation	
	MA22	Prepare reports on monitoring and evaluation	
	MA23	Carry out periodic evaluation on process and impact of CMS implementation	
	MA24	Disseminate reports	

CHAPTER 16: FINANCING THE CMS

16.1 Overview

This Chapter outlines the strategies for sustainably financing the strategic actions contained in this CMS. It focuses on the budgetary requirements and the sources of funds. To sustainably implement the CMS, there will be need to enhance resource mobilization. This entails:

- Efficiency in internal revenue collection mechanisms by emphasizing on permitting, *user pay* and *polluter pay* principle;
- Collaborative efforts in seeking diversified alternative funding (income) sources like engaging County Governments;
- Developing funding proposals to potential partners;
- Use of public-private partnerships (PPP).

16.2 Situation analysis

Currently the main financial streams are internal revenues, GOK funding and development partners. The catchment intends to take advantage of the devolved government funds to implement CMS activities.

16.2.1 Key issues

- Low revenue base;
- Delayed disbursement of funds to WRUAs;
- Low compliance to water use payments.
- Low private sector participation in WRM;
- Inadequate data on abstractors
- Inadequate funding

16.2.2 Achievements in the implementation of the lapsed CMS

The following achievements were realised in ENNCA to various degree over the period of the lapsed CMS and have made a good base for way forward for the next phase:

- Integrated financial management system was upgraded. Training on Microsoft dynamics Navision FMIS data entry was done for officers in the accounts department.
- Annual WRMA Work plans and Budgets were cascaded to the Region and subsequently to the sub-regions and formed the basis for disbursement of funds to the region and sub regions.
- A basic water users data base (listing) compiled and regularly updated for billing
- Main abstractors listed in PDB and used to enforce permitting conditions
- Enhanced enforcement of WRM rules
- 74No. WRUAs formed and at various WDC stages

16.2.3 Financial Requirements of ENNCA

ENNCA will require financial resources to meet both its development budget as well as recurrent budget for water resource management activities as indicated below:

Development Budgets

These are costs related to long term investments needed to construct or install appropriate WRM facilities, equipment or systems. They include the following:

- *Institutional capacity strengthening:* To strengthen the institutional capacity of ENNCA, funds are needed to enhance work environment through:-
 - Refurbishment/renovations of some sub regional offices,
 - Optimization of the number of field motor vehicles, office furniture and equipment, computers, printers and other IT equipment especially for permitting, data and accounts.
 - Research and development costs.
- *Water Resource permitting:* To ensure smooth and sustainable implementation of water permitting and control, funds will be required to:-
 - Enhance the capacity of water rights officers.
 - Upgrade the Permitting data base (PDB) for both software and hardware and
 - Staff training on the use of upgraded PDB.
- *Water Resource monitoring:* To enhance monitoring, there is need for investment in:-
 - Installation and rehabilitation of gauging stations (river, GW, rainfall)
 - Flood discharge measurement equipment
 - Replacement of metal post for river gauges to concrete posts
 - Upgrade of the manual gauges to automatic.
 - Installation of dedicated monitoring boreholes
- *Water Resources Data Management:*
 - Upgrading of the Water Resource Database (both software and hardware)
 - Establishment of additional water quality test laboratories (building and utilities)
 - Providing equipment and reagents for the laboratories.
 - Training of staff on use of Water Resource Database and laboratory testing
- *Catchment Conditions Improvement:*
 - Rehabilitation of degraded sections of the catchment (wetland reclamation, tree growing, riparian pegging, river bank stabilization) and
 - Support to WRUA formation and implementation of SCMPs.

Recurrent Budget

These are costs related to financing continuous implementation of WRM activities in the CMS. It is intended that these costs will eventually be funded solely from WRMA internal sources. The costs include the following:

- Operational costs:

- Staff costs and
- Regional and sub-regional office administrative costs e.g. transport and office maintenance
- Stakeholder Mobilization Costs: Expenses incurred for collaborations and partnerships like;
 - participation in County Governments' WRM activities,
 - costs for venues and allowances of WRUAs during trainings and catchment forums operations,
 - CAACs activities expenses
- WR Monitoring costs like;
 - gauge readers' payments,
 - monitoring SW quality and quantity,
 - river discharge measurement,
 - GW quality monitoring,
 - rainfall monitoring and
 - discharge measurement
- WR data collection and analysis costs
- Costs for WR regulation compliance enforcement of permit conditions and Water Allocation Plans
- Information dissemination costs

16.2.4 Funding options available to ENNCA

ENNCA will depend on internal revenue sources to finance the CMS. However due to the scale of investment needed for water resources development, external funding will still be required. Below are listed the various sources of funding available to ENNCA

- Internal Revenue sources (Appropriation-in-Aid) derived from WRMA's mandate:
 - Water use and ED charges and associated penalties and fines
 - Water Use permits (new, extension, renewal, amendments, variation)
 - Laboratory services,
 - Sale of water resources data,
 - Water quality and quantity assessment services,
 - Professional/technical services like hydrological/ hydro-geological surveys and gauging.
- Support from GoK grants (budget allocations for both development and recurrent budgets)
- Other potential sources:
 - County Governments
 - WSTF for WRUA funding through WDC
 - others like CDF and CDTF
- Funds from development partners (UN agencies donations, bi-lateral donors, NGOs)
- Collaborative programmes and projects with other institutions
- Public Private Partnerships

16.3 Goal, Objectives, Targets and Strategic Actions

Goal: To achieve financial stability to implement the CMS	
Objectives	
PO14	To enhance revenue collection efficiency
PO15	To engage CGs in financing catchment management activities in SCMPs
PO16	To diversify revenue sources beyond internal revenue
PO17	To mobilize funds for WRM by involving private sector

Targets		Relevant Objectives
PT14	Efficiency in revenue collection enhanced	PO14
PT15	County Governments engaged in financing catchment management activities	PO15
PT16	Sources of revenue diversified	PO16
PT17	PPP Projects Promoted	PO17

Strategic Actions			Relevant Objective
PT14	PA52	Undertake abstraction survey and classify abstractors	PO14
	PA53	Fully automate the billing system, Upgrade the permit database and integrate with the billing system	
	PA54	Collect 100% of water use and effluent discharge charges	
	PA55	Train staff on enforcement of permit conditions and revenue collection	
	PA56	Facilitate staff to enforce permit conditions	
PT15	PA57	Engage CGs in preparation of SCMPs	PO15
	PA58	Collaborate with County Governments for funding sub- catchment management plan activities (SCMPs)	
PT16	PA59	Identify programs and projects that can attract revenue,	PO16
	PA60	Map out possible financiers and develop 16 bankable proposals for financing	
	PA61	Create awareness on various services offered by WRMA that could attract revenue.	
	PA62	Disseminate information on diversified revenue sources for value addition	
PT17	PA63	Identify projects for PPP	PO17
	PA64	Prepare proposals for PPP projects	
	PA65	Implement PPP projects	

APPENDICES

Appendix 15.1: ENNCA Rationalized River Gauging Stations

S/N	Station ID	River name	Long/Easting	Lat/Northing	Station Category
1	5ED01	EwasoNg'iro at Archer's Post	37.678	0.642	National
2	5AC08	EwasoNarok	36.863	0.508	MU
3	5BC04	EwasoNgiro	36.905	0.09	MU
4	5BE20	Nanyuki	37.03	0.147	MU
5	5DC01	EwasoNgiro	36.867	0.529	MU
6	5DA07	Isiolo	37.567	0.333	MU
7	5AA01A (5AA17)	EwasoNarok	36.369	0.048	IMU
8	5AA05	Equator	36.363	0.02	IMU
9	5AA13	Lake OlBolossat	36.4028	0.0111	IMU
10	5AB02	Pesi	36.517	0.2	IMU
11	5AB04	Pesi	36.527	0.063	IMU
12	5AC10	EwasoNarok	36.724	0.438	IMU
13	5AC15	EwasoNarok	36.537	0.257	IMU
14	5AD01	Mutara	36.553	0.067	IMU
15	5AD04	Mutara	36.663	0.08	IMU
16	5BA03	Moyok	36.871	0.263	IMU
17	5BB02	EwasoNg'iro	36.867	0.133	IMU
18	5BC02	NaroMoru	37.025	0.165	IMU
19	5BC05	Rongai	37.067	0.042	IMU
20	5BC06	Burguret	37.038	0.109	IMU
21	5BC08	EngareNgobit	36.783	0.05	IMU
22	5BD02	Surugoi	36.603	0.076	IMU
23	5BE01	Nanyuki	37.077	0.021	IMU
24	5BE02	Ontulili	37.139	0.04	IMU
25	5BE05	Teleswani	37.23	0.083	IMU
26	5BE06	Timau	37.242	0.088	IMU
27	5BE07	Likii	37.087	0.021	IMU
28	5BE19	Ngusishi	37.261	0.1	IMU
29	5BE21	Nanyuki	37.028	0.132	IMU
30	5BE22	Sirimon	37.2	0.061	IMU
31	5D02 (5DA01)	NgareNything	37.4228	0.1814	IMU
32	5D04 (5DA02)	NgareNdare	37.344	0.186	IMU
33	5D10 (5DA03)	Rugusu (Western Marania)	37.4744	0.1933	IMU
34	5D11 (5DA04)	Kithima (MaraniaRuguthu)	37.4908	0.2006	IMU
35	5D14 (5DA05)	Likiundu	37.804	0.233	IMU
36	5D-NEW (5DA06)	EwasoNgiro	37.531	0.5666	IMU
37	5D-OLDONG'IRO (5DC02)	EwasoNgiro	36.8707	0.5992	Special
38	5E06 (5EC01)	Bakuli Springs	37.99	2.3325	Special
39	5E-NEW (5EC02)	Ngurunit Springs	37.2757	1.7205	Special
40	5H01 (5HA01)	Daua River	41.8756	3.9694	Special

APPENDIX 1: IMPLEMENTATION MATRIX-ENNCA

Chapter 4: Management Approaches

Goal: To achieve sustainable water resources management in quantity and quality while involving the stakeholders the catchment management units

LO01: Classify water resources in order to develop appropriate management responses towards water allocation; **LO02:** Determine the reserve and identified nodes; **LO03:** Set the RQOs for water bodies

Target	Strategic Actions		Timeframe	Stakeholders		Budget	
				Lead	Others		
LT01	Water resources classified.	LA01	Classify ground water resources	June, 2016	RO	HQ, RO, WRUAs	3M
		LA02	Classify surface water	June 2017	RO	HQ, SRO, WRUAs	10M
LT02	Reserve determined	LA03	Identify the nodes for determining the reserve and set the reserve	June 2017	SRO	HQ, RO, WRUAs	30M
LT03	Resource Quality Objectives set.	LA04	Set the Resource Quality Objectives	June, 2018	RO	HQ	180M
		LA05	Determine criteria for monitoring the RQOs	June, 2016	SRO	RO, WRUAs	3M
		LA06	Develop management plan for achieving the RQOs	June, 2015	RO	SRO, WRUAs, key stakeholders	3M

Chapter 5: Water balance and Demand Management

Goal: Establish water resources potential and demand for effective management

Objectives: **WO01:** To determine water demand at sub-catchment level; **WO02:** To determine available water resources at sub-catchment level; **WO03:** To implement strategies to balance demand and availability; **WO04:** To establish mechanism for information sharing and awareness creation

Target	Strategic Actions	Timeframe	Stakeholders		Budget
			Lead	Others	
WT01	Water demand determined for all sub catchments	June, 2016	SRO	RO	5M
		June, 2017	SRO	RO	5M
WT02	Available water resources determined	June, 2018	RO	SRO	40M
WT03	Strategies to balance water demand and availability implemented	June, 2019	SRO	RO	6M
		June, 2019	SRO	RO	2M
		June,2016	RO	HQ, SRO	15M
		June, 2018	RO	HQ, SRO	5M
		June, 2018	RO	HQ, SRO	2M
		June, 2016	SRO	RO, CG, National Govt. WRUAs	10M

awareness established	WA10	Formulate programmes for awareness creation	Continuous	SRO	RO	5M
-----------------------	------	---	------------	-----	----	----

6.3 Water Allocation and use management

Goal: Equitable allocation of water resources to the competing needs for sustainable use while maintaining the reserve

Objective: **WO05:** To set and maintain the Reserve; **WO06:** To allocate water resources equitably; **WO07:** To enhance water use efficiency

Target	Strategic Actions		Timeframe	Stakeholders		Budget
	WA11	WA12		RO	HQ, SRO	
WT05 To set and maintain the Reserve	Set the reserve for each identified node on a water body (see chapter 4)	Conserve and recharge water body to maintain set reserve .	June 2017	RO	HQ, SRO	3M
WT06 Water resources allocated to all uses equitably	WA13	Determine allocatable surface water for all sub-catchments	Periodically June 2020	RO	HQ, SRO	15M
	WA14	Determine allocatable ground water	Dec 2016	RO	HQ, SRO	10M
	WA15	Carry out 15 abstraction surveys	Dec 2022	RO	SRO	45M
	WA16	Develop 10 No. water allocation plans (WAPs)	Continuous	SRO	HQ, RO, WRUAs, CAAC County Govt	40M
WT07 Water use efficiency enhanced	WA17	Collect water use charges 100%	Continuous	RO	SRO, WRUAs, CAAC, County Govt	15M
	WA18	Carry out 15 No. awareness campaigns on water conservation and water use efficiency.	Continuous	RO	SRO, HQ, National Govt, County Govt	6M
	WA19	Prepare and implement an annual enforcement plan for permit conditions	Continuous	HQ	RO, SRO	8M
	WA20	Monitor and enforce compliance	Dec 2016	HQ	RO, SRO	10M

Chapter 7: Water Resources Protection

Goal: Water resources protected from adverse impacts

Objective: **WO08:** To ensure effluent dischargers comply with permitting conditions; **WO09:** To classify water resources and set the RQOs; **WO10:** To collaborate with County Governments and other stakeholders on sanitation and solid waste management; **WO11:** To develop and implement a programme for urban river clean up in collaboration with the CG

Target	Strategic Actions		Timeframe	Stakeholders		Budget
	WA21	WA22		Lead	Others	
WT08 All effluent dischargers comply with permit requirements	Carry out fifteen pollution surveys	Sensitize effluent dischargers on effluent permit conditions annually	Continuous 2020	RO	SRO	30M
WT09 To classify water	WA23	Identify and enforce compliance to water use permit conditions on all major dischargers	June, 2016	SRO	RO	16M
	WA24	Establish a water resources register	June, 2016	SRO	HQ, RO	2M

Catchment Management Strategy (2014-2022)

	resources and set the RQOs	WA25	Define desired classes		June, 2017	SRO	HQ, RO	2M
		WA26	Set RQOs		June, 2018	SRO	HQ, RO	5M
		WA27	Specify criteria (requirements and effective dates)		Dec 2020	RO	SRO	2M
		WA28	Determine monitoring points		June 2020	HQ	RO, SRO	2M
		WA29	Formulate and implement a management plan towards attaining the RQOs in collaboration with County Governments and stakeholders		Dec 2020	RO	SRO	10M
WT10	To manage solid waste and sanitation	WA30	Collaborate with County Governments, WRUAs and other stakeholders		June, 2020	SRO	RO	10M
		WA31	Actively participate in planning for sanitation and solid waste management within the counties		June, 2020	RO	HQ, SRO, CGs	5M
		WA32	Identify and map out pollution hotspots for urban centres and river cleaning		continuous	SRO	RO, HQ, CGs	8M
WT11	To develop and implement a programme for urban river clean up	WA33	Develop a programme for urban river clean up		June, 2016	SRO	RO, CGs, WRUAs	5M
		WA34	Implement the programme on urban centre and river clean-up in collaboration with the County Government, WRUAs and other stakeholders		June, 2016	SRO	RO, CGs, WRUAs	15M

Chapter 8: Catchment Protection and Conservation

Goal: Improved condition of the water catchment areas in collaboration with stakeholders.

LO04: To restore and protect degraded water catchments; **LO05:** To identify and conserve water conservation areas; **LO06:** To collaborate with County Governments in soil and water conservation efforts.

Target	Strategic Actions	Timeframe	Stakeholders		Budget
			Lead	Others	
LT04	Degraded water catchments restored and protected	June 2016	RO	SRO, HQ, WRUA, CG	5.5M
		Continuous	SRO	RO, HQ, WRUA, CG	150M
LT05	Water conservation areas identified and gazetted	Continuous	SRO	RO, HQ, WRUA, CG	450M
		June, 2017	RO	SRO, HQ, WRUA, CG	10M
		Continuous	RO	SRO, HQ, WRUA, CG	200M
		Continuous	HQ	RO, SRO, WRUA, CG	30M
		Continuous	SRO	RO, HQ, WRUA, CG	8M

LT06	Collaboration with county government on soil and water conservation enhanced	stakeholders		Continuous	SRO	RO, WRUA, CG	5M
		LA14	Carry out stakeholder analysis				
		LA15	Carry out river clean-up activities in identified hotspots areas in collaboration with the County Government and other stakeholders	Continuous	SRO	RO, WRUA, CG	24M
		LA16	Support WRUAs in soil and water conservation activities funded in SCMPs	Continuous	RO	SRO, HQ, WRUA, CG	15M
		LA17	Identify and map solid waste hotspots	June, 2016	SRO, WRUA, CG	RO	5M
		LA18	Engage county governments and other stakeholders in identification of alternative solid waste management	June, 2017	SRO, WRUA, CG	RO	5M
		LA19	Liaise with county governments and other stakeholders in solid waste management using the identified alternatives	June, 2018	SRO, WRUA, CG	RO	10M

Chapter 9: Flood and Drought Management

Goal: Develop and implement Integrated Flood and Drought management plans in Collaboration with Stakeholders

WO12: To adopt best practices on Integrated Flood and Drought Management (IFDM); **WO13:** To develop and operationalize framework for collaboration with County Governments (CGs) and other Stakeholders on IFDM; **WO14:** To enhance capacity on IFDM (CGs, WRUAs, WRMA staff); on monitoring skills, use of Information Systems and Flood Control centers; **WO15:** To mainstream Flood and Drought management in SCMPs; **WO16:** To Enforce the Reserve with respect to drought management

Target	Strategic Actions	Timeframe	Stakeholders		Budget
			Lead	Others	
WT12 Best practices on IFDM adopted	WA35 Establish community based 4 No. Flood & 8 No Drought Management committees from CGs, stakeholders and existing WRUAs	June, 2018	SRO	RO, WRUAs, CGs	8M
	WA36 Develop 4 No flood and 8No drought hazard maps;	June, 2020	RO	HQ, SRO, Devt Partners	4M
	WA37 Establish 4No flood evacuation centers and 4 No evacuation routes	June, 2022	SRO	RO, CGs	24M
	WA38 Collaborate with the County Governments and other Stakeholder to undertake structural and non structural measures including FEWS early warning systems for flood management.	Continuous	SRO	RO, CGs	10M
	WA39 Promote rain water harvesting	Continuous	SRO	RO, WRUAs, CGs	16M
	WA40 Customize existing schools, community awareness campaigns and education programs on floods and drought management	Continuous	SRO	RO, WRUAs, CGs	10M

Catchment Management Strategy (2014-2022)

		WA41	Promote efficient water use and storage	Continuous	SRO	RO, WRUAs CGs,	5M
		WA42	Develop 4 No and implement 8 No IF&DM plans	Dec. 2018	RO	HQ, SRO, WRUA, Stakeholders	30M
WT13	Existing framework for collaboration with CGs and Other Stakeholders on IF&DM operationalized	WA43	Identify areas of collaboration with County Governments and other stakeholders	Continuous	RO	SRO, WRUA, CGs, Stakeholders	2M
		WA44	Create awareness through joint forums and enter into MOU.	June, 2015	HQ	RO, SRO, WRUA, CGs	10M
WT14	Capacity on IFDM enhanced	WA45	Carry out 3 No. training needs assessment for WRMA, WRUAs and County Governments	June 2016	RO	HQ, SRO, WRUAs, CGs	20M
		WA46	Prepare and Implement 3 No. training plans	June 2017	SRO	RO, HQ, CGs	10M
		WA47	Upgrade existing monitoring networks and equipment for real time data transmission	Dec. 2018	SRO	RO, CGs	20M
		WA48	Upgrade assorted equipment	Dec. 2020	HQ	RO, SRO	100M
		WA49	Upscale Integrated 4 No. Flood and 8 No. drought management early warning systems	Dec. 2017	HQ	RO, SRO	50M
		WA50	Establish and operationalize 6 No. Flood and Drought forecasting centre	Dec. 2016	RO	HQ, SRO,	10M
WT15	Flood and Drought management in SCMPs mainstreamed	WA51	Review the existing SCMPs to include Flood and Drought Management (FDM)	Dec 2020	RO	HQ, SRO, CGs	50M
		WA52	Develop new 150 No SCMPs to include Flood and Drought Management	Dec 2020	SRO	RO	3M
		WA53	Implement FDM activities in the SCMPs	Continuous	SRO	RO, CGs	10M
WT16	Reserve Maintained	WA54	Develop and implement Enforcement Plan for drought situations	Continuous	SRO	RO, CGs	10M

Chapter 10: Climate change adaptation									
Goal: Integrate climate change adaptation measures into water resources management									
PO01: To strengthen monitoring systems for enhanced data collection; PO02: To enhance capacity and create awareness on climate change effects; PO03: To develop scenarios to support decision making; PO04: To identify and map water storage areas.									
Target	Strategic Actions			Timeframe	Stakeholders		Budget		
					Lead	Others			
PT01	Monitoring networks optimized for enhanced data collection	PA01	Review water resources monitoring requirements	June, 2016	HQ	RO, SRO			2M
		PA02	Establish, rehabilitate 100 No, relocate and upgrade 5 No monitoring stations (refer to Chapter 15)	Dec, 2018	HQ	RO, SRO			5M
		PA03	Enhance staff capacity in data collection	June, 2017	HQ	RO, SRO			15M
		PA04	Enhance capacity for gauge readers	June, 2016	SRO	RO, WRUAs			20M
		PA05	Automate 5No and modernize 20No monitoring stations	June, 2020	HQ	RO, SRO			10M
		PA06	Set and implement data quality control procedures	June, 2016	HQ	RO, SRO			
		PA07	Enhance partnership on data collection and sharing	June, 2016	SRO	RO			3M
PT02	Capacity and awareness on climate change enhanced	PA08	Create awareness on effects and adaptation of climate change (WRUAs, schools)	Continuous	SRO	RO			9M
		PA09	Enhance capacity and create awareness to WRMA staff on climate change adaptation (CCA) measures	June, 2016	HQ	SRO, RO			5M
		PA10	Review 40No SCMPs to incorporate climate change adaptation (CCAs) in accordance to WDC	June, 2020	HQ	SRO, RO			3M
PT03	climate scenarios generated to support decision making	PA11	Downscale regional climate models to generate sub-catchment climate scenarios	June, 2017	SRO	RO			7M
PT04	storage areas identified and mapped	PA12	Assess and map out Aquifer Recharge areas	June, 2017	RO	RO, HQ			1M
		PA13	Assess and map storage areas	June, 2018	RO	RO, HQ, WRUAs			1M

Chapter 11: Water Resources Infrastructure Development							
Goal: Regulate infrastructure development for safety while ensuring downstream water commitments							
Objectives: WO17:To regulate water resources infrastructure development for safety and sustainability; WO18:To identify potential sites for water resources infrastructure development; WO19: To enforce Codes for practice for surface water Infrastructure Development							
WT17	Water resources infrastructure development regulated for sustainable use	WA55	Enforce conditions attached to authorizations	Continuous	RO	SRO, CGs	8M
		WA56	Inspect development of infrastructure according to schedules contained in authorisation	Continuous	SRO	RO	8M
		WA57	Build capacity of WRMA staff on infrastructure permitting	Continuous	HQ	RO, SRO	2M
		WA58	Establish, train and operationalize a Water Infrastructure Development Panel (WIDP)	June 2015	RO	SRO	2M
		WA59	Carry out the required periodic safety inspections and submit reports	Continuous	SRO	RO, CGs	8M
		WA60	Incorporate early warning procedures by the infrastructure operator in the permit conditions	June 2016	RO	HQ, SRO,	0.5M
		WA61	Enforce early warning procedural requirements for dam operators	Continuous	SRO	RO, CGs	5M
		WA62	Monitor compensation flows	Continuous	SRO	RO	8M
		WA63	Enforce water releases to meet downstream commitments	Continuous	SRO	RO	4M
		WA64	Select 40 sites for pre-feasibility and conduct studies	June 2017	RO	SRO, HQ, CGs	50M
		WA65	Compile assessment reports for 40 identified sites	June 2018	RO	SRO, HQ	20M
		WA66	Share reports with County Governments and other stakeholders	Dec 2018	SRO	RO, CGs	2M
		WA67	Identify 5 suitable sites for river flow regulation infrastructure	June 2016	RO	SRO, HQ	5M
		WA68	Carry out feasibility studies	Dec 2017	RO	SRO, HQ	30M
		WA69	Design and construct water flow regulation infrastructure	Dec 2018	RO,	SRO, HQ	100M
		WA70	Develop Codes of Practice	June 2016	HQ	RO, SRO	2M
WT19	Codes for practice for surface water Infrastructure Development enforced	WA71	Enforce Codes of practice for surface water infrastructure development and operation	Continous	RO	SRO	8M

Chapter 12: Rights-Based Approach

Goal: Equitable access to water for all

Objectives: PO05: To enhance access to water resources for the vulnerable groups through reserve maintenance; PO06: To promote exchange of information and experiences.

Target	Strategic Actions	Timeframe	Stakeholders		Budget
			Lead	Others	
PT05 Access to water resources for vulnerable groups enhanced through maintenance of the reserve	PA14 Maintain Reserve flow (see chapter 6)	Dec. 2022	HQ	RO, SRO	6M
	PA15 Continuously identify and access their water demands for the vulnerable and disadvantaged communities.	Continuous	RO	SRO	4M
	PA16 Build capacity and ensure gender balance for WRUAs and CAAC	Continuous	HQ	RO, SRO	8M
	PA17 Promote mechanisms that support vulnerable groups access to water (water pans, spring protection etc)	Continuous	SRO	RO	5M
PT06 Catchment forum established and operationalized	PA18 Carry out stakeholders analysis and establish ENNCA Catchment Forum	June 2016	RO	SRO, HQ	10M
	PA19 Promote gender and generational representation in decision making in the catchment forums	June, 2016	HQ	RO, SRO	8M
	PA20 Use catchment forum to promote water use conflict resolution	Annually	RO	SRO, WRUA, CAAC	40M

Chapter 13: Livelihood Enhancement						
Goal: Promote catchment management through livelihoods enhancement						
Objectives: PO07: To build capacity in Livelihood activities of WRUAs, CBOs and Service Providers geared towards WRM; PO08: To enhance the collaboration and Partnership with the CGs and other development partners to support LMGs; PO09: To enhance the management of LMGs (sensitization, plans, oversight, SCMPs)						
Target	Strategic actions		Time Frame	Lead	Others	Budget
PT07 WRUAs, CBOs and other stakeholders capacity built/enhanced on livelihood projects	PA21	Assess Capacity and Training needs for the WRUAs, CBOS, SPs and other stakeholders	June, 2016	SRO	RO, WRUAs	1M
	PA22	Capacity build the WRUAs, CBOS, SPs and other stakeholders on provisions of LMGs	Continuous	SRO	RO, CG, ODPs	15M
	PA23	Develop a Consultancy framework for support services	June, 2016	HQ	RO, SRO	5M
	PA24	Sensitize WRUAs on LMGs	Continuous	SRO	RO, CG, ODPs	4M
PT08 Management of the LMGs enhanced	PA25	Develop benefit sharing plans	Continuous	SRO	RO, CG, ODPs	2M
	PA26	Evaluate and prioritize the proposals	Continuous	RO	SRO, HQ	8M
	PA27	Provide oversight and quality control on LMGs implementation	June, 2016	SRO	RO, HQ, WRUAs	10M
	PA28	Incorporate livelihood component in the SCMPs	June, 2016	SRO	RO, HQ, WRUAs	5M
PT09 Collaboration and partnership with County Governments and other development partners in support to WDC- LMGs established and enhanced	PA29	Develop a manual for management of LMGs	Continuous	SRO	RO, WRUAs	10M
	PA30	Develop a Data base on WDC LMGs on funding and implementation	Continuous	RO	SRO, WRUAs	5M
	PA31	Capacity build the support Service Providers of specialized services to WRUAs on livelihood component	Continuous	RO	SRO, WRUAs	5M
	PA32	Identify the areas of collaboration	June 2016	RO	SRO, WRUAs, CGs	1M
	PA33	Operationalize the framework for collaboration with County Governments and other development partners in support to WDC- LMGs	Dec 2016	SRO	RO, WRUAs, CGs	5M

Chapter 14: Institutional Strengthening									
Goal: Strengthen institutional capacity for effective and efficient water resources management									
Objectives: PO10: To enhance the capacity of RO and SROs and CAAC to effectively undertake IWRM; PO11: To build capacity for the County Governments to effectively participate in water resources management; PO12: To enhance capacity of WRUAs to undertake IWRM activities; PO13: To enhance collaboration with stakeholders on WRM issues									
Target	Strategic Actions				Timeframe	Stakeholders		Budget	
						Lead	Others		
PT10	Capacity of RO, SRO and CAAC to effectively undertake IWRM enhanced.	PA34	Determine the required number of technical staff in Regional and Sub-regional offices	Dec. 2015	HQ	RO, SRO		2M	
		PA35	Deploy staff in line with the required number	Dec. 2016	HQ	RO, SRO		4M	
		PA36	Enhance staff training and manpower development	Dec. 2015	HQ	RO, SRO		10M	
		PA37	Improve work environment (e.g. provision of tools & equipment, office space, transport facilities, ICT infrastructure)	Continuous	SRO	RO, HQ		80M	
		PA38	Construct 3 SROs in Isiolo, Wajir and Marsabit	Dec. 2017	HQ	SRO, RO		120M	
PT11	Capacity for the County Governments to effectively participate in water resources management built	PA39	Train County Governments staff in IWRM	Continuous	RO	SRO, HQ, CG		10M	
		PA40	Give technical support to CGs in formulating water related laws	Continuous	RO	SRO, HQ, CG		5M	
		PA41	Harmonise planned CGs' water resources related activities with SCMPs	Continuous	SRO	RO, WRUA, CG		4M	
PT12	Capacity of WRUAs to undertake IWRM activities enhanced	PA42	Ensure WRUAs, CGs are represented in CAAC	June, 2015	HQ	RO, SRO, CAAC, CG		8M	
		PA43	Collaborate with WRUAs and CGs in implementation of their IWRM activities	Continuous	SRO	RO, CG		5M	
		PA44	Undertake IWRM awareness campaigns among water users to encourage WRUA formation and membership	Continuous	SRO	RO, CG, WRUAs		25M	
		PA45	Support WRUAs to develop proposals for funding SCMPs	Annually	SRO	RO, WRUAs, CGs		4M	
		PA46	Train WRUAs on WDC Framework	Continuous	SRO	RO, WRUAs		54M	
PT13	Collaboration with stakeholders on IWRM issues enhanced	PA47	Enhance WRUA capacity to be effective agents of IWRM	Continuous	SRO	RO, WRUAs		10M	
		PA48	Build capacity of CAAC	Continuous	RO	SRO, HQ, CAAC		5M	
		PA49	Ensure CAAC hold quarterly meetings on related activities	Quarterly	RO	SRO, HQ, CAAC		40M	
		PA50	Undertake IWRM awareness campaigns among stakeholders	Continuous	RO	SRO, CAAC, HQ WRUA, County Govt		20M	
		PA51	Ensure that structured catchment forum meetings are held annually	Annually	RO	SRO, WRUA, CAAC		16M	

Goal: Provide reliable information to support planning and management of the water resources

Objectives: MO01: To optimize water resources monitoring network; MO02: To enhance data management system (data collection, analysis, storage and dissemination); MO03: To upgrade water resource information system; MO04: To establish an effective monitoring and evaluation system.

Target	Strategic Actions	Timeframe	Stakeholders		Budget		
			Lead	Others			
MT01	Water resources monitoring network optimized	MA01	Assess status of monitoring stations	Continuous	HQ	RO, SRO	5M
		MA02	Train 8No. staff at the region on water resources monitoring	Dec 2016	RO	HQ, SRO	15M
		MA03	Develop a Water Resource monitoring plan	June 2016	RO	HO, SRO	2.5M
		MA04	Implement the WR monitoring plan	continuous	RO	HQ, SRO	25M
		MA05	Undertake quarterly assessment of status of monitoring stations	Continuous	SRO	RO, WRUAs,CAACs,CG	25M
		MA06	Prepare updated monitoring network maps	Continuous	RO	SRO, HQ	7M
		MA07	Establishment, rehabilitation and upgrade of 100No.stations	Dec 2017	SRO	RO, HQ	50M
MT02	Data management system enhanced	MA08	Automate 10 No. stations	Dec 2020	SRO	RO, HQ	40M
		MA09	Procure and install new data software compatible with WRMA information requirements	June 2018	HQ	RO, SRO	20M
		MA10	Train 15 No. staff on new equipment and software	Continuous	RO	SRO, HQ	10M
		MA11	Train and facilitate 45 No. gauge readers	Continuous	SRO	RO, HQ, WRUAs	10M
		MA12	Improve data storage, sharing and security (cloud backup, security systems, WAN)	June 2018	HQ	RO, SRO	15M
MT03	Water resource information system upgraded	MA13	Identify data gaps	Continuous	SRO	RO, HQ	8M
		MA14	Carry out quarterly information quality control	Continuous	HQ	RO, SRO	2M
		MA15	Operationalize information access levels	June 2016	HQ	RO, SRO	10M
		MA16	Operationalize online customer service	Continuous	SRO	RO, HQ	3M
		MA17	Contribute information quarterly to be uploaded in the website	June 2015	HQ	RO, SRO	16M
MT04	Effective monitoring and evaluation system for the CMS implementation established	MA18	Develop CMS implementation plan	June 2016	HQ	RO, SRO	2M
		MA19	Monitor and evaluate the CMS implementation plan	June 2016	HQ	RO, SRO	2M
		MA20	Prepare monitoring and evaluation reports				8M
		MA21	Disseminate information on CMS implementation	Annually	HQ	RO, SRO	8M
		MA22	Develop and implement evaluation action plan	Dec 2017	HQ	RO, SRO	5M
		MA23	Dissemination of information	Continuous	RO	HQ, SRO, CGs	10M

Chapter 16: Finance the CMS									
Goal: To achieve financial stability to implement the CMS									
Objectives: PO14: To enhance revenue collection efficiency; PO15: To engage CGs in financing catchment management activities in SCMPs; PO16: To diversify revenue sources beyond internal revenue; PO17: To mobilize funds for WRM by involving private sector									
Target	Strategic Actions			Timeframe	Stakeholders		Budget		
					Lead	Others			
PT14	Efficiency in revenue collection enhanced	PA52	Undertake abstraction survey and classify abstractors	June, 2016	HQ	RO			30M
		PA53	Fully automate the billing system, Upgrade the permit database and integrate with the billing system	June, 2022	HQ	RO, SRO			20M
		PA54	Collect 100% of water use and effluent discharge charges	June, 2022	SRO	RO, WRUAs, CG			15M
		PA55	Train staff on enforcement of permit conditions and revenue collection	Continuous	RO	SRO, HQ, CG			10M
		PA56	Facilitate staff to enforce permit conditions	Continuous	SRO	RO, HQ, CGs			20M
PT15	County Governments engaged in financing catchment management activities in SCMPs	PA57	Engage CGs in preparation of SCMPs	Continuous	SRO	RO, HQ, CGs			2M
		PA58	Collaborate with County Governments for funding sub-catchment management plan activities (SCMPs)	Continuous	SRO	RO, HQ, CGs			
PT16	Sources of revenue diversified	PA59	Identify programs and projects that can attract revenue.	June, 2020	RO	SRO, WRUAs, CG			10M
		PA60	Map out possible financiers and develop 16 bankable proposals for financing	Annually	SRO	RO, HQ			2M
		PA61	Create awareness on various services offered by WRMA that could attract revenue.	Continuous	SRO	RO, HQ, WRUAs			8M
		PA62	Disseminate information on diversified revenue sources for value addition	Annually	RO	SRO, HQ			2M
PT17	PPP Projects Promoted	PA63	Identify projects for PPP	Annually	SRO	RO, CG, WRUAs, Donors, Private investors			1.5M
		PA64	Prepare proposals for PPP projects	Annually	SRO	RO, CG, WRUAs, Donors, Private investors			2M
		PA65	Implement PPP projects	Annually	SRO	RO, CG, WRUAs, Donors, Private investors			50M
			GRAND TOTAL						3,341M

APPENDIX 2

Table 1 COUNTY STAKE HOLDERS CMS WORKSHOP ATTENDANCE LIST HELD ON 12TH JUNE, 2014 AT SPORTSMANS

ARMS HOTEL, NANYUKI

S/NO	NAME	INSTITUTION	EMAIL ADDRESS
1	Khaendi Frolence	ACACIA -Nairobi	khaendie@gmail.com
2	Alfred Opere	ACACIA	lopere@uombi.ac.ke
3	Lawrence T. Kuria	Team Leader Consultants	Lkuriaenorken.co.ke
4	Dan Odero	NORKEN/ACACIA	d.odero@swas.co.ke
5	Benjamin Kogo	NORKEN/ACACIA	
6	Aggrey Ifedha	ACACIA/NORKEN	aifedha@yahoo.co.uk
7	Francis Edalia	WRMA-HQ	fjedalia@wrma.or.ke
8	Elizabeth Diego	WRMA-HQ	Elizabeth.diego@wrma.or.ke
9	Milton Mutuma	CETRAD-Nanyuki	m.muriungi@cetrad.org
10	Geoffrey Mworia	WRMA-ENNCA RO	Geofreymworia@gmail.com
11	David Musyoka	WRMA-ENNCA Rumuruti	Momomusyoki50@yahoo.com
12	Ali Yallow	RMA-ENNCA Mandera	Ayar-2008@yahoo.com
13	Jane Mwangi	WRMA-ENNCA RO	Wambuijane505@yahoo.com
14	Tartious Kinyua	WRMA-ENNCA-Marsabit	kinyuatn@yahoo.com
15	Mohammed Ali	County Water Officer -Garissa	maiario@yahoo.com
16	John Kinyanjui	WRMA-ENNCA Isiolo	jnkinyanjui@gmail.com
17	C. Maina Gichara		
18	J.K Waititu	Consultant-Nairobi	j.waititu@yahoo.com
19	Simon Mwangi		

20	Boniface Mwaniki	WRMA-HQ	Bm.mwaniki@yahoo.com
21	Timothy Mutie	WRMA-ENNCA RO	timmuteti@yahoo.com
22	Purity Wanja	Forest supervisor -Meru	purityyason@yahoo.com
23	Eng .Joseph Kinyua	WRMA-HQ	Kinyua.wrma.or.ke
24	Ruth Kilonzo	WRMA-ENNCA RO	luwaysco@gmail.com
25	Stanely Kirimi	Stakeholder Nanyuki	baitomesi@yahoo.com
26	Jane Gatwiri	WRMA-ENNCA RO	gatwirijane@yahoo.com
27	David Warutere	Water -Nyeri	dwarutere@yahoo.com
28	Shippila Wambui	WRMA-ENNCA RO	shippilamaina@yahoo.com
29	Christine Thine	WRMA-HQ	cthine@gmail.com
30	Gibson Mwangi	WRMA-ENNCA Nanyuki	gibbsmwangi@yahoo.com
31	David Ochillo	WRMA-ENNCA RO	dochillo@yahoo.uk
32	Job Owak	WRMA-ENNCA RO	chnjob@gmail.com
33	Barbra Mumbua	WRMA -HQ	Barbra.mumbua.wrma.or.ke
34	Japheth Magiri	WRMA-ENNCA RO	japhethmagiri@yahoo.com
35	Hilda Kibet	WRMA-ENNCA RO	cheyechilda@gmail.com
36	Julia Kiruri	WRMA-HQ	majulia@gmail.com
37	Patrick Muraguri	Deputy Governor's Office- Nanyuki	pmuraguri@yahoo.com
38	David Mutai	WRMA-HQ	dkkmutaira@yahoo.com
39	Francis Kariuki	Kenya Forest Service -Isiolo	ffmutai@kenyaforestservice.org
40	Partick Njiru	WRMA-HQ	Nyaga-njiru@yahoo.com

41	Alex Muthiani	WRMA-ENNCA RO	alex.muthiani.wrma.or.ke
42	Nobert Ndanyi	WRMA-HQ	nobertndanyi@yahoo.com

Table 2 REGIONAL STAKEHOLDERS CONSULTATIVE CMS WORKSHOP ATTENDANCE LIST-ENNCA ON 04TH September, 2014 AT SPORTSMAN ARM HOTEL ,NANYUKI

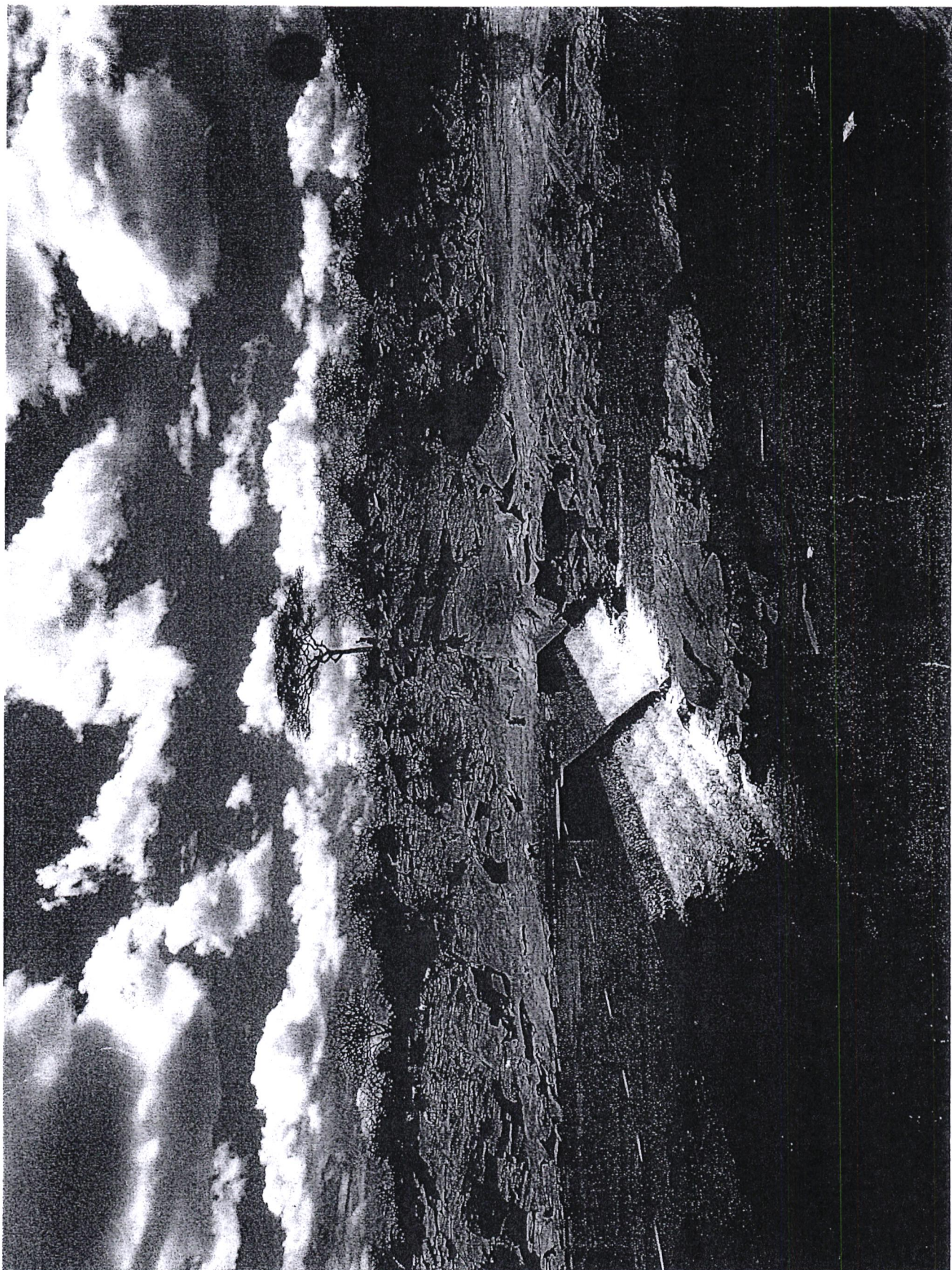
	NAME	INSTITUTION	EMAIL ADDRESS
1	Janet Leiyagu	CAAC -Samburu	leiyagujanet2yahoo.com
2	Rose Gikonyo	CAAC -Nyahururu	raikonyo@gmail.com
3	Rev. J Michuki	CAAC-Meru	bpmichuki@yahoo.com
4	Philip Munyua	WRMA-ENNCA RO	Philiph.munyua@wrma.or.ke
5	Benard Githaiga	WRMA-ENNCA RO	Benardg2011@yahoo.com
6	Dominic Kibaya	WRMA-ENNCA RO	kibdom@yahoo.com
7	John Kinyanjui	WRMA –ENNCA Isiolo	jhnkinyanjui@gmail.com
8	David Musyoka	WRMA -ENNCA Rumuruti	Mumomusyoki50@yahoo.com
9	Patrick Njiru	WRMA- HQ	Nyaga.njim@yahoo.com
10	Boniface Mwaniki	WRMA-HQ	Bm.mwaniki@yahoo.com
11	Canute Mwakamba	WRMA-HQ	canutemwakamba@gmail.com
12	Mugambi Muthinja	WRMA-ENNCA RO	Muthinjaim@yahoo.com

13	Dr. Maina Gicheba	ACACIA Consultant	Maina.gichaba@gmail.com
14	Florence Khaendi	NORKEN -NRB	khendiaf@gmail.com
15	Eng. Joseph M.Kinyua	TM-WRMA	kinyua@wrma.or.ke
16	David .K. Mutai	ATCM-GW-WRMA	dkkmutaio@yahoo.com
17	Antony Kuria N	Kenya Red Cross LKP	Nudge.antony@redcross.or.ke
18	Batula Hassan	CAAC Member	
19	Andrew A. Waki	CAAC Chairman	wakoandrew@yahoo.com
20	Julia Kiruri	WRMA-HQ	majuliak@gmail.com
21	David Ochillo	WRMA- ENNCA RO	dochillo@yahoo.co.or
22	Geoffrey Mworio	WRMA- ENNCA RO	geofreymworio@gmail.com
23	Virginia Thaara	CARITAS -Nyeri	thaaravirginia@yahoo.com
24	Benson Sururu	IMPACT-Nanyuki	banolesururu@gmail.com
25	Dedan Kariuki	WRMA-ENNCA RO	dedankariuki@gmail.com
26	Chrispas Musee	WRMA-ENNCA RO	museechrispus@yahoo.com
27	Christian Thine	WRMA-HQ	Cthine@gmail.com
28	Aggrey Ifetha	ACACIA-NRB	aifedha@acaciaconitancy.org
29	Simon Mwangi	WRMA-HQ	simonmwangi@yahoo.com
30	Adan Roba	CAAC-Mandera	0727626497
31	Harun Roba	CAAC -Isiolo	0711770540
32	Benson Wanga	WRMA-HQ	Bensonwanga@gmail.com
33	Denis Munyi	WRMA-HQ	dnmunyi@yahoo.com

Catchment Management Strategy (2014-2022)

34	Ali Yallow	WRMA-ENNCA Mandera	Ayar-2008@yahoo.com
35	James Kagiri	CARITUS -Nyeri	kagirijames@yahoo.com
36	Eunice Ochieng	WRMA-HQ	euniceochieng@yahoo.com
37	Dr. Margaret Abira	WRMA-HQ	Mabira59_yahoo.com
38	Jane Wahome	WRMA-HQ	wamucij@yahoo.com
39	Lucia Kyalo	WRMA-HQ	luciakyalo@gmail.com
40	Teresia Nhungu	WRMA-ENNCA RO	Teyywant85@yahoo.com
41	Richard Chepkuroy	Kenya Wildlife Service	rchepkuony@kws.go.ke
42	Tom Odhiambo	WRMA-ENNCA RO	tommiodhiambo@yahoo.com
43	Francis Kariuki	Kenya Forest Services-Isiolo	Kariuki@kenyaforestservice.or.ke
44	Martha Waihenya	WRMA-ENNCA Nanyuki	Waihenyam@yahoo.com
45	Vitalis Too	CETRAD-Nanyuki	vitalistoo@yahoo.com
46	Saita Kitonga	CAC-Galbatara	Stkitonga65@gmail.com
47	Qalicha Msa	ENNDA-Isiolo	dibagaquu78@yahoo.com
48	Dickson Maitho	Water Dept. Marsabit County	dickmaitho@gmail.com
49	Nobert Ndanyi	WRMA-HQ	nobertndanyio@gmail.com
50	Benard Wagumba	WRMA ENNCA RO	Sagawagumba @gmail.com
51	W.O Wanyanga	County Commissioner - Laikipia	cclailikipiacounty@yahoo.com

52	Joyce Kaburi	WRMA-ENNCA Nanyuki	jpattol@yahoo.com
53	Mitchelle Aketch	WRMA-ENNCA Nanyuki	Mitchelle.aketch@yahoo.com
54	Jackson Odawa	WRMA-ENNCA Nanyuki	Jacksonodawa@yahoo.com
55	Shippilla Wambui	WRMA-ENNCA RO	shippilamaina@yahoo.com
56	James Kariuki	WRMA-ENNCA RO	jameskariuki@yahoo.com
57	Ruth Kilonzo	WRMA-ENNCA RO	luwaysco@gmail.com
58	Bernice Kaleve	WRMA-ENNCA Nanyuki	Bernice.kaleve@yahoo.com
59	Margret Moraa	WRMA-ENNCA Nanyuki	mmoichaa@yahoo.com
60	Jacinta Waigwa	WRMA-ENNCA Nanyuki	jwaigwa@yahoo.com
61	Charity Karugu	WRMA-ENNCA Nanyuki	karugucharity@yahoo.com
62	John Sikote	NAWASCO-Nanyuki	Sikote06@yahoo.com
63	Gibson Mwangi	WRMA-ENNCA Nanyuki	gibbsmwangi@yahoo.com
64	Hilda Kibet	WRMA-ENNCA RO	cheyekhilda@gmail.com
65	Kinyua Tartious	WRMA-ENNCA Marsabit	kinyuatn@yahoo.com
66	Annastacia Kavuli	WRMA-ENNCA Nanyuki	astykamu@yahoo.com
67	James Mwangi	Laikipia Wildlife Forum-Nanyuki	water@laikipia.org
68	Jane Gatwiri	WRMA-ENNCA RO	gatwirijane@yahoo.com
69	Daniel Mapena	WRMA-HQ	dmapena@yahoo.com
70	Barbra Mumbua	WRMA-HQ	barbramumbua@yahoo.com







WATER RESOURCES MANAGEMENT AUTHORITY

**RESPONSE TO PETITION FILED ON BEHALF OF
DOWNSTREAM RESIDENTS OF EWASO NYIRO RIVER ON
MANAGEMENT OF EWASO NYIRO RIVER BASIN**

PRESENTED TO

**THE NATIONAL ASSEMBLY COMMITTEE ON
ENVIRONMENT AND NATURAL RESOURCES**

8th March, 2016



WATER RESOURCES MANAGEMENT AUTHORITY

RESPONSE TO PETITION FILED ON BEHALF OF DOWNSTREAM RESIDENTS OF EWASO NYIRO RIVER BASIN ON THE MANAGEMENT OF EWASO NYIRO RIVER BASIN

A. INTRODUCTION

i) Brief background on Water Resources Management Authority

The Water Resources Management Authority (WRMA) is a state corporation established pursuant to Section 7 of the Water Act, 2002 and was operationalized in 2005. As the lead agency in water resources management WRMA has decentralized its regional offices within the six catchment areas. For this reason, the Water Resources Management Authority (WRMA), being the country's lead agency in water resource management has a vital role to regulate, manage and equitably allocate this water resource nationally to all uses.

The Water Resources Management Authority has delineated the country into six catchment areas and the operations have been decentralized to: Lake Victoria North, Lake Victoria South, Rift Valley, Athi, Tana, and Ewaso Ng'iro North Catchment Areas.

ii) Brief background on Ewaso Ng'iro North Catchment Area

The Ewaso Ng'iro North Catchment Area covers an area of about 210,226 km² which is about 36% of the total area of Kenya, spread over ten Counties:- *Garissa, Mandera, Wajir, Isiolo, Meru, Marsabit, Nyandarua, Samburu, Nyeri* and *Laikipia*.

Altitude ranges from 150m above sea level at the Lorian swamp to the Mount Kenya whose peak is 5,199m above sea level.

Most of the catchment lies below 1,000m above sea level. The catchment neighbours Somalia in the East and Ethiopia to the North. Rift Valley internal drainage to the west and Tana catchment to the south.

According to National Water Master Plan 2030, renewable surface water in the catchment is 1,725 MCM/year, while that for ground water is 18,197 MCM/year giving a total 19,922 MCM/year. Consequently, it is estimated that Ewaso Ng'iro North Catchment Area has a per capita water availability of 5,534 m³ way above the global benchmark of 1,000 m³ per year.

iii) Preamble to the Issues for deliberation

This paper aims to address the issues raised through a Petition to the National Assembly Committee on Environment and Natural Resources by the downstream residents of Ewaso Nyiro River Basin on the management of Ewaso Nyiro River Basin.

The National Assembly Committee on Environment and Natural Resources has condensed these issues into three for purposes of the hearing. These are as follows:

- i) The historical water data discharge by Ewaso Ng'iro River during the dry and wet seasons and why the water discharge has reduced;
- ii) Measures being put in place to ensure the continuous flow of water is not interrupted and to mitigate the destruction of the River;
- iii) The abstraction formula for the entire basin.

These issues are individually addressed in the subsequent paragraphs in this report.

B. THE ISSUES

1. The Historical Water Data Discharge by Ewaso Ng'iro River During the Dry and Wet Seasons and Why the Water Discharge has Reduced

WRMA has addressed this issue in two parts:

- i) the historical water data discharge; and
- ii) the reasons why the water discharge has reduced

i) The historical water data discharge

Ewaso Ng'iro River sources are at a very high altitude of above 4000 metres above mean sea level at Mt. Kenya and Aberdare Mountain ranges and by time it is traversing Isiolo County the altitude drops to 800 meters (*Ama*) while at *Harbaswein* the altitude ranges to 150 meters (*Ama*). This implies that at lower limits of *Harbaswein* the river has completely lost its velocity and erosional ability. At this point the river attains deposition characteristic forming levy and sand deltas while spreading apart.

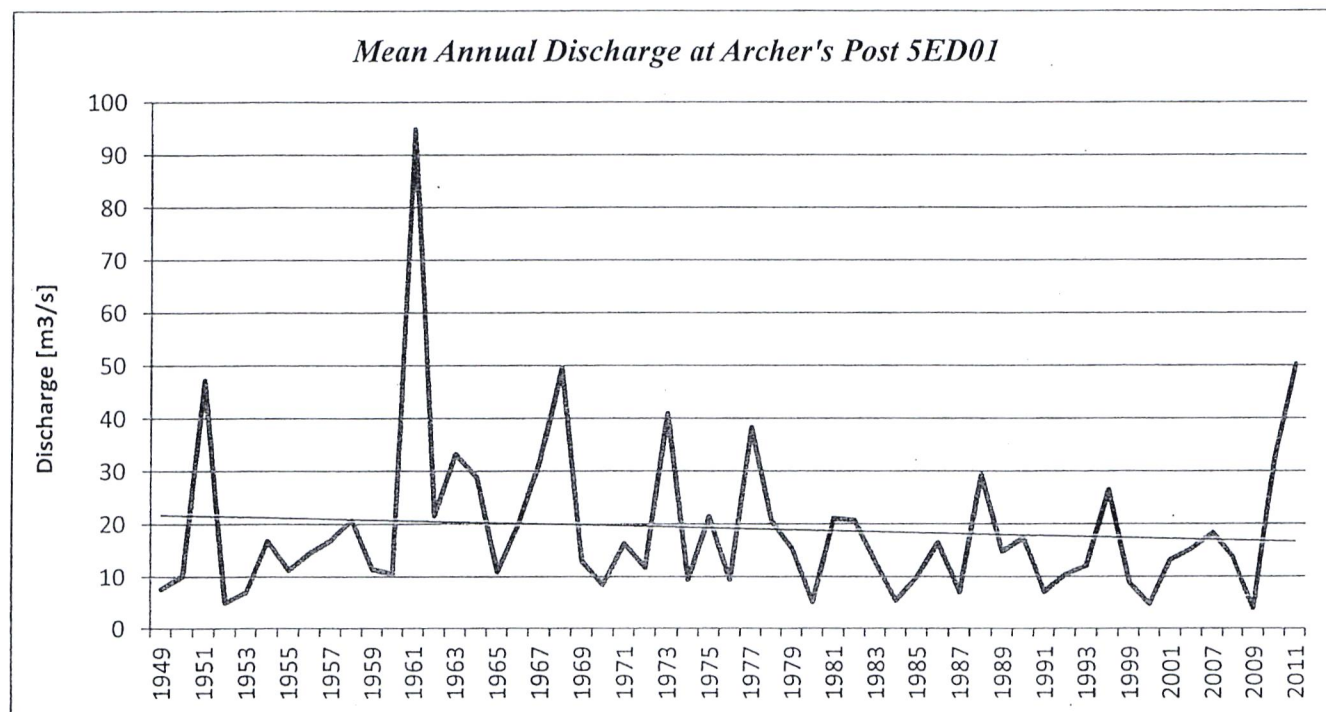
The river is further burdened by huge sand deposits of Rivers *Bhogal* and *Balal* whose source is Ethiopian highlands. Consequently, its flow is interrupted to infiltrate and percolate underground forming a long stretch of *Mert* aquifer which extends all the way to Somalia.

Merti aquifer is a blessing of Ewaso Ng'iro River disappearance into the *Lorian* Swamp where it gets underground to recharge the aquifer. This phenomenon of the river is natural and may not be changed forever as it is dictated by the geology and the land geomorphology.

Surface Water Resources

Approximately 90% of the surface water resources originate from the Mt. Kenya and Aberdare water towers and are concentrated in Upper Ewaso Ng'iro and the southern part of Engare Narok Melghis Sub Regions. These form the headwaters of the Ewaso Ng'iro North River that flows eastward to disappear into the Lorian Swamp.

The drainage from the Upper Ewaso Ng'iro North catchment area is concentrated at the Archer's Post National Station which is used to gauge the discharge from this area. The station was installed in 1949 and has been operational since then though with some data gaps occasioned by destruction of the station by natural or human causes. From the available data, the river has the following discharges:



Based on hydrological analysis, the above results indicate the following:

- i). The river exhibits regular peaks in the annual discharge which recurred in 1951, 1961 and 1968 (duration of almost 10 years apart). However, after 1971, the peaks are recurring with less intensity and more frequently;
- ii). Between 1949 and 2011, the trend shows a reduction in the discharge volume of almost 200 MCM of water. Considering the water use and demand within the upper Ewaso Ngiro North Catchment area, the drop is very high and is not solely as a result of abstractions. The causes attributed to the drop have been discussed on the second part below.

At the start of the monitoring for Archer's Post Gauging Station, the mean discharge was 18.04825 m³ per second and a minimum discharge of 0.636909 m³ per second.

Over time, the mean annual discharge has not changed much, slightly increasing to 18.95127 m³ per second. However, when this is viewed against the minimum flow recorded during the period, it shows a sharp drop from 0.637 m³ per second to 0.076 m³ per second.

In terms of the maximum discharge which was recorded at 865.285 m³ per second during the early 1950s, the maximum discharge has significantly increased to 1,754.319 m³ per second.

In terms of the total discharge through the station, the values vary from year to year with a maximum annual discharge of 2,992 Mm³ realized in 1961.

Due to the limited finances available for putting mechanisms in place for the efficient resources management, WRMA has endeavored to look seek financial support from various partners. One of the support partners approached, CETRAD, has taken up financing the rehabilitation of a weir which is key to data collection within the area. The weir's rehabilitation has substantively progressed and data collection and analysis will be less cumbersome.

ii) Some causes of water discharge reduction overtime in Ewaso Ngiro River

a). Changes in land use and land cover in the upper areas/water towers.

The Ewaso Ngiro North catchment area used to be sparsely populated due to its harsh climate and water shortages. With increased population pressures in the "high agricultural potential areas" more people were forced to migrate to the marginal lands in the ASAL areas. The human settlement called for woodfuel (firewood and charcoal) as well as development of farmlands. This occasioned the clearing of the vegetation cover leading to catchment degradation through soil erosion.

As some of these areas were not suited to permanent settlement and especially cultivated agriculture, the new settlers also invaded the water catchment areas where the vegetation was still intact in search of woodfuel and fodder for their livestock;

b). Allocation Title Deeds over Catchment Areas, wetlands and riparian land

During the sub division of the previously white owned large scale farms in parts of Nyandarua, Laikipia, Meru and Isiolo, the water catchment areas that were sources of springs and groundwater recharge areas (swamps and marshes) were allocated to individuals.

Through neglect or deliberate human actions, the catchment areas were cleared and turned into farmlands (i.e. *Kabeere* and *Kithima* springs in Meru, *Ewaso Narok* swamp in Rumuruti, *Lake Ol Bolossat* in Nyandarua, *Mar Manet* scheme, etc).

With these lands in private hands and with title deeds, the process of their conservation has been difficult with the consequence that their contribution to the Basin's water resources is substantially reduced.

c). The Mt Kenya, Aberdares and the Nyambene hills are the main water towers for the Ewaso Ngiro North river.

The vegetation cover in the three water towers, which are gazetted forests, has been depleted through human activities that have resulted in large areas being cleared.

The use of exotic species in re-afforestation programmes has also affected the catchment yields.

d). Effects of Climate Change

Temperatures have risen throughout the country, rainfalls have become irregular and unpredictable, and when it rains, the down pour is more intense. Extreme and harsh weather is now a norm in Kenya.

The effects of climate change resulting to increased temperatures have affected Mt. Kenya glacier which recharged most of the rivers from this source, Ewaso Ngiro River included. The glacier on Mt. Kenya have receded tremendously that in 1980s glacier size measured approximately 0.7 sq. Km far less than observed in 1890s. The Barlour Glacier on the Northwest face of Point Piggot, the Kolbe Glacier, located Northeast of Point Lenana and the Melhuish Glacier to the Southwest of Point Melhuish are some of the glacier that have melted. Of 18 ice entities at the end of 19th Century, 8 disappeared altogether and all suffered substantial loss.

The Mt Kenya glacier is the source of several rivers that feed the Ewaso Ngiro North River. Due to the climate change and global warming, the glacier has reduced considerably and rivers such as *Narumoro*, *Sirimon*, *Likii*, *Teleswani* and *Nanyuki* are seriously affected, drying up further upstream and more frequently.

e). Non-Compliance with the law

Compliance with the legal framework governing the water resources sub-sector in Kenya is fairly low, with most people assuming that since water is God given, they are entitled to use it to their satisfaction without any control from the Government or any other authority.

Consequently, compliance to the law is low while little budgetary allocation is provided for water resources management in the country.

Low investment in water resources management has exacerbated the problems of water scarcity, underdevelopment of the available renewable freshwater, climate variability, catchment degradation, degradation of water resources,

inefficient water use and collapsed of water resources assessment and monitoring programmes.

2. Measures being put in place to Ensure the Continuous Flow of Water is not interrupted and to Mitigate the Destruction of the River

Section 15 of the Water Act, 2002 places an obligation of formulation of Catchment Management Strategy on WRMA. The Act requires that this be undertaken through a process of public consultation.

For the management, use, development, conservation, protection and control of water resources in Ewaso Ngiro North Catchment Area (ENNCA), WRMA has formulated **Catchment Management Strategy (CMS)** for the Ewaso Ngiro North Catchment Area.

Through the ENNCA –CMS 2014 to 2022, WRMA undertakes the following activities:

i). Regulation and enforcement of water resources uses that involves:

- a) Receiving and processing applications and issuance of water use permits;
- b) Enforcing permit conditions;
- c) Surveillance of water resources bodies to stop illegal abstractions/interferences with water resources bodies;
- d) Carrying out abstraction surveys (Isiolo sub basin, Narumoro sub basin, Timau sub basin and Ewaso Narok sub basin on going)
- e) Development of water allocation plans (Narumoro sub basin and Isiolo sub basin-5DA).

ii). Catchment Protection and conservation that involves:

- a) Protection of springs for improved water resources availability;
- b) Gazettement of water catchment areas and wetlands.
- c) Riparian land delineation and demarcation.
- d) Tree planting especially on the riparian lands and water catchment areas;

iii). Participatory Management of Water Resources that involves:

- a) The establishment of WRUAs.
- b) Development of sub catchment management plans (SCMP).
- c) Stakeholders' collaboration.

- d) Sensitization, capacity building and technical assistance to WRUAs and stakeholders;
- iv). **Water Resources monitoring, assessment and data management that includes:**
 - a) 23 Regular Gauging Stations collecting daily water levels on the perennial rivers are rated and the water levels are converted into discharges for planning and management purposes;
 - b) 8 No weather stations out of which 5 are full weather stations, 1 is a sub-meteorological station and 2 are rainfall stations (Archer's Post, Gataragwa Chief's Camp, Lamuria, Nanyuki MoW, Rumuruti MoW, Marsabit Lodge, AMS Nyahururu and Ndaragwa Forest Station)
 - c) 16 No Groundwater monitoring boreholes;
 - d) 56 No Water Quality Monitoring Stations composed of 40 No stations for surface water and 16 No for groundwater;
 - e) Water resources assessment (Isiolo County, Wajir County and Marsbit Groundwater aquifer mapping);

The Catchment Management Strategy in respect to the Ewaso Ngiro North Catchment Area is hereby attached and marked **ANNEX I**.

Also attached are Notices issuing restrictions on use of water resources during dry seasons. These are marked as **ANNEX II**.

3. The Abstraction Formula for The Entire Basin

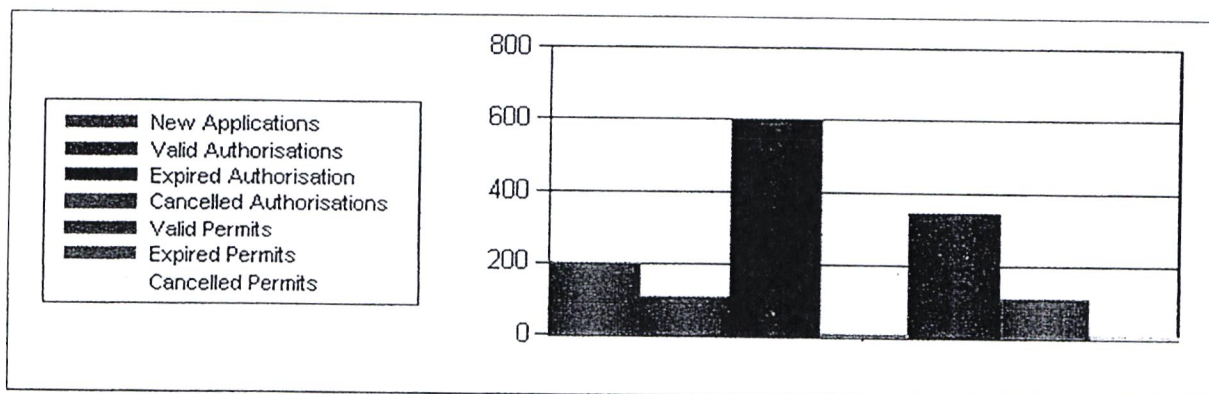
The abstraction formula for the entire basin is water allocation by WRMA through issuance water permits with permit conditions for abstractions as guided by the Catchment Management Strategy, Water Allocation Guidelines and Water Allocation Thresholds.

Whereas provision has been made within the Catchment Management Strategy for the development of Water Allocation Plans, this is a very expensive exercise and WRMA has been unable to develop this important tool for all the Catchments due to budgetary constraints. Concerted efforts have been made and two Water Allocation Plans for *Timau* and *Isiolo* have been developed.

While exercising the mandate for water allocation, WRMA gives preference/priority to water for domestic use which is part of the reserve.

- Prior to issuance of permits and Authorizations for Category C and D, WRMA takes into account views of various stakeholders, including members of the public, Catchment Area Advisory Committees and Water Resources Users Associations amongst others. Some of the Permits and Authorizations are hereby exhibited as ANNEX III.

Number of applications, Authorizations and Permits



Hydro.	No. of New	Current Authorisation Status			Current Permit Status		
		Valid	Expired	Cancelled	Valid	Expired	Cancelled
1KB	0	0	0	0	0	0	0
5AA	4	6	41	0	16	5	0
5AB	1	2	7	0	7	1	0
5AC	3	14	20	0	8	1	0
5AD	2	0	1	0	0	0	0
5BA	1	2	3	0	2	0	0
5BB	3	4	13	0	6	4	0
5BC	19	23	38	0	30	19	0
5BD	1	1	3	0	1	0	0
5BE	60	20	93	0	91	45	0
5CA	2	2	15	0	1	1	0
5CB	0	0	0	0	0	0	0
5CC	0	0	0	0	0	0	0
5DA	61	16	111	0	111	26	0
5DB	3	0	9	0	10	2	0
5DC	0	0	0	0	0	0	0
5DD	3	0	15	0	1	0	0
5EA	0	0	35	0	3	0	0
5EB	3	7	21	0	14	0	0
5EC	10	1	49	7	35	3	8
5ED	13	7	45	0	4	1	0
5FA	5	1	21	0	0	0	0
5FB	0	0	7	0	0	0	0
5GA	2	1	18	0	0	0	0
5GB	0	0	9	0	1	0	0
5H	0	0	0	0	0	0	0
5HA	1	0	5	0	0	0	0
5HB	2	0	10	0	0	0	0
5J	0	0	0	0	0	0	0
5JA	1	0	12	0	4	0	0
6AA	0	0	0	0	0	0	0
TOTAL	200	107	601	7	345	108	8

The Ewaso Ngiro North Catchment Area has adequate volumes of renewable freshwater. However, its availability in terms of spatial and temporal distribution

does not match the demand pattern. According to National Water Master Plan 2030, renewable surface water in the catchment is 1,725 MCM/year, while that for ground water is 18,197 MCM/year giving a total 19,922 MCM/year.

Consequently, ENNCA has a renewable per capita water of 5,534 m³ per year which is way beyond the current demand. However, majority of it is available only during the rainy seasons and flows away due to lack of storage facilities.

As part of its mandate, and in collaboration with other stakeholders, WRMA has identified some potential water storage infrastructure will greatly assist in flow regulation and water demand management, to ensuring that no deficit is experienced during the dry season. Some of the facilities that will benefit from this kind of investment include:

Dam sites, rivers and capacity

<i>Dam Name</i>	<i>River</i>	<i>Capacity (Mm3)</i>
Archer's Post	Ewaso Ngiro	214
Crocodile Jaws	Ewaso Ngiro	120
Ewaso Narok	Ewaso Narok	13
Kihoto	Ewaso Ngiro	443
Minns	Ewaso Ngiro	15
Nanyuki	Nanyuki	5.5
Naro Moru	Naro Moru	2.5
Ngadurumoto	Ewaso Ngiro	74
Nyahururu	Nyahururu	9.8
Pesi	Pesi	25
Randall	Ewaso Ngiro	8.9
Timau	Timau	2.34
<i>Total</i>		<i>933.04</i>

According to the assessment made in the ENNCA CMS 2014 – 2022, ENNCA already has a water deficit of 68 MCM per year and which is expected to be widened as socio-economic growth increases.

With the potential to develop 933 MCM of storage all within the upper Ewaso Ngiro North catchment will eliminate the water shortage/deficit experienced in the area.

In addition, mapping and protection and conservation of groundwater recharge areas such as swamps and wetlands and artificial groundwater recharge will reduce the water shortages.

In conclusion, for the catchment to attain maximum water availability against the militating environmental challenges, parliament must vote for more budgetary allocation for water resources management as opposed to the current status.

ENNCA Development Budget for the last three years

Financial Year	Approved Budget	Disbursement	% Allocation
2012/2013	41,150,000.00	2,014,337.60	4.9%
2013/2014	54,272,000.00	21,805,169.00	40.2%
2014/2015	64,640,000.00	13,967,091.15	21.6%
2015/2016	61,500,000.00	4,777,568.00	7.8%

C. THE AFFIDAVIT

The Authority wishes to clarify some of the issues contained in the Affidavit presented to the Committee on Environment and Natural Resources. THAT:

1. From the foregoing background, it is evident that due consideration is made by the Authority in water allocations through public consultations before issuance of permits. The Authority has on various occasions convened consultation forums before issuance of water use permits or authorizations for development of works.

Copies of documents confirming consultations were undertaken are hereby attached as **ANNEX V**.

2. Specifically, the Authority has ensured that compliance to Section 29 of the Water Act, 2002 is not only in respect to public consultations, but also, are subjected to an Environmental Impact Assessment where applicable, as required under Section 29(4) of the Act.

Copies of documents confirming compliance to Section 29(4) of the Water Act are hereby attached and marked **ANNEX VI**.

3. At no given time has there been rejection of an application for water use for domestic purposes. This is a right guaranteed by law and under the Constitution.
4. In undertaking water allocations as mandated by law, the Authority gives consideration to Domestic users. Indeed, the Authority is guided by the Water Allocation Guidelines as currently in place. Copies of the Water Allocation Guidelines are attached hereto and marked **ANNEX VI**.
5. The Authority has also sought intervention of the Ministry of Water and Irrigation in the Gazettment of Catchment Area Advisory Committees whose advisory role is key to the applications for water uses within any catchment area. Copies of the correspondence with the relevant offices on this issue are hereby annexed as **ANNEX VII**.
6. The Committee is invited to interrogate the contents of this report with the annexes and confirm that the water allocation permits are issued in accordance with the Water Act, 2002, particularly, Section 29(4).

7. No complaints have been received by the Authority on the subject of hearing before the Committee. Any permits found to have been issued contrary to the provisions of the Water Act should be specifically identified to the Authority and steps towards their review will be initiated as contemplated under the Water Act.

ANNEX I

EWASO NGIRO NORTH CATCHMENT AREA CATCHMENT MANAGEMENT STRATEGY

Not an abstract problem but land ownership
is the main problem



**WATER RESOURCES MANAGEMENT
AUTHORITY**

**EWASO NG'IRO NORTH
CATCHMENT AREA (ENNCA)**

**CATCHMENT MANAGEMENT
STRATEGY**

Vang new

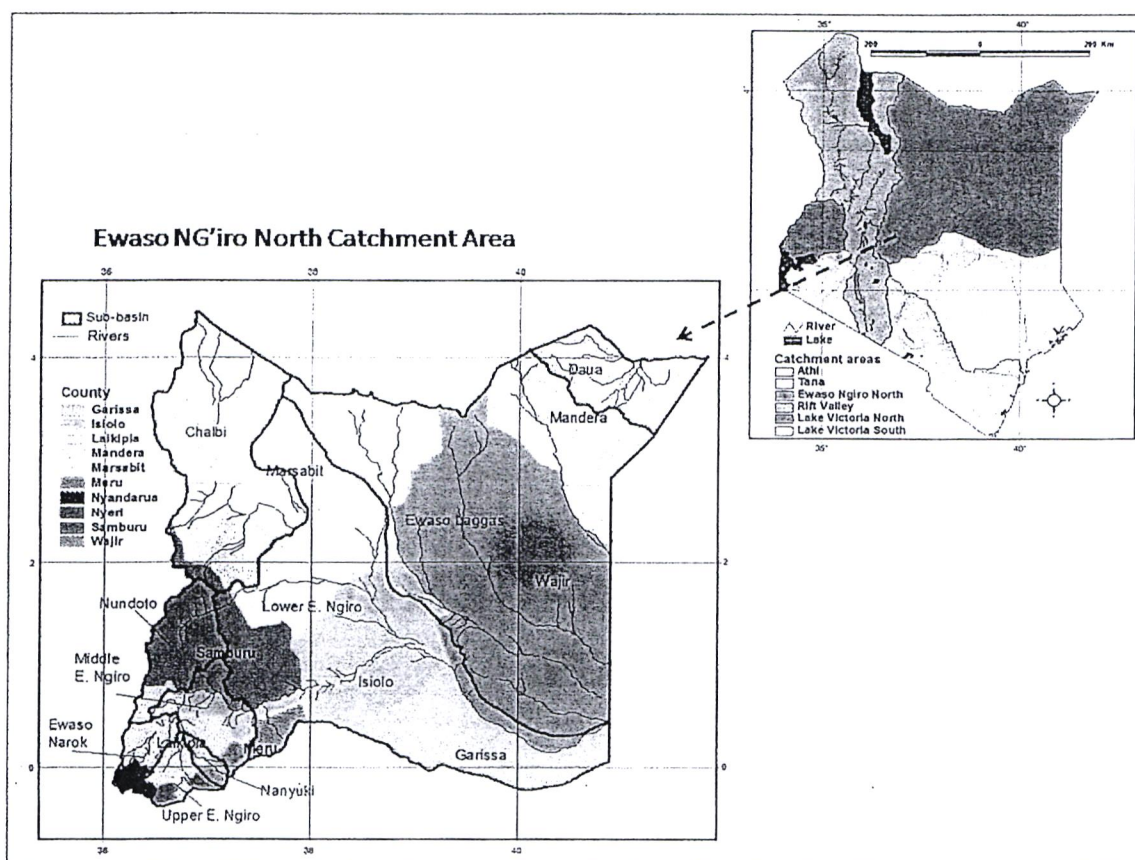
(2015-2022)



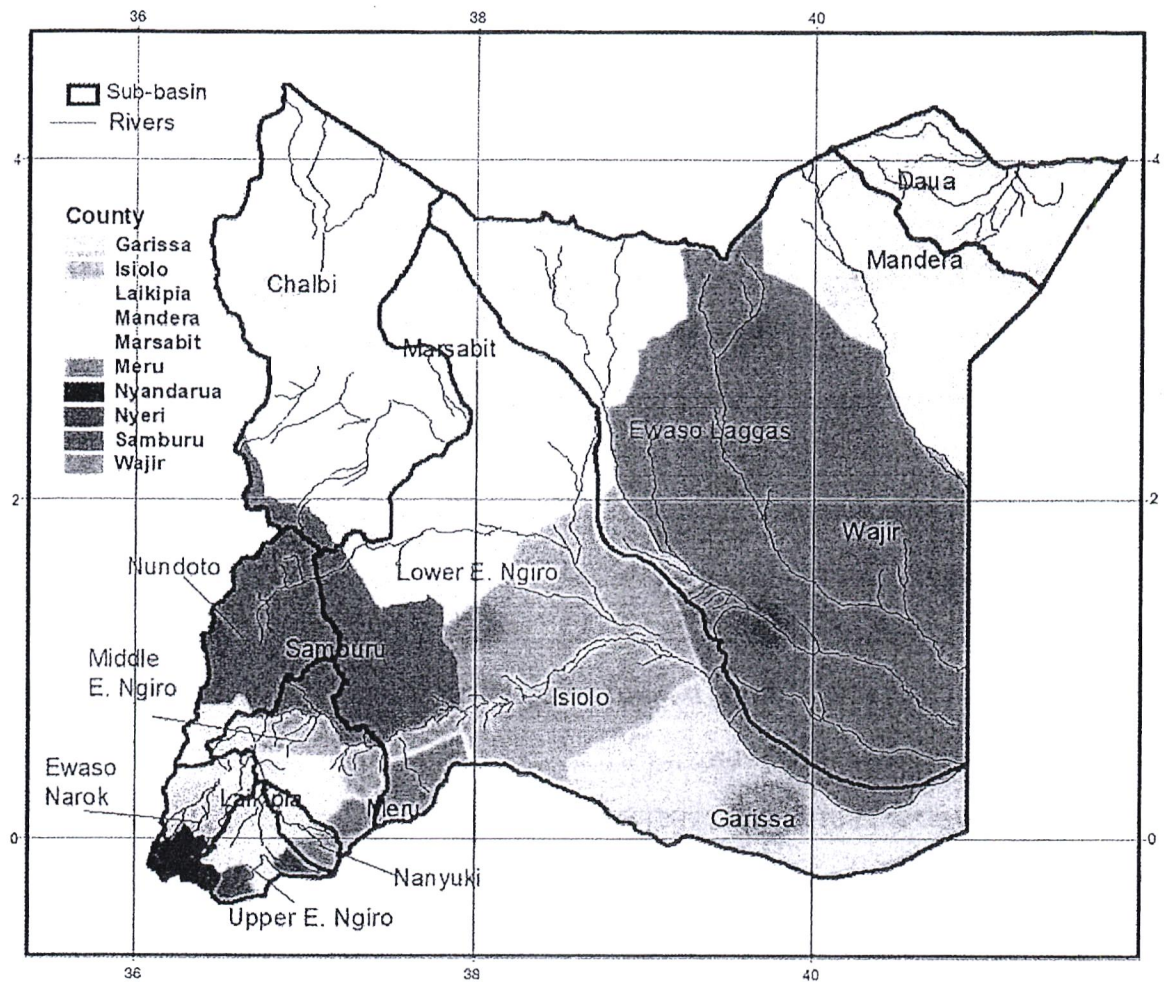
REPUBLIC OF KENYA

APRIL 2015

Catchment Management Strategy for Ewaso Ng'iro North Catchment Area



Location Map of EwasoNg'iro North Catchment Area



Counties in EwasoNg'iro North Catchment Area

TABLE OF CONTENTS

TABLE OF CONTENTS	4
LIST OF TABLES	5
LIST OF FIGURES	6
FOREWORD	7
ACRONYMS AND ABBREVIATIONS.....	8
PART I: BACKGROUND.....	12
CHAPTER 1: INTRODUCTION	13
CHAPTER 2: POLICY, VISION, MISSION AND PRINCIPLES	28
CHAPTER 3: BASIN CHARACTERIZATION	33
PART II: STRATEGIES FOR PROTECTION OF THE RIGHT TO WATER.....	40
CHAPTER 4: MANAGEMENT APPROACHES.....	41
CHAPTER 5: WATER BALANCE AND DEMAND MANAGEMENT	50
CHAPTER 6: WATER ALLOCATION AND USE MANAGEMENT	ERROR! BOOKMARK NOT DEFINED.
ISSUES THAT IMPACTED ON THE IMPLEMENTATION OF THE 2008-2013 CMS AND THOSE THAT EMERGED DURING IMPLEMENTATION INCLUDED:	ERROR! BOOKMARK NOT DEFINED.
PART III: STRATEGIES FOR RESOURCE PROTECTION.....	54
CHAPTER 7: WATER RESOURCES PROTECTION	55
CHAPTER 8: CATCHMENT PROTECTION AND CONSERVATION	58
PART IV: STRATEGIES FOR RESOURCE AUGMENTATION,ADAPTATION AND DEVELOPMENT	62
CHAPTER 9: FLOOD AND DROUGHT MANAGEMENT	63
CHAPTER 10: CLIMATE CHANGE ADAPTATION	69
CHAPTER 11: WATER RESOURCES INFRASTRUCTURE DEVELOPMENT	73
CHAPTER 12: RIGHTS BASED APPROACH	76
CHAPTER 13: LIVELIHOOD ENHANCEMENT.....	79
PART V: STRATEGIES FOR IMPLEMENTATION, INFORMATION MANAGEMENT AND FINANCING.....	82
CHAPTER 14: INSTITUTIONAL STRENGTHENING	83
CHAPTER 15: MONITORING AND INFORMATION MANAGEMENT	87

CHAPTER 16: FINANCING THE CMS.....	92
APPENDICES	96

LIST OF TABLES

TABLE 1-1: EVALUATING THE IMPLEMENTATION OF LAPSED CMS	15
TABLE 1-2: ELEMENTS OF STRATEGIES FOR CATCHMENT MANAGEMENT WITH DETAILS ON THE GOTA.....	ERROR!
BOOKMARK NOT DEFINED.	
TABLE 3-1: ANNUAL AVAILABLE WATER RESOURCES (ENNCA)	35
TABLE 3-2: WATER DEMANDS BY SUBSECTOR (ENNCA)	35
TABLE 3-2: POPULATION TREND (2014-2022)	38
TABLE 4-1: ENNCA SUB-REGIONS, MANAGEMENT UNITS AND SUB-REGIONAL OFFICES	43
TABLE 4.2: EWASO NGIRO NORTH CATCHMENT MANAGEMENT UNITS AND SUB-REGIONS	46
TABLE 9-1: MEASURES FOR FLOODS AND DROUGHT MANAGEMENT IN THE CATCHMENT	64

LIST OF FIGURES

FIGURE 1-1: CONCEPTUAL FRAMEWORK FOR CMS DEVELOPMENT	25
FIGURE 1-2: WATER RESOURCES MANAGEMENT CYCLE.....	25
FIGURE 3-1: MAP OF ENNCA SHOWING COUNTIES.....	33
FIGURE 3-2: MAJOR LAND USE TYPES AND PROTECTED AREAS IN ENNCA.....	37
FIGURE 4-1: ENNCA CATCHMENT MANAGEMENT UNITS.....	43
FIGURE 4-2: MANAGEMENT UNITS CLASSIFICATION	46
FIGURE 4-3: EWASO NG'IRO NORTH CATCHMENT MANAGEMENT UNITS (CMUs).....	47
FIGURE 6-1: THE WATER TANK CONCEPT FOR ALLOCATING WATER BETWEEN VARIOUS USES . ERROR! BOOKMARK NOT DEFINED.	
FIGURE 8-1: SOIL EROSION RISK AND VEGETATION COVER CHANGE BETWEEN 2001 AND 2013	59
FIGURE 9-1: FRAMEWORK FOR FLOOD AND DROUGHT MANAGEMENT (<i>MODIFIED FROM: NWMP 2030</i>)	63
FIGURE 9-2: DROUGHT AND FLOOD PRONE AREAS IN ENNCA.....	66

FOREWORD

Water is an important natural resource throughout the world; it is the source of life, the backbone of growth and prosperity. Kenya is a water stress country, whose water resource endowment is outstripped by the demand. For this reason, the Water Resources Management Authority (WRMA), being the country's lead agency that regulates and manages water resources nationally, has the vital role in equitably allocating water to all water uses. The economic and social development anticipated by Kenya Vision 2030 will require much more water resources than at present.

The National Water Resource Management Strategy (NWRMS) 2013 has provided a clear, accountable and transparent road map for assessing, maintaining, enhancing, developing and managing the limited available, renewable, fresh water. The Integrated Water Resources Management (IWRM) approach has been the most preferred in guiding the management of water resources globally. Kenya also has adopted the IWRM approach. WRMA has adopted strategies which include, among others, managing an effective water resources monitoring system for informed decision making and planning, ensuring access to information at all levels and linking water resources to a growing economy in attaining Kenya Vision 2030. Furthermore, WRMA will perform specific tasks which include protection of riparian land, water sources, water recharge areas and water bodies; infrastructure development for water harvesting and storage; real time water resources assessment and monitoring; water allocation, water use control; capacity building and institutional development of Water Resource Users Associations (WRUAs). Further, WRMA will create awareness and provide information to the public; and implement livelihood projects for income generation as a way of encouraging communities living in important water catchment areas to preserve, conserve and protect water resources. The tasks are in line with WRMA's mandate as provided in the Water Policy of 1999 and the Water Act of 2002.

Section 15 of the Water Act 2002 requires the WRMA in consultation with the public, to formulate a catchment management strategy for the management, use, development, conservation, protection and control of water resources within each catchment area in Kenya. In formulating this CMS WRMA involved stakeholders both at County and Regional levels. The importance of stakeholder involvement and partnerships in managing our water resources cannot be over emphasized. The Government, the academia, the NGOs and development partners should join hands in this direction so as to bring in synergies, and to avoid duplication and resource wastage. We all must appreciate that different stakeholders have different key inputs in these efforts. I wish to thank all stakeholders and development partners who have been involved in one way or the other in the formulation of this strategy. Your contributions are valuable and much appreciated.

HON. PETER L. N. KIILU, EBS.

CHAIRMAN, WATER RESOURCES MANAGEMENT AUTHORITY

ACRONYMS AND ABBREVIATIONS

ACA	Athi Catchment Area
ASAL	Arid and Semi Arid Land
CAAC	Catchment Area Advisory Committee
CBO	Community Based Organization
CCA	Climate Change Action
CDD	Community Driven Development
CDO	Community Development Officer
CDTF	Community Development Trust Fund
CG	County Government
CETRAD	Centre For Research and Arid Land Development
CMO	Catchment Management Officer
CMSs	Catchment Management Strategies
CMU	Catchment Management Unit
COD	Chemical Oxygen Demand
DEM	Digital Elevation Model
DMC	Disaster Management Committee
DO	Dissolved Oxygen
DOC	Disaster Operations Centre
EC	Electrical Conductivity
ED	Effluent Discharge
EDCP	Effluent Discharge Control Plan
EDP	Effluent Discharge Permit
EIA	Environmental Impact Assessment
ENNCA	EwasoNg'iro North Catchment Area
FMIS	Finance Management Information System
FMO	Flood Management Officer
GCM	Global Climate Model
GEF	Global Environmental Fund
GIS	Geographic Information System
GOK	Government Of Kenya
GW	Groundwater

GWO	Ground Water Officer
GIZ	German International Co-operation
HQ	Headquarter
ICT	Information Communication Technology
IFDMP	Integrated Flood and Drought Management Plan
IT	Information Technology
IWRM	Integrated Water Resources Management
IFM	Integrated Flood Management
IFMP	Intergrated Flood Management Plan
JICA	Japan International Cooperation Agency
KFS	Kenya Forest Service
KMD	Kenya Meteorological Department
KNBS	Kenya National Bureau of Statistics
LMG	Livelihood Micro Grand
LVIA	Lay Volunteers International Association
LVNCA	Lake Victoria North Catchment Area
LVSCA	Lake Victoria South Catchment Area
LWF	Laikipia Wildlife Forum
MCM	Million Cubic Metres
MDG	Millenium Development Goals
M &E	Monitoring and Evaluation
MEWNR	Ministry of Environment, Water and Natural Resources
MTAP	Medium Term ASAL Programme
MTR	Medium Term Review
MOU	Memorandum of Understanding
MWI	Ministry of Water and Irrigation
NCCAP	National Climate Change Action Plan
NCF	Nordic Climate Facillity
NEMA	National Environment Management Authority
NGO	Non Governmental Organizations
NRM	Natural Resources Management
NWMP	National Water Master Plan
NWRMS	National Water Resources Management Strategy
OSHA	Occupational Safety and Health Act
GOTA	Goal, Objectives, Targets, Actions

PDB	Permit Data Base
PICD	Participatory Intergrated Community Development
PRSP	Poverty Reduction Strategic Paper
PPP	Public Private Partnership
RDM	Resource Directed Management
RGS	Regular Gauging Station
RM	Regional Manager
RO	Regional Office
RQOs	Resource Quality Objectives
RVCA	Rift Valley Catchment Area
SCMPs	Sub-Catchment Management Plans
SP	Service Providers
SRM	Sub-Regional Manager
SRO	Sub-Regional Office
SW	Surface Water
SWO	Surface Water Officer
TCA	Tana Catchment Area
TSS	Total Suspended Solids
UN	United Nations
UNDP	United Nations Development Programme
WAN	Wide Area Network
WAP	Water Allocation Plan
WDC	WRUA Development Cycle
WIDP	Water Investment Development Panel
WQ	Water Quality
WQPCO	Water Quality and Pollution Control Officer
WR	Water Resource
WRCS	Water Resources Classification System
WRIMS	Water Resources Information Management Systems
WRMA	Water Resources Management Authority
WRM	Water Resources Management
WRO	Water Rights Officer
WRUA	Water Resource Users Association
WSIP	Water Sector Investment Plan
WSP	Water Service Provider

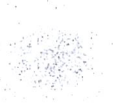
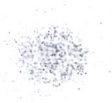
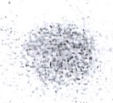
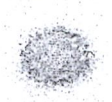
WSTF Water Services Trust Fund

10

ANNEX II

NOTICES ISSUING RESTRICTIONS ON USE OF WATER RESOURCES DURING DRY SEASONS.

11
12
13
14
15





56

WATER RESOURCES MANAGEMENT AUTHORITY

Upper Ewaso Ng'iro Sub Region Office
P.O. BOX 1331 – 10400
Nanyuki- Kenya

Telephone: Nanyuki 062 – 31784
Fax: Nanyuki 062 – 32511
E-mail: wrma.nanyuki@yahoo.com

REF:WRMA/ENNCA/UEN/TELE/WRUA(106)

THE CHAIRMAN
TELESWANI WRUA
TIMAU
RE: LOW RIVER FLOWS

23RD FEBRUARY 2016

Following this office letter Ref.WRMA/ENNCA/UEN/REST/GEN.VOL.1(35), dated 5th February 2016 in regard to the above subject, we believe you have made the necessary steps to ensure the contents of the letter reached the attention of all concerned water abstractors. However, in the course of our routine patrol of the rivers we have noted that:

1. The flow of Teleswani River seems to be on and off flow that indicates that there is no measures in place for strict observation being undertaken to ensure that the normal flow of the river downstream is maintained.
2. Rationing programme for Teleswani river cannot sustain the normal flow downstream because you have listed about 25 No. Water projects to abstract water at the same time for 24 hours which follows with another same number of projects after another 24hrs. If this is considered alongside individual abstractors there will be no water flow downstream and the river cannot be able to flow up to its confluence.

The purpose of this letter therefore is to inform you that you are supposed to come up with a workable rationing programme and with projects that are compliant with water Act 2002 and WRMA rules.

Please take the necessary action

ISAAC G KARIMI
For: Assistant Technical Coordination Manager
Upper Ewaso Ng'iro Sub-Region
Cc
Deputy Technical Coordination Manager - ENNCA

10

10



53

WATER RESOURCES MANAGEMENT AUTHORITY

Upper Ewaso Ng'iro Sub Region Office
P.O. BOX 1331 – 10400
Nanyuki- Kenya

Telephone: Nanyuki 062 – 31784
Fax: Nanyuki 062 – 32511
E-mail: wrma.nanyuki@yahoo.com

✓ REF:WRMA/ENNCA/UEN/REP/10/VOL.1(57)

Date: 24th September 2015

The Chairmen
All WRUAs/WATER PROJECTS.

RE: RESTRICTION ON IRRIGATION/IRRIGATION BAN

As you are all aware the, flow of water in our rivers has be very low to a situation whereby we are now violating the Reserve flow. The view if the above situation, this office has found it necessary to issue the following instructions to be complied with immediately.

- i) No abstraction of water from any surface water source for the purposes of irrigation or any other use a part from domestic and livestock purposes.
- ii) All the projects/water users should liaise with the WRUA and develop effective water rationing programme for domestic and livestock purpose only.

NB: Water for irrigation purposes should be abstracted from storage facilities which had stored water before the onset of the dry period.

Any violation of the above conditions will lead to disconnection/revocation of the water abstraction permit.

Please note the importance of this restriction and take the necessary action with immediate effect.

G. K. Mwangi
Assistant Technical Coordination Manager
UPPER EWASO NGIRO SUB REGION.

Copy to;

1. The County Commissioner
Laikipia County
NANYUKI.
2. The Deputy Technical Coordination Manager
Ewaso Ng'iro North Catchment Area.
NANYUKI.



.

.

.

.

.

.



WATER RESOURCES MANAGEMENT AUTHORITY

Upper Ewaso Ng'iro Sub Region Office
P.O. BOX 1331 – 10400
Nanyuki- Kenya

Telephone: Nanyuki 062 – 31784
Fax: Nanyuki 062 – 32511
E-mail: wrma.nanyuki@yahoo.com

REF: WRMA/ENNCA/UEN/REST/GEN VOL.I(35)

5th February 2016

The Chairman /Manager
.....
.....
.....

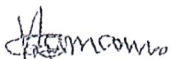
RE: LOW RIVER FLOWS

It has been noted that the rivers are experiencing very low flows hence the need to control abstractions and impose restrictions on water use.

The purpose of this letter is to inform you to bring to the attention of all abstractors within our sub-catchment/WRUA of the need and to observe the following and adhere to the following:

1. That no direct water abstractions from any river for irrigation purposes by any water user, unless from their storage facilities that had already topped up their storage to meet their irrigation water demand during low flows
2. No unauthorized water abstraction is allowed from any water source unless permitted by the authority.

Please take the necessary action with effect from the date of this letter and bring to the attention of this office the rationing programme or any action you have taken.



G.K Mwangi
Assistant Technical Coordination Manager
Upper Ewaso Ng'iro Sub-Region

Copy to:

1. All abstractors/project
2. Deputy Technical Coordination Manager
Ewaso Ng'iro North Catchment Area



WATER RESOURCES MANAGEMENT AUTHORITY

Telephone: Nanyuki 062 - 32510
Fax: Nanyuki 062 - 32511
E-mail: wrma.ewasongiro@yahoo.com
When replying please Quote
WRMA/ENNCA/SW/1322/(60)

EWASO NGIRO NORTH REGIONAL OFFICE
P.O. BOX 1331 - 10400
NANYUKI

4th July 2012

The Chief Executive Officer,
Northern Water Services Board,
Maji, House,
GARISSA

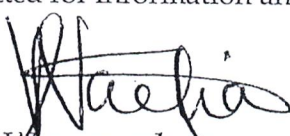
RE: APPLICATION FOR WATER PERMITS FOR ISIOLO WATER SUPPLY PHASE II

Further to your applications for water permits from Kithima and Rugusu rivers, Ref WRMA/50/ISL/5DA/10143/S and WRMA/50/ISL/5DA/10144/S respectively dated 22nd June 2012. From the information on water availability and allocation for the Isiolo river and its tributaries contained in the Hydrological Assessment Reports you submitted and the technical evaluation of the same by this office, the unallocated amount available for allocation from Kithima river is 743 m³ per day while the application is for 1,800 m³ per day. For Rugusu river, the unallocated amount is 1,599 m³ per day against an application for 5,000 m³ per day.

For equitable and fair allocation of the scarce resource and maintenance of environmental reserve, the maximum amount that can be allocated is 500 and 1000 m³ per day from the Kithima and Rugusu rivers respectively. This assumes that water resources availability will remain stable and over-abstraction by authorized abstractors and illegal abstractions are curbed.

The purpose of this letter therefore is to request you to re-submit your amended applications taking into account the above stated amounts in your revised designs for the intakes and pipelines.

Submitted for information and further necessary action.


S. W. Wangombe

Deputy Technical Coordination Manager,

ENNCA - NANYUKI

CC

The Chief Executive Officer,
Water Resources Management Authority,
P. O. Box 45250 - 00100
Nairobi

The Assistant Technical Coordination Manager,
Middle Ewaso Ngiro Sub Region,
Isiolo

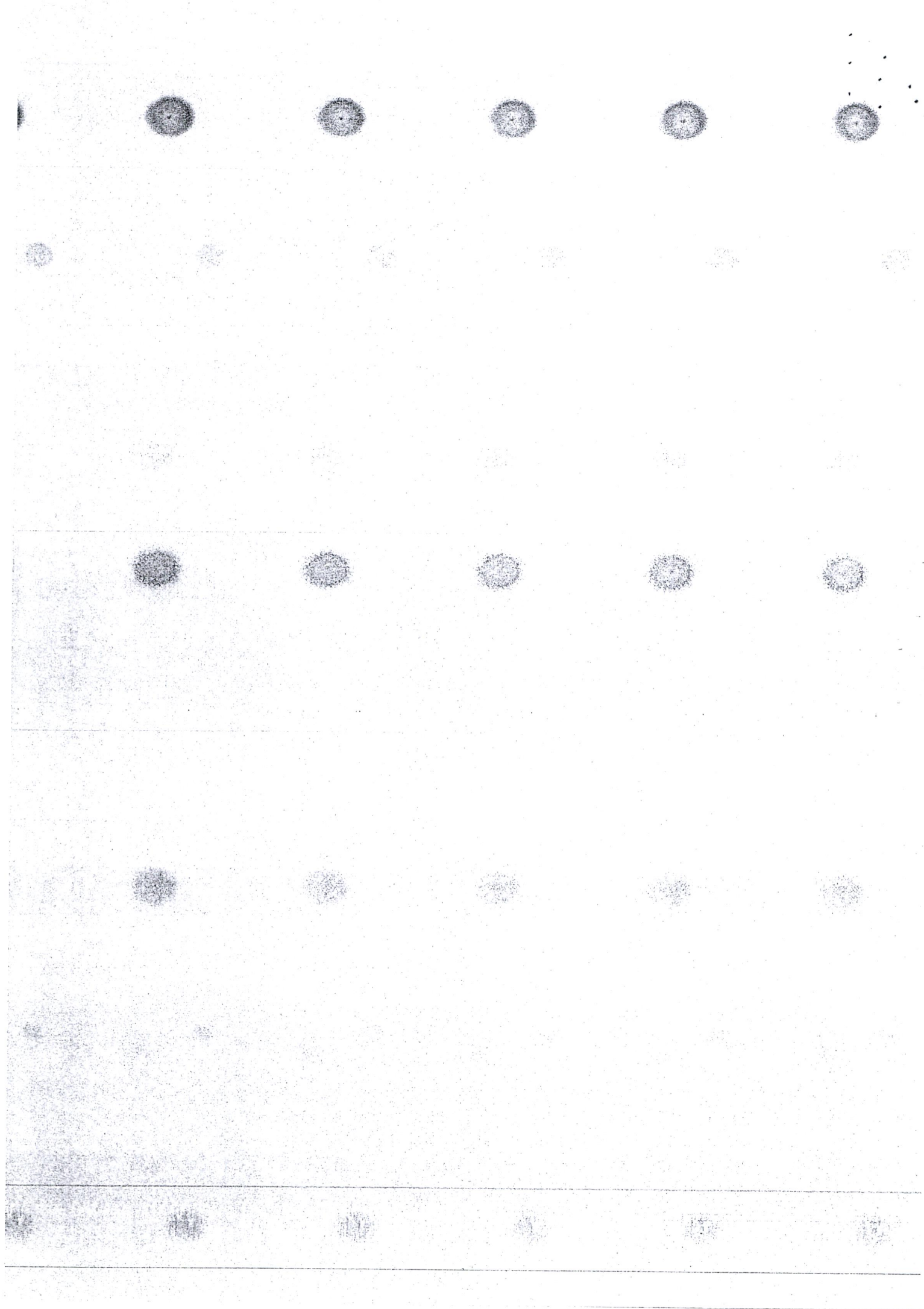
accounting for every drop

10

11

ANNEX III

PERMITS AND AUTHORIZATIONS



11

MINUTES OF THE 24TH CAAC MEETING: ENNCA

Date: 24th October 2014

Venue: ENNCA Regional Office Boardroom

Members present:

Name	Presentation	Station
1. Andrew A. Wako	Chairman	Marsabit
2. Janet Leiyagu	Vice Chairlady	Maralal
3. Mr John Kinoti	Lewa conservancy	Isiolo
4. Harun Roba	Pastoralist	Garbatulla
5. Vitalis Too	CETRAD	Nanyuki
6. Francis K. Kariuki	Kenya Forest Service	Isiolo
7. Ahmed M. Abdille	Pastoralist	Wajir South
8. Rose W. Gikonyo	Farmer	Nyandarua
9. Saita Kitonga	Youth	Ngarendare
10. Batula L. Hassan	Gender	Marsabit
11. Rev. Joseph Michuki	WRUA Member	Isiolo

Absent with apology

1. Adan I. Roba
2. Qalicha Dida/ENNDA
3. Chairman NWSB

In Attendance

- | | |
|---------------------|-------------|
| 1. D. O. Ochillo | DTCM |
| 2. T. M. Mutie | ATCM-FM/RTM |
| 3. D.G. Kibaya | ATCM - WQ |
| 4. Geoffrey Mworia | ATCM - SWO |
| 5. Bernard Githaiga | ATCM - GW |
| 6. Shiphila Wambui | WRO |
| 7. J.N. Magiri | WRO |
| 8. T. Thungu | WRO |
| 9. R. Muthinja | CMO |

10. Jane W. Mwangi
11. Wagumba B.G.
12. Hilda C. Kibet

WCO
CO
CDO

AGENDA ITEM	MIN. NO.	DISCUSSIONS	FOLLOW UP ACTION	FOLLOW UP ACTION	
				RESPON SIBLE	TIMELINE
1. Opening of the Meeting	Min. No 01/10/2014	The meeting was started with a word of prayer by Rev. Michuki at 10.30 am after which the Chairman requested the members to introduce themselves. The agenda was adopted by the members through consensus.			
2. Adoption of the Agenda	Min No. 02/10/2014				
3. DTCM's Brief	Min No. 03/10/2014	DTCM apologized for being late due to some hitches he encountered on the way while travelling back to Office from a safari. -He explained to the members that a Budget had been prepared for the CAAC Tour scheduled for the 1 st Qtr but it had not been financed because the Authority was financially constrained since the revenue it was collecting was not able to finance all its activities and support from GOK was insufficient.	DTCM to make a follow up	DTCM WRMA HQ	
4. Chairman's Brief	Min. No. 04/10/2014	The Chairman welcomed the members and explained that the meeting had started late since the members had requested that they wait for the arrival of the DTCM for clarification on two main issues:- 1) Payment of balances for members' allowances for attendance of the CMS stakeholders workshop on 2 nd Sept 2014 2) CAAC tour which had been Scheduled for 2 nd Sept 2014 -The DTCM explained that WRMA HQ had not yet released funds for the two activities but he would continue to pursue the same and requested the members to be patient since they would be paid once the funds are disbursed. -The members requested that the office should be communicating with the Chairman on all issues for ease of rescheduling their plans who would the pass on the message to the members.	DTCM WRMA HQ.		

•
•
•
•
•

,

/

.

-

.

				DTCM Chairman CAAC		
5. Confirmation of the Minutes.	Min. No. 05/10/2014	The chairman took the members through the minutes and the members confirmed them to be true record of the proceedings, proposed by John Kinoti and seconded by Rev. Michuki				
6. Matters Arising from the Minutes	Min. No. 06/10/2015 1) <					

Min. No.13/10/2014 Application for class C water Permit: Nanyuki Ranching Ltd. Drg. area 58E: File No. WRMA/50/NUK/58E/10268/G	Source: Mt. Kenya Aquifer Amount: 200m ³ /d for domestic use and Commercial Irrigation Fees Paid: Kshs. 20,000/=assessment fees	Application for issuance of Authorization has been recommended for the borehole to be drilled to a maximum depth of 180m	WRMA HQ TO evaluate WRO	
Min. No.14/10/2014 Request for Removal of application from Data base class D Application: Northern Water Service Board: Drg. Area 5AA: File No. WRMA/50/RUM/5AA/10065/G	Source: Ol Bolossat Aquifer Amount: 1,600m ³ /d for Public use	Request to remove application from Data base recommended due to low yield of monitoring BH earlier drilled.	WRO to request HQ to delete.	
Min. No.15/10/2014 Request for Removal of application from Data base class D Application: Northern Water Service Board: Drg. Area 5AA: File No. WRMA/50/RUM/5AA/10071/G	Source: Ol Bolossat Aquifer Amount: 1,000m ³ /d for Public use	Request to remove application from Data base recommended due to low yield of monitoring BH earlier drilled.	WRO to request HQ. to delete.	
9. Open Forum	Min. No. 16/10/2015	The next meeting to be held on 26 th November 2014	WRMA HQ to Facilitate	By 26 th Nov 2014
10. Closing Remarks	Min. No. 16/10/2015	There being no other business, the meeting was closed with a word of prayer by Harun Roba.		

6

Confirmed by:-

Chairman.....Date.....

Secretary.....Date.....

10

MINUTES OF THE 23RD CAAC MEETING.

Date: 30th June 2014

Venue: ENNCA Regional Office Boardroom

Members present:

Name	Presentation	Station
1. Andrew A. Wako	Chairman	Marsabit
2. Janet Leiyagu	Vice Chairlady	Maralal
3. Qalicha Diba	ENNDA	Isiolo
4. Mr John Kinoti	Lewa Conservancy	Isiolo
5. Harun Roba	Pastoralist	Garbatulla
6. Vitalis Too	CETRAD	Nanyuki
7. Francis K. Kariuki	Kenya Forest Service	Isiolo
8. Ahmed M. Abdille	Pastoralist	Wajir South
9. Rose W. Gikonyo	Farmer	Nyandarua
10. Saita Kitonga	Youth	Ngarendare
11. Adan I. Roba	PDA	Mandera
12. Batula L. Hassan	Gender	Marsabit
13. Rev. Joseph Michuki	WRUA Member	Isiolo

In Attendance

1. D. O. Ochillo	DTCM
2. D.G. Kibaya	ATCM - WQ
3. Geoffrey Mworio	ATCM - SWO
4. Bernard Githaiga	ATCM - GW
5. Shiphila Wambui	WRO
6. J.N. Magiri	WRO
7. T. Thungu	WRO
8. R. Muthinja	CMO
9. Jane W. Mwangi	WCO

MIN. NO.	DISCUSSIONS	FOLLOW UP ACTION		TIMELINE
		RESPONSIBLE		
Min.1/06/2014 Opening of the meeting and The Chairman's brief	The Chairman welcomed the group to the meeting at 9. 40 am and Rev. Michuki led with a word of prayer. -He requested the members to introduce themselves and asked the RM to brief the group.			
Min.2/6/2014 DTCM'S Brief	The Regional Manager welcomed the members to the 2nd meeting in the same quarter and stated that the meeting had previously been scheduled as a tour but due to constraints in the organization this has not been possible but he would follow up on the issue with WRMA HQ. -He reported that in a meeting held on 22 nd May 2014 between WRMA and UNHCR, UNHCR had committed itself to pay outstanding arrears in WUC, legalize illegal works by 30 th June 2014 and also allow the Authority to use the boreholes they had requested to be replaced as dedicated boreholes for monitoring purposes. They had therefore appealed to the Committee to reconsider their applications which were deferred during the CAAC meeting held on 29 th April 2014.	DTCM	DTCM to follow up issue with the FAM	By 2 nd Sept 2014.
		DTCM	DTCM to follow up with UNHCR	Immediately
Min. No. 3/06/2014 Matters Arising from the previous minutes.	- Ex-Min.No. 5/04/2014 -(3) Likiundu River Rev. Michuki reported that the river was still not flowing past the tarmac and that Ruiro Trl. of the same was dry. -Mr Saita suggested that WRMA Check on the upstream situation to avoid further delay on the issue. - Encroachment of Gathaara river- Ex -Min No.7/11/2013 -Madam Rose reported that she managed to see the Governor and the Area MCA who promised to look into the issue. She also said there was a cleanup exercise along the stream during the world Environmental Day which she participated.	DTCM	DTCM to liaise with ATCM – Isiolo to look for a lasting solution. -Rev. Michuki to see the ATCM –Isiolo on the same issue. - Mr Mutie, Mr	Immediately

	-The RO, SRO and the WRUA went round and were able to see the encroachment. Madam Rose asked the DTCM to be inviting CAAC members for activities taking place in their areas which he promised would be done. -It was reported that Prisons was discharging effluent into Gathaara river.	Muthinja and ATCM to liaise with the SRO in finding out about the ownership of the Wetland and on the pollution issue.	RTM, CMO, ATCM	
	▪ Ex Min. No. 6/04/2014 Water Resources Situation Briefs (d) Catchment Management Mr Roba solicited clarification on whether the WRUAs in Mandra and Marsabit had taken off and Mr Muthinja explained that the members had said they would not undertake the activities during the ramadhan period. ▪ Ex-min. 6/04/2014 To be corrected to be numbered Ex -min. 7/04/2014 Applications for Water Permits. Application for Class 'C' water permit for Direct Aid International Organization not to have been deferred since erroneously indicated to abstract from Merti Aquifer but correct source is El Wak/Wajir Aquifer.	Mr Muthinja and the CDO To make a follow up	CMO, CDO	
	Application for Class 'C' water permit for Direct Aid International Organization not to have been deferred since erroneously indicated to abstract from Merti Aquifer but correct source is El Wak/Wajir Aquifer. ▪ Ex Min. 8/04/2014-Open Forum Concern was raised that CAAC meeting scheduled for 26th May 2014 was not convened and notice for the current meeting was too short. -The Chairman made a special request for a Tour outside their Catchment Area before their Term of Office ends. -The DTCM informed the committee that he had prepared a budget in time but disbursement was late. During that period the Government was restricting expenditure due to financial constraints. He however said he would be communicating early enough on any changes.	Application approved.		
	Minutes of the previous meeting were confirmed as a true	Secretariat to give enough notice	DTCM, WRO	Continuous
		DTCM to make a follow up with HQ on facilitation for the Tour and meetings.	DTCM	By 2 nd Sept 2014
Min. No. 4/06/2014:		All members present		

Confirmation of minutes.	record of the proceedings with a few corrections. Proposed by- Mr Harun Roba and seconded by Mr. Saita Kitonga	in the previous meeting.	
Min. No. 5/06/2014 1) Briefs on Marsabit Aquifer mapping a	▪ Brief on Marsabit Aquifer mapping –DTCM The DTCM informed the Committee that mapping of the aquifer is being carried out concurrently with the Turkana mapping WRMA by due to a realization of high demand of ground water to drive development in the two areas. -Launch of the study was on 17th May 2014 and the study which will be undertaken by Rural focus and the a swiss firm. will take 12 months and will entail the following areas:- 1, Mapping 2, Delineating 3, Identifying recharge areas 4, Water Quality assessment 5, Modeling for the aquifer 6, Dissemination of information to stakeholder -Information derived from the study will be used by stakeholders, policy makers and users among others. Assessment of Merti/Wajir Aquifer to start under MTAP II Project.		
2) Brief on WRUAs	▪ Brief on WRUAs -In Marsabit , North Horr, Badha Huri, and WAMA WRUAs have been approved for funding by WSTF -In Mandera, Ewaso Habaswein, Shitley proposals have been approved by WSTF but WARRA is yet to be funded. -In Isiolo, Funding has been released for SCMP development for Sericho, Garfusa, and Ndomiu WRUAs. Gallana Goffo and Kipsing WRUAs are awaiting adoption of their SCAMPs. Kipsing WRUA was funded by CARITAS. - In Nanyuki Kariguini WRUA is has been funded for SCAMP	CMO , CDO to continue on follow up of other WRUAs who have submitted their proposals for funding.	

	development. The DTCM explained that Donors had withdrawn from funding WSTF which is therefore causing delayed funding of WRUAs.	WSTF to be requested to inform WRMA the no. of WRUAs it can fund annually for ease of planning.	DTCM /WRMA HQ	
Min. No.6/06/2014 Application for Class 'C' water permit: AAA Growers Ltd (Turi Farm): Drg. Area 5BC: File No. WRMA/50/NUK/5BC/10246/G, Burguret Village, Burguret Location, Burguret Location Burguret Division, Nyeri North District	Source: Mt Kenya Aquifer Amount: 60m ³ /d for commercial irrigation of Horticultural crops. Fees paid: Kshs. 20,000/= assessment fees.	Application for issuance of Authorization approved for a borehole to be drilled to a maximum depth of 250m.	WRMA HQ to evaluate and advertise. WRO	
Min. No.7/06/2014 Application For Class 'C' Water Permit GULSAN INSTANTAS CO.LTD: File No. WRMA/50/MIT/SEC/10111/G:Drg Area No. SEC: Logologo Village, Logologo Location,Logologo Division: Marsabit South District	Source: Logologo Aquifer Amount: 90m ³ /d for road construction Fees Paid Kshs. 20,000/= assessment fees.	Application for issuance of Authorization approved for a borehole to be drilled to a maximum depth of 200.	WRMA HQ to evaluate and advertise. WRO	
Min. No.8/06/2014 Application For Class 'D' Water Permit: National Water Conservation & Pipeline Corporation: File No. WRMA/50/MIT/SEC/10045/S: Drg. Area No. Sec: Badasa /Leyai Village, Badasa/Songa Location,Central Division, Marsabit Central District	Source: Boji Laga Amount: 7350m ³ /d for Public supply Fees Paid: Kshs. 40,000/= assessment fees. Year Population Water Demand m ³ /d Storage(Capacity Required mm ³) 2010 36,060 3266 3060 2020 54,090 4870 1855 2030 81,135 7349 5510 Yield at Bakuli land 11 is 600m ³ /d	Application recommended for approval	WRMA HQ to evaluate and advertise and process. WRO	

Confirmation of minutes.	record of the proceedings with a few corrections. Proposed by- Mr Harun Roba and seconded by Mr. Saita Kitonga	in the previous meeting.		
Min. No. 5/06/2014 1) Briefs on Marsabit Aquifer mapping a	▪ Brief on Marsabit Aquifer mapping –DTCM The DTCM informed the Committee that mapping of the aquifer is being carried out concurrently with the Turkana mapping WRMA by due to a realization of high demand of ground water to drive development in the two areas. -Launch of the study was on 17th May 2014 and the study which will be undertaken by Rural focus and the a swiss firm will take 12 months and will entail the following areas:- 1, Mapping 2, Delineating 3, Identifying recharge areas 4, Water Quality assessment 5, Modeling for the aquifer 6, Dissemination of information to stakeholder -Information derived from the study will be used by stakeholders, policy makers and users among others. Assessment of Merti/Wajir Aquifer to start under MTAP II Project.			
2) Brief on WRUAs	▪ Brief on WRUAs -In Marsabit, North Horr, Badha Huri, and WAMA WRUAs have been approved for funding by WSTF -In Mandera, Ewaso Habaswein, Shitley proposals have been approved by WSTF but WARRA is yet to be funded. -In Isiolo, Funding has been released for SCMP development for Sericho, Garfussa, and Ndomiu WRUAs. Gallana Goffo and Kipsing WRUAs are awaiting adoption of their SCAMPs. Kipsing WRUA was funded by CARITAS. - In Nanyuki Kariguini WRUA is has been funded for SCAMP	CMO , CDO to continue on follow up of other WRUAs who have submitted their proposals for funding.		

	Capacity of treatment works at Badasa will be 306m ³ /hr initially then 459m ³ /hr in 2020.																							
Min. No.9/06/2014	Application for Class 'C' Surface Water Permit: 4/7 Solio Water Project: File No. WRMA/50/NUK/5BA/10223/S: Drg. Area No. 5BA:4/7 Village, Mathingira Location, Lamuria Division, Laikipia Central District	Source: Moyok River Amount: 541.92m³/d for domestic use Fees Paid Kshs. 25,000/= assessment fees. <u>Report Evaluation</u> The hydrological analysis is for Moyok river but point of abstraction is on Thukuthuku trib of Moyok which has not been assessed. -Analysis of the Reserve is not properly indicated. - Two figures of abstraction from normal flow have been given from an unclear source.	Application is deferred for the hydrologist concerned to fill in missing Data in the report. WRO																					
Min. No. 10/06/2014	CAAC members came up with the calendar for the year 2014/2015 as follows:- <table><thead><tr><th>Period</th><th>Day</th><th>Date</th><th>Activity</th></tr></thead><tbody><tr><td>Qtr. 1</td><td>Tue.</td><td>2. 09. 2014</td><td>Tour</td></tr><tr><td>Qtr. 2</td><td>Tue.</td><td>2. 12. 2014</td><td>Meeting</td></tr><tr><td>Qtr. 3</td><td>Wed.</td><td>3. 03. 2014</td><td>Meeting</td></tr><tr><td>Qtr. 4</td><td>Tue.</td><td>2. 06. 2014</td><td>Meeting</td></tr></tbody></table> There being no other business the meeting ended at 3.30 pm with a word of prayer by Rev. Michuki.	Period	Day	Date	Activity	Qtr. 1	Tue.	2. 09. 2014	Tour	Qtr. 2	Tue.	2. 12. 2014	Meeting	Qtr. 3	Wed.	3. 03. 2014	Meeting	Qtr. 4	Tue.	2. 06. 2014	Meeting	All CAAC members to participate. DTCM/HQ Facilitation	DTCM	
Period	Day	Date	Activity																					
Qtr. 1	Tue.	2. 09. 2014	Tour																					
Qtr. 2	Tue.	2. 12. 2014	Meeting																					
Qtr. 3	Wed.	3. 03. 2014	Meeting																					
Qtr. 4	Tue.	2. 06. 2014	Meeting																					
Open Forum																								

Confirmed:-

Chairman

Secretary

Date

MINUTES OF THE 23RD CAAC MEETING.

Date: 30th June 2014

Venue: ENNCA Regional Office Boardroom

Members present:

Name	Presentation	Station
1. Andrew A. Wako	Chairman	Marsabit
2. Janet Leiyagu	Vice Chairlady	Maralal
3. Qalicha Diba	ENNDA	Isiolo
4. Mr John Kinoti	Lewa Conservancy	Isiolo
5. Harun Roba	Pastoralist	Garbatulla
6. Vitalis Too	CETRAD	Nanyuki
7. Francis K. Karuki	Kenya Forest Service	Isiolo
8. Ahmed M. Abdille	Pastoralist	Wajir South
9. Rose W. Gikonyo	Farmer	Nyandarua
10. Saita Kitonga	Youth	Ngare Ndare
11. Adan I. Roba	PDA	Mandera
12. Batula L. Hassan	Gender	Marsabit
13. Rev. Joseph Michuki	WRUA Member	Isiolo

In Attendance

1. D. O. Ochillo	DTCM
2. D.G. Kibaya	ATCM – WQ
3. Geoffrey Mworia	ATCM – SWO
4. Bernard Gitthaiga	ATCM – GW
5. Shiphila Wambui	WRO
6. J.N. Magiri	WRO
7. T. Thungu	WRO
8. R. Muthinja	CMO
9. Jane W. Mwangi	WCO

CAC MEETING.

Additional Office Boardroom

Presentation	Station
Chairman	Marsabit
Vice Chairlady	Maralal
ENNDA	Isiolo
Lewa Conservancy	Isiolo
Pastoralist	Garbatulla
CETRAD	Nanyuki
Kenya Forest Service	Isiolo
Pastoralist	Wajir South
Farmer	Nyandarua
Youth	Ngare Ndare
PDA	Mandera
Gender	Marsabit
WRUA Member	Isiolo
DTCM	
ATCM - WQ	
ATCM - SWO	
ATCM - GW	
WRO	
WRO	
WRO	
CMO	
WCO	

57



WATER RESOURCES MANAGEMENT AUTHORITY

TITLE: Meeting Attendance Form

DEPARTMENT: Management Representative
ISSUED BY: MR
AUTHORIZED BY: CFO

REF. NO: F/18/1
ISSUE NO: 04
REV. NO: 3
DATE OF ISSUE: 17th July, 2012
PAGE: 1 of 2

SUBJECT: 24th CMC MEETING
VENUE: WILMA REGIONAL OFFICE, BORDO PLAZA
DATE: 22/10/2014 TIME: 9:00 AM

S/N	NAME	Designation/Institution	Station	Email Address	Signature
1	ANDRE A. WAKU	CDR CHAMUHAN	MBABU	andrea.waku@wrma.go.ke	[Signature]
2	Rev. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
3	Mr. John K. Mwangi	CMC - Mombasa	MBABU	john.k.mwangi@wrma.go.ke	[Signature]
4	SATIA KIMANI	CMC - Mombasa	MBABU	satia.kimani@wrma.go.ke	[Signature]
5	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
6	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
7	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
8	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
9	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
10	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
11	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
12	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
13	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
14	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
15	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]
16	Mr. Joseph Mwangi	CMC - Mombasa	MBABU	rev.joseph.mwangi@wrma.go.ke	[Signature]



WATER RESOURCES MANAGEMENT AUTHORITY

TITLE: Meeting Attendance Form

REF. NO: F/18/1
ISSUE NO: 04

DEPARTMENT: Management Representative
ISSUED BY: MR
AUTHORIZED BY: CEO

REV. NO: 3
DATE OF ISSUE: 17th July, 2012
PAGE: 2 of 2

Sl. No.	Name of the Representative	Designation	Signature	Date
1	Mr. M. S. G. G. G. G.	General Manager		
2	Mr. M. S. G. G. G.	General Manager		
3	Mr. M. S. G. G. G.	General Manager		
4	Mr. M. S. G. G. G.	General Manager		
5	Mr. M. S. G. G. G.	General Manager		
6	Mr. M. S. G. G. G.	General Manager		
7	Mr. M. S. G. G. G.	General Manager		
8	Mr. M. S. G. G. G.	General Manager		
9	Mr. M. S. G. G. G.	General Manager		
10	Mr. M. S. G. G. G.	General Manager		
11	Mr. M. S. G. G. G.	General Manager		
12	Mr. M. S. G. G. G.	General Manager		
13	Mr. M. S. G. G. G.	General Manager		
14	Mr. M. S. G. G. G.	General Manager		
15	Mr. M. S. G. G. G.	General Manager		
16	Mr. M. S. G. G. G.	General Manager		
17	Mr. M. S. G. G. G.	General Manager		
18	Mr. M. S. G. G. G.	General Manager		
19	Mr. M. S. G. G. G.	General Manager		
20	Mr. M. S. G. G. G.	General Manager		
21	Mr. M. S. G. G. G.	General Manager		
22	Mr. M. S. G. G. G.	General Manager		
23	Mr. M. S. G. G. G.	General Manager		
24	Mr. M. S. G. G. G.	General Manager		
25	Mr. M. S. G. G. G.	General Manager		
26	Mr. M. S. G. G. G.	General Manager		
27	Mr. M. S. G. G. G.	General Manager		
28	Mr. M. S. G. G. G.	General Manager		
29	Mr. M. S. G. G. G.	General Manager		
30	Mr. M. S. G. G. G.	General Manager		
31	Mr. M. S. G. G. G.	General Manager		
32	Mr. M. S. G. G. G.	General Manager		
33	Mr. M. S. G. G. G.	General Manager		
34	Mr. M. S. G. G. G.	General Manager		
35	Mr. M. S. G. G. G.	General Manager		
36	Mr. M. S. G. G. G.	General Manager		
37	Mr. M. S. G. G. G.	General Manager		
38	Mr. M. S. G. G. G.	General Manager		
39	Mr. M. S. G. G. G.	General Manager		
40	Mr. M. S. G. G. G.	General Manager		
41	Mr. M. S. G. G. G.	General Manager		
42	Mr. M. S. G. G. G.	General Manager		
43	Mr. M. S. G. G. G.	General Manager		
44	Mr. M. S. G. G. G.	General Manager		
45	Mr. M. S. G. G. G.	General Manager		
46	Mr. M. S. G. G. G.	General Manager		
47	Mr. M. S. G. G. G.	General Manager		
48	Mr. M. S. G. G. G.	General Manager		
49	Mr. M. S. G. G. G.	General Manager		
50	Mr. M. S. G. G. G.	General Manager		
51	Mr. M. S. G. G. G.	General Manager		
52	Mr. M. S. G. G. G.	General Manager		
53	Mr. M. S. G. G. G.	General Manager		
54	Mr. M. S. G. G. G.	General Manager		
55	Mr. M. S. G. G. G.	General Manager		
56	Mr. M. S. G. G. G.	General Manager		
57	Mr. M. S. G. G. G.	General Manager		
58	Mr. M. S. G. G. G.	General Manager		
59	Mr. M. S. G. G. G.	General Manager		
60	Mr. M. S. G. G. G.	General Manager		
61	Mr. M. S. G. G. G.	General Manager		
62	Mr. M. S. G. G. G.	General Manager		
63	Mr. M. S. G. G. G.	General Manager		
64	Mr. M. S. G. G. G.	General Manager		
65	Mr. M. S. G. G. G.	General Manager		
66	Mr. M. S. G. G. G.	General Manager		
67	Mr. M. S. G. G. G.	General Manager		
68	Mr. M. S. G. G. G.	General Manager		
69	Mr. M. S. G. G. G.	General Manager		
70	Mr. M. S. G. G. G.	General Manager		
71	Mr. M. S. G. G. G.	General Manager		
72	Mr. M. S. G. G. G.	General Manager		
73	Mr. M. S. G. G. G.	General Manager		
74	Mr. M. S. G. G. G.	General Manager		
75	Mr. M. S. G. G. G.	General Manager		
76	Mr. M. S. G. G. G.	General Manager		
77	Mr. M. S. G. G. G.	General Manager		
78	Mr. M. S. G. G. G.	General Manager		
79	Mr. M. S. G. G. G.	General Manager		
80	Mr. M. S. G. G. G.	General Manager		
81	Mr. M. S. G. G. G.	General Manager		
82	Mr. M. S. G. G. G.	General Manager		
83	Mr. M. S. G. G. G.	General Manager		
84	Mr. M. S. G. G. G.	General Manager		
85	Mr. M. S. G. G. G.	General Manager		
86	Mr. M. S. G. G. G.	General Manager		
87	Mr. M. S. G. G. G.	General Manager		
88	Mr. M. S. G. G. G.	General Manager		
89	Mr. M. S. G. G. G.	General Manager		
90	Mr. M. S. G. G. G.	General Manager		
91	Mr. M. S. G. G. G.	General Manager		
92	Mr. M. S. G. G. G.	General Manager		
93	Mr. M. S. G. G. G.	General Manager		
94	Mr. M. S. G. G. G.	General Manager		
95	Mr. M. S. G. G. G.	General Manager		
96	Mr. M. S. G. G. G.	General Manager		
97	Mr. M. S. G. G. G.	General Manager		
98	Mr. M. S. G. G. G.	General Manager		
99	Mr. M. S. G. G. G.	General Manager		
100	Mr. M. S. G. G. G.	General Manager		

Issued by: 

(Management Representative)

Approved by: 
(Chief Executive Officer)

REF. NO: F/18/1

REV. NO: 3

DATE OF ISSUE: 17th July, 2012

PAGE: 1 of 2

VENUE: 6000 E. 1st Avenue, Suite 100, Denver, CO 80231

DATE: 11/11/11 TIME: 9:00 AM

[illegible]

REF. NO: F/18/1
ISSUE NO: 04

REV. NO: 3

REVISION: _____
DATE OF ISSUE: 17th July, 2012

PAGE: 2 of 2

AUTHORIZED BY: _____		DATE: _____	
14	Edwards, William G. A.	11/11/1914	11/11/1914
15	Hill, C. H.	11/11/1914	11/11/1914
16	W. H. Hill	11/11/1914	11/11/1914
17	W. H. Hill	11/11/1914	11/11/1914
18	W. H. Hill	11/11/1914	11/11/1914
19	W. H. Hill	11/11/1914	11/11/1914
20	W. H. Hill	11/11/1914	11/11/1914
21	W. H. Hill	11/11/1914	11/11/1914

(Management Representative)

(Chief Executive Officer)



WATER RESOURCES MANAGEMENT AUTHORITY

TITLE: Meeting Attendance Form

DEPARTMENT: Management Representative

ISSUED BY: MR

AUTHORIZED BY: CEO

REF. NO: F/18/1

ISSUE NO: 04

REV. NO: 3

DATE OF ISSUE: 17th July, 2012

PAGE: 1 of 2

SUBJECT: JSC C.A.A.C. Meeting

VENUE: Regional Office, Raichak Room

DATE: 30th June 2014 TIME: 9:00 Am -

S/No	NAME	Designation/ Institution	Station	Email Address	Signature
1	TANUJ L. ENAYATI	Asst. Manager	Management	tanuj.enayati@wra.gov.bd	Tanu
2	SARVA KILANAN	C.A.A.C. Member	Management	Sarva.Kilanan@wra.gov.bd	Sarva
3	BABULU LIKABI	C.A.A.C. Member	Management	Babulu.Likabi@wra.gov.bd	Babulu
4	Ahmed Madine Ashik	C.A.A.C. "	MASSR	Tel-0708514862	Madine
5	HANAN REBA	C.A.A.C.	GTulla	0711776544	Hanan
6	AMAN D. QOCBA	C.A.A.C.	Kyrenobor	0727626477	Aman
7	ASSA W. ENAYATI	C.A.A.C.	Management	0722023644	Assa
8	ANDREW A. LUAKO	C.A.A.C.	MARSAB.7	0724883940	Andrew
9	MOHAMMAD N. MUMIN	C.A.A.C.	Management	0724883940	Mohammad
10	NITAIAS TOS	Second	Management	nitaias.tos@wra.gov.bd	Nitaias
11	DELICHA DUKA	Inspector	ISIGLO	deliccha.duka@wra.gov.bd	Deliccha
12	FAHREIS K. KHAMUKU	HES	ISIGLO	fahreis.khamuku@wra.gov.bd	Fahreis
13	D. C. KILANAN	Asst. Manager	Management	d.c.kilanan@wra.gov.bd	D.C. Kilanan
14	N. G. KILANAN	Asst. Manager	Management	n.g.kilanan@wra.gov.bd	N.G. Kilanan
15	SHARIF KILANAN	Asst. Manager	Management	sharif.kilanan@wra.gov.bd	Sharif
16	SHARIF KILANAN	Asst. Manager	Management	sharif.kilanan@wra.gov.bd	Sharif



WATER RESOURCES MANAGEMENT AUTHORITY

TITLE: Meeting Attendance Form		REF. NO: F/18/1
DEPARTMENT: Management Representative		ISSUE NO: 04
ISSUED BY: MR		REV. NO: 3
AUTHORIZED BY: CEO		DATE OF ISSUE: 17 th July, 2012
		PAGE: 2 of 2

14	MURRAY KENNEDY	Label (Name)	MURRAY KENNEDY	murkenn@waterresources.gov.au	
19	MURRAY KENNEDY	Label (Name)	MURRAY KENNEDY	murkenn@waterresources.gov.au	
19	TIMOTHY M. MURPHY	ATM (Name) - ERMCA	MURPHY	timothy.murphy@ermca.com	
20	JAMES M. MURPHY	James M. Murphy	MURPHY	james.murphy@ermca.com	
21	DR O. MURPHY	DR O. MURPHY	MURPHY	o.murphy@ermca.com	
22	TIMOTHY M. MURPHY	Label (Name)	MURPHY	timothy.murphy@ermca.com	

Issued by:

(Management Representative)

Approved by:

(Chief Executive Officer)

Serial No. **827**

Form B



(0.1/1)

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
EFFLUENT DISCHARGE LICENSE

License No. NEMA/WQ/EDL/774

Application Reference No. NEMA/WQ/EDA/317

OFFICIAL USE:

This is to certify that the application for discharge to aquatic environment received from (name of applicant)

AAA Growers Limited - Chestnut Farm

P.O. Box 32211 - 00600, Nairobi
of

(address) to the National Environmental Authority in accordance with the Environmental Management and Co-ordination (Water Quality) Regulations, 2006 for
Waste Water Treatment System

(facility) located at **L.R. No. 11780/4/10, Naro Moru, Nyeri County**

(locality and district) to

discharge effluent to **River**

has been evaluated and a

license is hereby issued for discharge, subject to attached conditions.

This license is valid for a period of

Twelve (12) Months

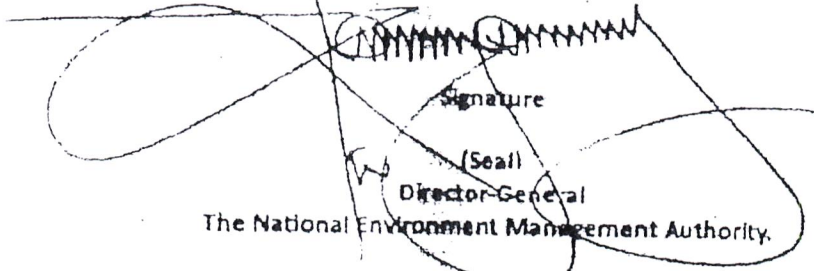
Renewal:

9th June, 2014

Expiry date

6/8/2015

Dated: **6/9/2014**


Signature
(Seal)
Director General
The National Environment Management Authority.

P. T. O.





Application Reference NoPR/146.....

Registration No.....0020855.....

For official use

nema

mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENT IMPACT ASSESSMENT LICENSE

This is to certify that the Project Report/Environmental Impact Assessment Study Report received from
African development solution (Adeso).....(Name of)
of individual/firm) ofP.O. BOX 136-60300, Isiolo.....(Address)
submitted to the National Management Environment Authority (NEMA) in accordance with the Environment
Impact Assessment and Audit Regulations regarding.....

Protection of Ngare Nyting Spring.....

.....(title of project) whose objective is to carry on

Construction of Ngare Nyting Spring to enhance availability of water for domestic use and.....

Irrigation and hence improved nutrition and health of beneficiaries.....

.....(briefly describe purpose) located at

Gambella Village, Ngare mara location, Isiolo North sub County, Isiolo county.....

.....(locality and district) has been

reviewed and a licence is hereby issued for implementation of the project, subject to attached conditions.

Dated this.....17th.....Day of.....September 2015.....

Signature.....

SEAL

Director General

The National Environment Management Authority

CONDITIONS OF LICENSE

1. This license is valid for a period of(time within which the project should commence) from the date hereof.
2. The Director-General shall be notified of any transfer/variation/surrender of this license.

P. T. O.



Decommissioning Conditions.

The proponent shall ensure that a decommissioning plan is submitted to the Authority for approval at least 3 (three) months prior to decommissioning.

- 5.2 The proponent shall ensure that all pollutants and polluted material is contained and adequate mitigation measures provided during this phase.

The above conditions will ensure environmentally sustainable development and must be complied with.



nema

mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

Application Reference No. PR/11,021

Registration No. 0017045

For official use

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT LICENSE

This is to certify that the Project Report/Environmental Impact Assessment Study Report received from
GATITU-MUTHAIGA IRRIGATION SCHEME (Name of
individual/firm) of P.O. BOX 3064, NYAHURURU (Address

submitted to the National Management Environment Authority (NEMA) in accordance with the
Environmental Impact Assessment and Audit Regulations regarding the proposed Gatitu-Muthaiga
Irrigation Scheme

(title of project) whose objective is to carry on
installation of pipe work system that will channel water to various plots
in the Scheme

(briefly describe purpose) located at
Laikipia West District, Laikipia County

(locality and district) has been
viewed and a licence is hereby issued for implementation of the project, subject to attached conditions.

Dated this 25TH Day of JULY, 2013

Signature

(SEAL)

Director General
The National Environment Management Authority

CONDITIONS OF LICENSE

1. This licence is valid for a period of 24 months (time within which the project should commence) from the date hereof.
2. The Director-General shall be notified of any transfer/variation/surrender of this license.

P.T.O.



1.0 General Conditions

- 1.1 This approval is for construction of the proposed Gatitu-Muthaiga Irrigation Scheme located in Rumuruti, Laikipia County, at a cost of KShs.47,054,574.41.
- 1.2 Without prejudice to the other conditions of this license, the proponent shall implement and maintain an environmental management system, organizational structure and allocate resources that are sufficient to achieve compliance with the requirements and conditions of this license.
- 1.3 The Authority shall take appropriate action against the proponent in the event of breach of any of the conditions stated herein or any contravention to the Environmental Management and Coordination Act, 1999 and regulations therein.
- 1.4 This license shall not be taken as statutory defence against charges of environmental degradation or pollution in respect of any manner of degradation/pollution not specified herein.
- 1.5 The proponent shall ensure that records on conditions of licenses/approval and project monitoring and evaluation shall be kept on the project site for inspection by NEMA's Environmental Inspectors.
- 1.6 The proponent shall submit an Environmental Audit report in the first year of occupation/operations/commissioning to confirm the efficacy and adequacy of the Environmental Management Plan.
- 1.7 The proponent shall comply with NEMA's improvement orders throughout the project cycle.
- 1.8 The proponent shall provide the final project accounts (final project costs) on completion of construction phase. This should be done prior to project commissioning/operation/occupation.

2.0 Construction Conditions

- 2.1 The proponent shall put up a project signboard as per the Ministry of Public Works standards indicating the NEMA EIA license number among other information.
- 2.2 The proponent shall ensure that adequate and appropriate sanitary facilities are provided for the workers during construction phase and that proper decommissioning of the facilities is carried out once construction is complete.
- 2.3 The proponent shall adhere to the recommendations of the hydrological Report with emphasis on storage or Staggered Irrigation, Observation of the design flood and obtaining/up-scaling water abstraction permit from Water Resources Management Authority.
- 2.4 The proponent shall implement (where applicable) a Resettlement Action Plan (RAP) as per the relevant legislations and to the satisfaction of Project Affected Persons (PAPs) with regard to relocation, compensation and restoration of livelihoods.
- 2.5 The proponent shall ensure that the irrigation layout plan is approved by the relevant authorities before commencement of works.
- 2.6 The proponent shall ensure that the community is engaged fully in the implementation of the irrigation plan and that full support is rendered before commencement.



Water Resources Management Authority

COMMENTS BY WRUA ON APPLICATION FOR WATER PERMIT

(To be submitted in triplicate)

(Rule 28)

NAME OF WRUA	PESI WRUA		
PARTICULARS OF PERMIT APPLICANT			
1. Full name of applicant(s) (In Block Letters)	LOISE NYAKINYUA PETER N IROGIE	2. WRMA ID Number of Applicant	
3. Box Number	Box 50661-00200	4. Town	NAIROBI
5. Telephonic Contact (Landline)		6. Telephone Contact (Mobile)	0715568266
7. Email Contact			

WATER RESOURCE DETAILS

Name of Body of Water or Aquifer where water is to be diverted, abstracted or stored	
--	--

Type of Water Use	Surface Water				Groundwater		Effluent Discharge	Swamp Drainage
	Diversion	Abstraction	In-stream Works	Storage	Shallow well	Borehole		
Tick Box	/	/	/	/	/	/	/	/

WRUA COMMENTS	ANSWER / COMMENTS
1. Application was discussed by WRUA on (date)	12 th MAY 2015
2. Is proposed application for water use likely to severely impact dry season flows?	NO
3. Is proposed application for water use likely to severely impact water quality?	NO
4. Is proposed application for water use likely to put public at risk?	NO
5. Is proposed application likely to increase the risk of water use conflicts?	NO
6. Is proposed application for water use considered beneficial to the public?	YES
7. Is there an alternative water source for the applicant that should be considered? (provide details)	YES. IN CASE THE BORE HOLE DRIES UP THE APPLICANT CAN ABSTRACT WATER FROM PESI RIVER
8. WRUA Conclusion (Objection, No objection, or Conditional No-Objection, or unable to make a conclusion due to lack of information)	
9. Reasons for Objection or Conditions for No-Objection	N/A

APPLICANT MEMBERSHIP OF WRUA ON 15.5.2014

SIGNATURE BY TWO WRUA OFFICIALS CHARGED FOR APPLICATION PAID 14.05.2015

Name of WRUA Official	RAJIBI GORRENY TACHUKU	JOSEPH N. KARANGA
Position	SECRETARY	VICE CHAIRMAN
Signature of WRUA Official		
Date of Signature	12 th MAY 2015	12 th MAY 2015

UPPER ZONE



Water Resources Management Authority

COMMENTS BY WRUA ON APPLICATION FOR WATER PERMIT

(To be submitted in triplicate)

(Rule 28)

NAME OF WRUA	Isiolo W.R.U.A		
PARTICULARS OF PERMIT APPLICANT			
1. Full name of applicant(s) (In Block Letters)	NO. 101/06	2. WRMA ID Number of Applicant	
3. Box Number	40-101/06	4. Town	TURNA
5. Telephone Contact (Landline)	-	6. Telephone Contact (Mobile)	0720 792368
7. Email Contact			

WATER RESOURCE DETAILS

Name of Body of Water or Aquifer where water is to be diverted, abstracted or stored	Western Meru River
--	--------------------

Type of Water Use	Surface Water				Groundwater		Effluent Discharge	Swamp Drainage
	Diversion	Abstraction	In-stream Works	Storage	Shallow well	Borehole		
Tick Box		☒						

WRUA COMMENTS	ANSWER / COMMENTS
1. Application was discussed by WRUA on (date)	12/10/2015
2. Is proposed application for water use likely to severely impact dry season flows?	NO
3. Is proposed application for water use likely to severely impact water quality?	NO
4. Is proposed application for water use likely to put public at risk?	NO
5. Is proposed application likely to increase the risk of water use conflicts?	NO
6. Is proposed application for water use considered beneficial to the public?	YES
7. Is there an alternative water source for the applicant that should be considered? (provide details)	NO
8. WRUA Conclusion (Objection, No objection, or Conditional No-Objection, or unable to make a conclusion due to lack of information)	NO Objection
9. Reasons for Objection or Conditions for No-Objection	NO other reliable source of water

SIGNATURE BY TWO WRUA OFFICIALS

Name of WRUA Official	Felix
Position	Chairman
Signature of WRUA Official	[Signature]
Date of Signature	13/10/2015

ANNEX IV

DOCUMENTS ON CONSULTATIONS



WATER RESOURCES MANAGEMENT AUTHORITY

ISO 9001:2008 CERTIFIED

PUBLIC NOTICE

In accordance with the Water Act 2002 and the WRMA Rules (2007), the Water Resources Management Authority (WRMA) has received the following applications for water permit. WRMA invites the public to submit written comments and/or objections to any WRMA office with copies to the local Water Resource Users Association (WRUA) within 30 days of the date of this notice. Any submission must state: (i) the reference number of the application to which the comments apply, (ii) the contact of the person making the comments and (iii) grounds for objections, if any. Detailed designs for works can be viewed at the respective WRMA sub-Regional Office between 8am and 5pm, Monday to Friday.

S/ FILE NO.	APPLICANT	WATER BODY	SUB REGION	LR NO.	PERMIT CLASS	INTENDED WATER USE	TOTAL AMOUNT APPLIED FOR (m ³ /d)	NEAREST MARKET CENTRE	VILLAGE	LOCATION	DISTRICT	SWGW EFFLUENT
1. WRMA/2015/NRB/224/481/6/S	SOMAK TRAVEL LIMITED	KATINA STREAM	Nairobi	3724/482	D	Canalization of the stream (70m)	N/A	Lavington	Lavington	Westlands	Nairobi	SW
2. WRMA/2015/WG/480/1053/MS	GAKENA IRRIGATION PROJECT	SOUTH MATHOYA	UPPER TANJA	871	D	IRRIGATION	4800	MUKANGU	GIKANDU	NUOGUINI	MURANGA	SW
3. WRMA/2015/WG/324/1063/MS	IRRA IRRIGATION CANAL USERS SHG	MARAGUA	UPPER TANJA	11942	D	IRRIGATION	10290	MURIRA	MBIRI	GIKUNDU	GIKUNDU	SW
4. WRMA/2015/WG/222/1063/MS	MIGOTIO IRRIGATION CANAL USERS SHG	RONGAI	Kabambe	10938	D	dom & irrigation	350	RONGAI	MAKONGENI	LOMOLO	RONGAI	GW

5	WRMA/20/ KAB/2EG/10355/G	AGRI FLORA KENYA LIMITED	RONGAI	Kabaret	4806	C	dom. & irrigation	50	NIORO	NG'ARA	NIORO	NAKURU	GW
6	WRMA/20/ KAB/2EG/10359/G	KEULWE COMMUNITY BOREHOLE (KAMOSI/CBO)	OLEBANITA SUBUKIA	Kabaret	227	C	dom.	80	MOGOTIO	MOGOTIO	SOMOTWE	MOGOTIO	GW
7	WRMA/20/ KAB/2EG/10361/G	MIGOTIO PLANTATIONS LTD	RONGAI	Kabaret	19898	D	dom. & irrigation	360	RONGAI	MAKONGENI LOMOLO	RONGAI		GW
8	WRMA/20/ KAB/2EG/10362/G	MIGOTIO PLANTATIONS LTD	RONGAI	Kabaret	19898	D	dom. & irrigation	350	RONGAI	MAKONGENI LOMOLO	RONGAI		GW
9	WRMA/20/ KAB/2ED/10366/G	ST. ANDREWS SCHOOL TURU	ELDAMA RAVINE	Kabaret	12619	C	dom. & irrigation	49.2	ELBURGON	ELBURGON	TURU	MOLO	GW
10	WRMA/20/ RUM/2AG/10129	MUTITARA W.P.	MUTITARA	Engare Narok Meighis (Rumurutu)	1586	C	Subsistence irrigation	47261080	Kiamariga	Raya Kiamariga	Mutara	Laikipia West	SW
11	WRMA/20/ RUM/2ED/10128/S	GATITU WATER PROJECT	MUTITARA	Engare Narok Meighis (Rumurutu)	1586	C	Subsistence irrigation	3913192	Kiamariga	Raya Kiamariga	Mutara	Laikipia West	SW
12	WRMA/20/ RUM/2EBE/10282/G	AFRICAN ISLAND CHURCH KENYA	BASEMENT	Upper Ewaso Ng'iro (NANYUKI)	LAIKIPIA/ LNDIRI/13	C	Domestic	20	KIMANJU	KOLA	OLOBORSOIT	LAIKIPIA NORTH	GW

Eng. Phillip J. Olum, HSC
Chief Executive Officer

Accounting for every drop

Accounting for every drop



WATER RESOURCES MANAGEMENT AUTHORITY

ISO 9001:2008 CERTIFIED

2015-01-13

PUBLIC NOTICE

The Water Resources Management Authority (WRMA) has received the following applications for water permits. The applications are subject to public notice and comment. The WRMA will consider the comments and make a decision on the applications. The applications are as follows:

- (i) The water permit for the application to which the comment applies.
- (ii) The water permit for the application to which the comment applies.
- (iii) The water permit for the application to which the comment applies.

The applications for water permits will be considered by the respective WRMA sub-regional office between 8am and 5pm, Monday to Friday.

Sl. No.	Applicant Name	Project Name	Location	Area (ha)	Water Source	Flow (m³/s)	Duration (years)	Remarks
1	WRMA/20/10/001/001	Water supply project	WRMA/20/10/001/001	100	Surface water	100	10	
2	WRMA/20/10/001/002	Water supply project	WRMA/20/10/001/002	100	Surface water	100	10	
3	WRMA/20/10/001/003	Water supply project	WRMA/20/10/001/003	100	Surface water	100	10	
4	WRMA/20/10/001/004	Water supply project	WRMA/20/10/001/004	100	Surface water	100	10	
5	WRMA/20/10/001/005	Water supply project	WRMA/20/10/001/005	100	Surface water	100	10	
6	WRMA/20/10/001/006	Water supply project	WRMA/20/10/001/006	100	Surface water	100	10	
7	WRMA/20/10/001/007	Water supply project	WRMA/20/10/001/007	100	Surface water	100	10	
8	WRMA/20/10/001/008	Water supply project	WRMA/20/10/001/008	100	Surface water	100	10	
9	WRMA/20/10/001/009	Water supply project	WRMA/20/10/001/009	100	Surface water	100	10	
10	WRMA/20/10/001/010	Water supply project	WRMA/20/10/001/010	100	Surface water	100	10	
11	WRMA/20/10/001/011	Water supply project	WRMA/20/10/001/011	100	Surface water	100	10	
12	WRMA/20/10/001/012	Water supply project	WRMA/20/10/001/012	100	Surface water	100	10	
13	WRMA/20/10/001/013	Water supply project	WRMA/20/10/001/013	100	Surface water	100	10	
14	WRMA/20/10/001/014	Water supply project	WRMA/20/10/001/014	100	Surface water	100	10	
15	WRMA/20/10/001/015	Water supply project	WRMA/20/10/001/015	100	Surface water	100	10	
16	WRMA/20/10/001/016	Water supply project	WRMA/20/10/001/016	100	Surface water	100	10	
17	WRMA/20/10/001/017	Water supply project	WRMA/20/10/001/017	100	Surface water	100	10	
18	WRMA/20/10/001/018	Water supply project	WRMA/20/10/001/018	100	Surface water	100	10	
19	WRMA/20/10/001/019	Water supply project	WRMA/20/10/001/019	100	Surface water	100	10	
20	WRMA/20/10/001/020	Water supply project	WRMA/20/10/001/020	100	Surface water	100	10	

71



WATER RESOURCES MANAGEMENT AUTHORITY

ISO 9001:2008 Certified

PUBLIC NOTICE

In accordance with the Water Act 2002 and the WRM Rules (2007), the Water Resources Management Authority (WRMA) has received the following applications for water permits. WRMA invites the public to submit written comments and/or objections to any WRMA office, with copies to the local Water Resource Users Association (WRUA) within 30 days of the date of this notice. Any submission must state: (i) the reference number of the application to which the comments apply; (ii) the contact of the person making the comments and; (iii) grounds for objections, if any. Detailed designs for works can be viewed at the respective WRMA office between 8am and 5pm, Monday to Friday.

S/ NO.	File NO.	APPLICANT	WATER BODY	SUB REGION	L.R. NO.	PERMIT CLASS	INTENDED WATER USE	TOTAL AMOUNT APPLIED FOR (M ³ /D)	NEAREST MARKET CENTRE	VILLAGE	LOCATION	DISTRICT	SW/GW/ EFFLUENT
1	WRMA/40/MRG/4BE/10598/S	ATHI WATER SERVICE BOARD	MARAGUA RIVER	UPPER TANA	1531, 1555	D	PUBLIC	259,200	MIRIRA	KINYONA	KINYONA	KANG'AMBA KINYONA	SW
2	WRMA/40/MRG/4BE/10599/S	ATHI WATER SERVICE BOARD	IRATI RIVER	UPPER TANA	488, 1253	D	PUBLIC	172,800	KANG'AMBA	KINYONA	KANG'AMBA	KANG'AMBA KIGUMU	SW
3	WRMA/40/MRU/4FA/10555/S	KIANTHUMBI MINI HYDRO	KATHITA RIVER	KATHITA MUTONGA	279 & 251	D	HYDRO POWER	108,518.40	KATHERU	KIANTHUMBI	KIRIMA KIANTHI	MERU CENTRAL	SW
4	WRMA/40/MRG/4BE/10597/S	ATHI WATER SERVICE BOARD	GARGIE RIVER	UPPER TANA	932, 1132, 338	D	PUBLIC	86,400	KIGUMO	KIGUMO	KIGUMO	KANG'AMBA KIGUMO	SW
5	WRMA/50/ISL/10-2VG	BLOOMING DALE	TIMAU ACQUFER	MIDDLE EWASO NGIRO (ISIOLO)	EX-LEWA 4	C	DOMESTIC AND COMMERCIAL IRRIGATION	130	MUGUMONE	KISIMA	KISIMA	BOURI	GW
6	WRMA/50/MT/5EB	CHINAWU Y LTD	ODDA	NORTH EWASO NGIRO (MARSABIT)	TRUST LAND	C	DOMESTIC AND ROAD CONSTRUCTION	60	ODDA	ODDA	ODDA	MOALE	GW
7	WRMA/50/NG/5BC/04-5/S	NYAMUGUNA SIRMA WATER PROJECT	NGORO RIVER	UPPER EWASO NGIRO (NANYUKI)	MEMBERS' HOLDINGS	C	DOMESTIC	815	WITARE	MUTHIA/SIRMA	SIRMA	TAMBIA CENTRAL	SW
8	WRMA/50/ME/5BA/1002/G	MEADBRIGHT COMMUNICATIONS FOR REFUGEES	MEKIT ACQUFER	EWASO DADA	TRUST LAND	D	DOMESTIC	360	Dadaab	Dadaab	Dadaab	Garsa	GW
9	WRMA/30/NRB/3AA/15199/S	Modara Trading Limited	Ngang River	Nairobi	209/12227	D	Instream works and diversion of section of Ngang River	N/A	Modara	Modara Way	Modara	Lanzet	SW
10	WRMA/50/NRB/3BA/15211/S	Acres Investments Limited	Katina Stream	Nairobi	5734430	D	Instream work and canalization of section of Katina River	N/A	Lavington	Lavington	Westlands	Westlands	SW

Eng. Philip J. Olum, HSC
Chief Executive Officer

Accounting for every drop!

707/2074



WATER RESOURCES MANAGEMENT AUTHORITY
150 3001:2008 Certified

PUBLIC NOTICE

Any submission must include:

- (i) The character number of the application to which the certificate applies.
- (ii) The number of the person making the application, and
- (iii) Grounds for objections, if any.

Interpanel diagonals for works can be viewed at no respect: WADA (3.4) (no panel of 20 between 6 and 40). Monthly 10 (10.1)

[illegible]

20/11/2020

⑧

70

5/2/2014

Thespians now form association

Body to regulate operations of drama teachers who are not employed by TSC

BY GEORGE ORIDO

A new association for teachers of drama in Kenyan schools, who are not employees of the Teachers Service Commission, has been founded.

The Cultural and Creative Arts Welfare Association (CCAWA) was unveiled last week in response to the ban last year on external help for schools during the Kenya Schools and Colleges Drama Festival.

The ban imposed after the play, *Shackles of Doom*, directed by Cleophas Malalah, now the Kakamega County deputy Speaker, sparked an uproar.

Revealing the Government's decision, the Permanent Secretary in the Ministry of Education at the time, George Godia, said the annual National Drama Festival was an extension of classroom work and scripts should strictly be written by students with the guidance of teachers, not outsiders.

Hudson Wafula, CCAWA's legal officer, said yesterday that the aim of the association is to regulate the work of external consultants, handle welfare issues for members and propagate activities beyond the festival.

Mr Wafula admitted that after last year's *Shackles of Doom* debacle, there was heightened interest in the work of consultants and, for the first time, "all stakeholders responded to our request for consultations more positively".

"After the festival finals in April, we have generally run very broke so we want to have work plans and business projects so that continuous productivity beyond the festival is realised," Wafula said.

INSTILL DISCIPLINE

He added: "We want a professional body in the same way that lawyers and doctors have their own regulatory boards. If a school has a problem with any one of us, we have a way of instilling discipline and self-regulation."

Mr Malalah agreed with Wafula. "It is a good thing if it's about accommodating the trainers outside the Teachers Service Commission," he said.

Chairman of the Kenya Schools and Colleges Drama Festival Executive Committee, Chokera Kahora, welcomed the idea and encouraged members to hone their skills in other areas of teaching, including child psychology.



Teachers acting during a drama workshop in Machakos last week. Schools drama consultants have formed an organisation to regulate their members. (PHOTO: GEORGE ORIDO/STANDARD)

Gangsters kill man, steal Sh60,000

BY CYRUS OMBATI

A man was shot dead in a robbery at Kahawa Wendani, Nairobi, on Monday night.

The man was in his house with his relatives when two robbers railed and robbed them of Sh60,000 and other valuables. They shot him at close range after an argument.

The robbers escaped on foot and no arrest has been made so far. Nairobi County deputy police boss Moses Ombati said yesterday that police are hunting for the criminals.

Elsewhere, a seven-year-old boy died after he fell into a pit latrine in Ngong, Nairobi.

The boy had gone to use the toilet when he slipped and fell into the latrine.

Meanwhile, a matatu was on Sunday night carjacked and several passengers robbed of their valuables and cash along Thika Road, Nairobi.

The matatu was headed for Githurai when the thugs, who had posed as passengers, commandeered it towards Lucky Summer estate and robbed the others.

The gang of six later abandoned the matatu and escaped; police say they are yet to make an arrest.

The incident came days after another bus was carjacked along Thika Road. Two passengers were killed and

PUBLIC NOTICE



WATER RESOURCES MANAGEMENT AUTHORITY
159/001/2010/C-001

PUBLIC NOTICE

In accordance with the Water Act 2002 and the WRMA Regulations 2003, the Water Resources Management Authority (WRMA) has received the following applications for water permit. WRMA invites the public to submit written comments and/or objections to any WRMA office, with copies to the local Water Resource Users Association (WRUA) within 30 days of the date of this notice. Any submission must state: (i) the reference number of the application to which the comments apply; (ii) the contact of the person making the comments; and (iii) grounds for objections, if any. Deadlines for submission of comments shall be as follows: WRMA Sub-region 1: 11th February 2014; WRMA Sub-region 2: 11th February 2014; WRMA Sub-region 3: 11th February 2014; WRMA Sub-region 4: 11th February 2014; WRMA Sub-region 5: 11th February 2014; WRMA Sub-region 6: 11th February 2014; WRMA Sub-region 7: 11th February 2014; WRMA Sub-region 8: 11th February 2014; WRMA Sub-region 9: 11th February 2014; WRMA Sub-region 10: 11th February 2014; WRMA Sub-region 11: 11th February 2014; WRMA Sub-region 12: 11th February 2014; WRMA Sub-region 13: 11th February 2014; WRMA Sub-region 14: 11th February 2014; WRMA Sub-region 15: 11th February 2014; WRMA Sub-region 16: 11th February 2014; WRMA Sub-region 17: 11th February 2014; WRMA Sub-region 18: 11th February 2014; WRMA Sub-region 19: 11th February 2014; WRMA Sub-region 20: 11th February 2014; WRMA Sub-region 21: 11th February 2014; WRMA Sub-region 22: 11th February 2014; WRMA Sub-region 23: 11th February 2014; WRMA Sub-region 24: 11th February 2014; WRMA Sub-region 25: 11th February 2014; WRMA Sub-region 26: 11th February 2014; WRMA Sub-region 27: 11th February 2014; WRMA Sub-region 28: 11th February 2014; WRMA Sub-region 29: 11th February 2014; WRMA Sub-region 30: 11th February 2014; WRMA Sub-region 31: 11th February 2014; WRMA Sub-region 32: 11th February 2014; WRMA Sub-region 33: 11th February 2014; WRMA Sub-region 34: 11th February 2014; WRMA Sub-region 35: 11th February 2014; WRMA Sub-region 36: 11th February 2014; WRMA Sub-region 37: 11th February 2014; WRMA Sub-region 38: 11th February 2014; WRMA Sub-region 39: 11th February 2014; WRMA Sub-region 40: 11th February 2014; WRMA Sub-region 41: 11th February 2014; WRMA Sub-region 42: 11th February 2014; WRMA Sub-region 43: 11th February 2014; WRMA Sub-region 44: 11th February 2014; WRMA Sub-region 45: 11th February 2014; WRMA Sub-region 46: 11th February 2014; WRMA Sub-region 47: 11th February 2014; WRMA Sub-region 48: 11th February 2014; WRMA Sub-region 49: 11th February 2014; WRMA Sub-region 50: 11th February 2014; WRMA Sub-region 51: 11th February 2014; WRMA Sub-region 52: 11th February 2014; WRMA Sub-region 53: 11th February 2014; WRMA Sub-region 54: 11th February 2014; WRMA Sub-region 55: 11th February 2014; WRMA Sub-region 56: 11th February 2014; WRMA Sub-region 57: 11th February 2014; WRMA Sub-region 58: 11th February 2014; WRMA Sub-region 59: 11th February 2014; WRMA Sub-region 60: 11th February 2014; WRMA Sub-region 61: 11th February 2014; WRMA Sub-region 62: 11th February 2014; WRMA Sub-region 63: 11th February 2014; WRMA Sub-region 64: 11th February 2014; WRMA Sub-region 65: 11th February 2014; WRMA Sub-region 66: 11th February 2014; WRMA Sub-region 67: 11th February 2014; WRMA Sub-region 68: 11th February 2014; WRMA Sub-region 69: 11th February 2014; WRMA Sub-region 70: 11th February 2014; WRMA Sub-region 71: 11th February 2014; WRMA Sub-region 72: 11th February 2014; WRMA Sub-region 73: 11th February 2014; WRMA Sub-region 74: 11th February 2014; WRMA Sub-region 75: 11th February 2014; WRMA Sub-region 76: 11th February 2014; WRMA Sub-region 77: 11th February 2014; WRMA Sub-region 78: 11th February 2014; WRMA Sub-region 79: 11th February 2014; WRMA Sub-region 80: 11th February 2014; WRMA Sub-region 81: 11th February 2014; WRMA Sub-region 82: 11th February 2014; WRMA Sub-region 83: 11th February 2014; WRMA Sub-region 84: 11th February 2014; WRMA Sub-region 85: 11th February 2014; WRMA Sub-region 86: 11th February 2014; WRMA Sub-region 87: 11th February 2014; WRMA Sub-region 88: 11th February 2014; WRMA Sub-region 89: 11th February 2014; WRMA Sub-region 90: 11th February 2014; WRMA Sub-region 91: 11th February 2014; WRMA Sub-region 92: 11th February 2014; WRMA Sub-region 93: 11th February 2014; WRMA Sub-region 94: 11th February 2014; WRMA Sub-region 95: 11th February 2014; WRMA Sub-region 96: 11th February 2014; WRMA Sub-region 97: 11th February 2014; WRMA Sub-region 98: 11th February 2014; WRMA Sub-region 99: 11th February 2014; WRMA Sub-region 100: 11th February 2014; WRMA Sub-region 101: 11th February 2014; WRMA Sub-region 102: 11th February 2014; WRMA Sub-region 103: 11th February 2014; WRMA Sub-region 104: 11th February 2014; WRMA Sub-region 105: 11th February 2014; WRMA Sub-region 106: 11th February 2014; WRMA Sub-region 107: 11th February 2014; WRMA Sub-region 108: 11th February 2014; WRMA Sub-region 109: 11th February 2014; WRMA Sub-region 110: 11th February 2014; WRMA Sub-region 111: 11th February 2014; WRMA Sub-region 112: 11th February 2014; WRMA Sub-region 113: 11th February 2014; WRMA Sub-region 114: 11th February 2014; WRMA Sub-region 115: 11th February 2014; WRMA Sub-region 116: 11th February 2014; WRMA Sub-region 117: 11th February 2014; WRMA Sub-region 118: 11th February 2014; WRMA Sub-region 119: 11th February 2014; WRMA Sub-region 120: 11th February 2014; WRMA Sub-region 121: 11th February 2014; WRMA Sub-region 122: 11th February 2014; WRMA Sub-region 123: 11th February 2014; WRMA Sub-region 124: 11th February 2014; WRMA Sub-region 125: 11th February 2014; WRMA Sub-region 126: 11th February 2014; WRMA Sub-region 127: 11th February 2014; WRMA Sub-region 128: 11th February 2014; WRMA Sub-region 129: 11th February 2014; WRMA Sub-region 130: 11th February 2014; WRMA Sub-region 131: 11th February 2014; WRMA Sub-region 132: 11th February 2014; WRMA Sub-region 133: 11th February 2014; WRMA Sub-region 134: 11th February 2014; WRMA Sub-region 135: 11th February 2014; WRMA Sub-region 136: 11th February 2014; WRMA Sub-region 137: 11th February 2014; WRMA Sub-region 138: 11th February 2014; WRMA Sub-region 139: 11th February 2014; WRMA Sub-region 140: 11th February 2014; WRMA Sub-region 141: 11th February 2014; WRMA Sub-region 142: 11th February 2014; WRMA Sub-region 143: 11th February 2014; WRMA Sub-region 144: 11th February 2014; WRMA Sub-region 145: 11th February 2014; WRMA Sub-region 146: 11th February 2014; WRMA Sub-region 147: 11th February 2014; WRMA Sub-region 148: 11th February 2014; WRMA Sub-region 149: 11th February 2014; WRMA Sub-region 150: 11th February 2014; WRMA Sub-region 151: 11th February 2014; WRMA Sub-region 152: 11th February 2014; WRMA Sub-region 153: 11th February 2014; WRMA Sub-region 154: 11th February 2014; WRMA Sub-region 155: 11th February 2014; WRMA Sub-region 156: 11th February 2014; WRMA Sub-region 157: 11th February 2014; WRMA Sub-region 158: 11th February 2014; WRMA Sub-region 159: 11th February 2014; WRMA Sub-region 160: 11th February 2014; WRMA Sub-region 161: 11th February 2014; WRMA Sub-region 162: 11th February 2014; WRMA Sub-region 163: 11th February 2014; WRMA Sub-region 164: 11th February 2014; WRMA Sub-region 165: 11th February 2014; WRMA Sub-region 166: 11th February 2014; WRMA Sub-region 167: 11th February 2014; WRMA Sub-region 168: 11th February 2014; WRMA Sub-region 169: 11th February 2014; WRMA Sub-region 170: 11th February 2014; WRMA Sub-region 171: 11th February 2014; WRMA Sub-region 172: 11th February 2014; WRMA Sub-region 173: 11th February 2014; WRMA Sub-region 174: 11th February 2014; WRMA Sub-region 175: 11th February 2014; WRMA Sub-region 176: 11th February 2014; WRMA Sub-region 177: 11th February 2014; WRMA Sub-region 178: 11th February 2014; WRMA Sub-region 179: 11th February 2014; WRMA Sub-region 180: 11th February 2014; WRMA Sub-region 181: 11th February 2014; WRMA Sub-region 182: 11th February 2014; WRMA Sub-region 183: 11th February 2014; WRMA Sub-region 184: 11th February 2014; WRMA Sub-region 185: 11th February 2014; WRMA Sub-region 186: 11th February 2014; WRMA Sub-region 187: 11th February 2014; WRMA Sub-region 188: 11th February 2014; WRMA Sub-region 189: 11th February 2014; WRMA Sub-region 190: 11th February 2014; WRMA Sub-region 191: 11th February 2014; WRMA Sub-region 192: 11th February 2014; WRMA Sub-region 193: 11th February 2014; WRMA Sub-region 194: 11th February 2014; WRMA Sub-region 195: 11th February 2014; WRMA Sub-region 196: 11th February 2014; WRMA Sub-region 197: 11th February 2014; WRMA Sub-region 198: 11th February 2014; WRMA Sub-region 199: 11th February 2014; WRMA Sub-region 200: 11th February 2014; WRMA Sub-region 201: 11th February 2014; WRMA Sub-region 202: 11th February 2014; WRMA Sub-region 203: 11th February 2014; WRMA Sub-region 204: 11th February 2014; WRMA Sub-region 205: 11th February 2014; WRMA Sub-region 206: 11th February 2014; WRMA Sub-region 207: 11th February 2014; WRMA Sub-region 208: 11th February 2014; WRMA Sub-region 209: 11th February 2014; WRMA Sub-region 210: 11th February 2014; WRMA Sub-region 211: 11th February 2014; WRMA Sub-region 212: 11th February 2014; WRMA Sub-region 213: 11th February 2014; WRMA Sub-region 214: 11th February 2014; WRMA Sub-region 215: 11th February 2014; WRMA Sub-region 216: 11th February 2014; WRMA Sub-region 217: 11th February 2014; WRMA Sub-region 218: 11th February 2014; WRMA Sub-region 219: 11th February 2014; WRMA Sub-region 220: 11th February 2014; WRMA Sub-region 221: 11th February 2014; WRMA Sub-region 222: 11th February 2014; WRMA Sub-region 223: 11th February 2014; WRMA Sub-region 224: 11th February 2014; WRMA Sub-region 225: 11th February 2014; WRMA Sub-region 226: 11th February 2014; WRMA Sub-region 227: 11th February 2014; WRMA Sub-region 228: 11th February 2014; WRMA Sub-region 229: 11th February 2014; WRMA Sub-region 230: 11th February 2014; WRMA Sub-region 231: 11th February 2014; WRMA Sub-region 232: 11th February 2014; WRMA Sub-region 233: 11th February 2014; WRMA Sub-region 234: 11th February 2014; WRMA Sub-region 235: 11th February 2014; WRMA Sub-region 236: 11th February 2014; WRMA Sub-region 237: 11th February 2014; WRMA Sub-region 238: 11th February 2014; WRMA Sub-region 239: 11th February 2014; WRMA Sub-region 240: 11th February 2014; WRMA Sub-region 241: 11th February 2014; WRMA Sub-region 242: 11th February 2014; WRMA Sub-region 243: 11th February 2014; WRMA Sub-region 244: 11th February 2014; WRMA Sub-region 245: 11th February 2014; WRMA Sub-region 246: 11th February 2014; WRMA Sub-region 247: 11th February 2014; WRMA Sub-region 248: 11th February 2014; WRMA Sub-region 249: 11th February 2014; WRMA Sub-region 250: 11th February 2014; WRMA Sub-region 251: 11th February 2014; WRMA Sub-region 252: 11th February 2014; WRMA Sub-region 253: 11th February 2014; WRMA Sub-region 254: 11th February 2014; WRMA Sub-region 255: 11th February 2014; WRMA Sub-region 256: 11th February 2014; WRMA Sub-region 257: 11th February 2014; WRMA Sub-region 258: 11th February 2014; WRMA Sub-region 259: 11th February 2014; WRMA Sub-region 260: 11th February 2014; WRMA Sub-region 261: 11th February 2014; WRMA Sub-region 262: 11th February 2014; WRMA Sub-region 263: 11th February 2014; WRMA Sub-region 264: 11th February 2014; WRMA Sub-region 265: 11th February 2014; WRMA Sub-region 266: 11th February 2014; WRMA Sub-region 267: 11th February 2014; WRMA Sub-region 268: 11th February 2014; WRMA Sub-region 269: 11th February 2014; WRMA Sub-region 270: 11th February 2014; WRMA Sub-region 271: 11th February 2014; WRMA Sub-region 272: 11th February 2014; WRMA Sub-region 273: 11th February 2014; WRMA Sub-region 274: 11th February 2014; WRMA Sub-region 275: 11th February 2014; WRMA Sub-region 276: 11th February 2014; WRMA Sub-region 277: 11th February 2014; WRMA Sub-region 278: 11th February 2014; WRMA Sub-region 279: 11th February 2014; WRMA Sub-region 280: 11th February 2014; WRMA Sub-region 281: 11th February 2014; WRMA Sub-region 282: 11th February 2014; WRMA Sub-region 283: 11th February 2014; WRMA Sub-region 284: 11th February 2014; WRMA Sub-region 285: 11th February 2014; WRMA Sub-region 286: 11th February 2014; WRMA Sub-region 287: 11th February 2014; WRMA Sub-region 288: 11th February 2014; WRMA Sub-region 289: 11th February 2014; WRMA Sub-region 290: 11th February 2014; WRMA Sub-region 291: 11th February 2014; WRMA Sub-region 292: 11th February 2014; WRMA Sub-region 293: 11th February 2014; WRMA Sub-region 294: 11th February 2014; WRMA Sub-region 295: 11th February 2014; WRMA Sub-region 296: 11th February 2014; WRMA Sub-region 297: 11th February 2014; WRMA Sub-region 298: 11th February 2014; WRMA Sub-region 299: 11th February 2014; WRMA Sub-region 300: 11th February 2014; WRMA Sub-region 301: 11th February 2014; WRMA Sub-region 302: 11th February 2014; WRMA Sub-region 303: 11th February 2014; WRMA Sub-region 304: 11th February 2014; WRMA Sub-region 305: 11th February 2014; WRMA Sub-region 306: 11th February 2014; WRMA Sub-region 307: 11th February 2014; WRMA Sub-region 308: 11th February 2014; WRMA Sub-region 309: 11th February 2014; WRMA Sub-region 310: 11th February 2014; WRMA Sub-region 311: 11th February 2014; WRMA Sub-region 312: 11th February 2014; WRMA Sub-region 313: 11th February 2014; WRMA Sub-region 314: 11th February 2014; WRMA Sub-region 315: 11th February 2014; WRMA Sub-region 316: 11th February 2014; WRMA Sub-region 317: 11th February 2014; WRMA Sub-region 318: 11th February 2014; WRMA Sub-region 319: 11th February 2014; WRMA Sub-region 320: 11th February 2014; WRMA Sub-region 321: 11th February 2014; WRMA Sub-region 322: 11th February 2014; WRMA Sub-region 323: 11th February 2014; WRMA Sub-region 324: 11th February 2014; WRMA Sub-region 325: 11th February 2014; WRMA Sub-region 326: 11th February 2014; WRMA Sub-region 327: 11th February 2014; WRMA Sub-region 328: 11th February 2014; WRMA Sub-region 329: 11th February 2014; WRMA Sub-region 330: 11th February 2014; WRMA Sub-region 331: 11th February 2014; WRMA Sub-region 332: 11th February 2014; WRMA Sub-region 333: 11th February 2014; WRMA Sub-region 334: 11th February 2014; WRMA Sub-region 335: 11th February 2014; WRMA Sub-region 336: 11th February 2014; WRMA Sub-region 337: 11th February 2014; WRMA Sub-region 338: 11th February 2014; WRMA Sub-region 339: 11th February 2014; WRMA Sub-region 340: 11th February 2014; WRMA Sub-region 341: 11th February 2014; WRMA Sub-region 342: 11th February 2014; WRMA Sub-region 343: 11th February 2014; WRMA Sub-region 344: 11th February 2014; WRMA Sub-region 345: 11th February 2014; WRMA Sub-region 346: 11th February 2014; WRMA Sub-region 347: 11th February 2014; WRMA Sub-region 348: 11th February 2014; WRMA Sub-region 349: 11th February 2014; WRMA Sub-region 350: 11th February 2014; WRMA Sub-region 351: 11th February 2014; WRMA Sub-region 352: 11th February 2014; WRMA Sub-region 353: 11th February 2014; WRMA Sub-region 354: 11th February 2014; WRMA Sub-region 355: 11th February 2014; WRMA Sub-region 356: 11th February 2014; WRMA Sub-region 357: 11th February 2014; WRMA Sub-region 358: 11th February 2014; WRMA Sub-region 359: 11th February 2014; WRMA Sub-region 360: 11th February 2014; WRMA Sub-region 361: 11th February 2014; WRMA Sub-region 362: 11th February 2014; WRMA Sub-region 363: 11th February 2014; WRMA Sub-region 364: 11th February 2014; WRMA Sub-region 365: 11th February 2014; WRMA Sub-region 366: 11th February 2014; WRMA Sub-region 367: 11th February 2014; WRMA Sub-region 368: 11th February 2014; WRMA Sub-region 369: 11th February 2014; WRMA Sub-region 370: 11th February 2014; WRMA Sub-region 371: 11th February 2014; WRMA Sub-region 372: 11th February 2014; WRMA Sub-region 373: 11th February 2014; WRMA Sub-region 374: 11th February 2014; WRMA Sub-region 375: 11th February 2014; WRMA Sub-region 376: 11th February 2014; WRMA Sub-region 377: 11th February 2014; WRMA Sub-region 378: 11th February 2014; WRMA Sub-region 379: 11th February 2014; WRMA Sub-region 380: 11th February 2014; WRMA Sub-region 381: 11th February 2014; WRMA Sub-region 382: 11th February 2014; WRMA Sub-region 383: 11th February 2014; WRMA Sub-region 384: 11th February 2014; WRMA Sub-region 385: 11th February 2014; WRMA Sub-region 386: 11th February 2014; WRMA Sub-region 387: 11th February 2014; WRMA Sub-region 388: 11th February 2014; WRMA Sub-region 389: 11th February 2014; WRMA Sub-region 390: 11th February 2014; WRMA Sub-region 391: 11th February 2014; WRMA Sub-region 392: 11th February 2014; WRMA Sub-region 393: 11th February 2014; WRMA Sub-region 394: 11th February 2014; WRMA Sub-region 395: 11th February 2014; WRMA Sub-region 396: 11th February 2014; WRMA Sub-region 397: 11th February 2014; WRMA Sub-region 398: 11th February 2014; WRMA Sub-region 399: 11th February 2014; WRMA Sub-region 400: 11th February 2014; WRMA Sub-region 401: 11th February 2014; WRMA Sub-region 402: 11th February 2014; WRMA Sub-region 403: 11th February 2014; WRMA Sub-region 404: 11th February 2014; WRMA Sub-region 405: 11th February 2014; WRMA Sub-region 406: 11th February 2014; WRMA Sub-region 407: 11th February 2014; WRMA Sub-region 408: 11th February 2014; WRMA Sub-region 409: 11th February 2014; WRMA Sub-region 410: 11th February 2014; WRMA Sub-region 411: 11th February 2014; WRMA Sub-region 412: 11th February 2014; WRMA Sub-region 413: 11th February 2014; WRMA Sub-region 414: 11th February 2014; WRMA Sub-region 415: 11th February 2014; WRMA Sub-region 416: 11th February 2014; WRMA Sub-region 417: 11th February 2014; WRMA Sub-region 418: 11th February 2014; WRMA Sub-region 419: 11th February 2014; WRMA Sub-region 420: 11th February 2014; WRMA Sub-region 421: 11th February 2014; WRMA Sub-region 422: 11th February 2014; WRMA Sub-region 423: 11th February 2014; WRMA Sub-region 424: 11th February 2014; WRMA Sub-region 425: 11th February 2014; WRMA Sub-region 426: 11th February 2014; WRMA Sub-region 427: 11th February 2014; WRMA Sub-region 428: 11th February 2014; WRMA Sub-region 429: 11th February 2014; WRMA Sub-region 430: 11th February 2014; WRMA Sub-region 431: 11th February 2014; WRMA Sub-region 432: 11th February 2014; WRMA Sub-region 433: 11th February 2014; WRMA Sub-region 434: 11th February 2014; WRMA Sub-region 435: 11th February 2014; WRMA Sub-region 436: 11th February 2014; WRMA Sub-region 437: 11th February 2014; WRMA Sub-region 438: 11th February 2014; WRMA Sub-region 439: 11th February 2014; WRMA Sub-region 440: 11th February 2014; WRMA Sub-region 441: 11th February 2014; WRMA Sub-region 442: 11th February 2014; WRMA Sub-region 443: 11th February 2014; WRMA Sub-region 444: 11th February 2014; WRMA Sub-region 445: 11th February 2014; WRMA Sub-region 446: 11th February 2014; WRMA Sub-region 447: 11th February 2014; WRMA Sub-region 448: 11th February 2014; WRMA Sub-region 449: 11th February 2014; WRMA Sub-region 450: 11th February 2014; WRMA Sub-region 451: 11th February 2014; WRMA Sub-region 452: 11th February 2014; WRMA Sub-region 453: 11th February 2014; WRMA Sub-region 454: 11th February 2014; WRMA Sub-region 455: 11th February 2014; WRMA Sub-region 456: 11th February 2014; WRMA Sub-region 457: 11th February 2014; WRMA Sub-region 458: 11th February 2014; WRMA Sub-region 459: 11th February 2014; WRMA Sub-region 460: 11th February 2014; WRMA Sub-region 461: 11th February 2014; WRMA Sub-region 462: 11th February 2014; WRMA Sub-region 463: 11th February 2014; WRMA Sub-region 464: 11th February 2014; WRMA Sub-region 465: 11th February 2014; WRMA Sub-region 466: 11th February 2014; WRMA Sub-region 467: 11th February 2014; WRMA Sub-region 468: 11th February 2014; WRMA Sub-region 469: 11th February 2014; WRMA Sub-region 470: 11th February 2014; WRMA Sub-region 471: 11th February 2014; WRMA Sub-region 472: 11th February 2014; WRMA Sub-region 473: 11th February 2014; WRMA Sub-region 474: 11th February 2014; WRMA Sub-region 475: 11th February 2014; WRMA Sub-region 476: 11th February 2014; WRMA Sub-region 477: 11th February 2014; WRMA Sub-region 478: 11th February 2014; WRMA Sub-region 479: 11th February 2014; WRMA Sub-region 480: 11th February 2014; WRMA Sub-region 481: 11th February 2014; WRMA Sub-region 482: 11th February 2014; WRMA Sub-region 483: 11th February 2014; WRMA Sub-region 484: 11th February 2014; WRMA Sub-region 485: 11th February 2014; WRMA Sub-region 486: 11th February 2014; WRMA Sub-region 487: 11th February 2014; WRMA Sub-region 488: 11th February 2014; WRMA Sub-region 489: 11th February 2014; WRMA Sub-region 490: 11th February 2014; WRMA Sub-region 491: 11th February 2014; WRMA Sub-region 492: 11th February 2014; WRMA Sub-region 493: 11th February 2014; WRMA Sub-region 494: 11th February 2014; WRMA Sub-region 495: 11th February 2014; WRMA Sub-region 496: 11th February 2014; WRMA Sub-region 497: 11th February 2014; WRMA Sub-region 498: 11th February 2014; WRMA Sub-region 499: 11th February 2014; WRMA Sub-region 500: 11th February 2014; WRMA Sub-region 501: 11th February 2014; WRMA Sub-region 502: 11th February 2014; WRMA Sub-region 503: 11th February 2014; WRMA Sub-region 504: 11th February 2014; WRMA Sub-region 505: 11th February 2014; WRMA Sub-region 506: 11th February 2014; WRMA Sub-region 507: 11th February 2014; WRMA Sub-region 508: 11th February 2014; WRMA Sub-region 509: 11th February 2014; WRMA Sub-region 510: 11th February 2014; WRMA Sub-region 511: 11th February 2014; WRMA Sub-region 512: 11th February 2014; WRMA Sub-region 513: 11th February 2014; WRMA Sub-region 514: 11th February 2014; WRMA Sub-region 515: 11th February 2014; WRMA

[illegible][illegible]

Thursday, August 15, 2013 / The Standard

ADVERTISER'S ANNOUNCEMENT / Page 5



WATER RESOURCE MANAGEMENT AUTHORITY

PUBLIC NOTICE

In accordance with the Water Act 2002 and the Water (Reservoirs Management) Authority (WRMA) Act 2002, the following public notice is hereby published in order to submit written comments and/or objections to the WRMA office, with copies to the local Water Resource Users Association (WRU) within 30 days of the date of this notice. Any submission must state: (i) the reference number of the application to which the comments and/or objections relate; (ii) the grounds for objections, if any; (iii) detailed details for works to be viewed at the respective WRMA and WRU offices between 8 am and 5 pm, Monday to Friday.

S / No	File No	Applicant	Water body	Sub-region	Land No.	Class	Intended water use	Total irrigated area (ha)	Project name	Village	Location	District
1	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
2	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
3	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
4	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
5	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
6	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
7	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
8	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
9	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
10	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
11	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
12	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
13	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
14	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
15	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
16	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
17	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
18	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW
19	WRMA/11/11/2012/1008/5	Mogoro - Mogoro Water Self Help Group	Mogoro	Stage	Block / Mogoro 30 E 501	10	Food crop	100	Mogoro	Mogoro	Konira	SW

Teachers now form association

to regulate
actions of drama
teachers who are not
regulated by TSC

BY GEORGE ORIDO

A new association for teachers of drama in Kenyan schools, who are not regulated by the Teachers Service Commission, has been formed.

The Cultural and Creative Arts Association (CCA) was formed last week in response to the last year on external help for drama during the Kenya Schools and Colleges Drama Festival.

The ban was imposed after the play, *Shackles of Doom*, directed by Geoffrey Mwalala, now the Kakamega County deputy Speaker, sparked an uproar.

The Government's decision to ban the play, said the Minister for Education at the time, George Odhia, said the annual National Drama Festival was an extension of classroom work and scripts should strictly be written by students with the guidance of teachers, not outsiders.

Hudson Wafula, CCA's legal officer, said yesterday that the aim of the association is to regulate the work of external consultants, handle welfare issues for members and propagate activities beyond the festival.

Mr Wafula admitted that after last year's *Shackles of Doom* debacle, there was heightened interest in the work of consultants and, for the first time, "all stakeholders responded to our request for consultations more positively".

"After the festival finals in April, we have generally run very broke so we want to have work plans and business projects so that continuous productivity beyond the festival is realised," Wafula said.

INSTALL DISCIPLINE

He added: "We want a professional body in the same way that lawyers and doctors have their own regulatory boards. If a school has a problem with any one of us, we have a way of instilling discipline and self-regulation."

Mr Mwalala agreed with Wafula. "It is a good thing if it's about accommodating the trainers outside the Teachers Service Commission," he said.

Chairman of the Kenya Schools and Colleges Drama Festival Executive Committee, Chokera Kahora, welcomed the idea and encouraged members to hone their skills in other areas of teaching, including child psychology.



Teachers acting during a drama workshop in Machakos last week. Schools drama consultants have formed an organisation to regulate their members. (PHOTO: GEORGE ORIDO/STANDARD)

Gangsters kill man, steal Sh60,000

BY CYRUS OMBATI

A man was shot dead in a robbery at Kahawa Wendani, Nairobi, on Monday night.

The man was in his house with his relatives when two robbers raided and robbed them of Sh60,000 and other valuables. They shot him at close range after an argument.

The robbers escaped on foot and no arrest has been made so far. Nairobi County deputy police boss Moses Ombati said yesterday that police are hunting for the criminals.

Elsewhere, a seven-year-old boy died after he fell into a pit latrine in Ngong, Nairobi.

The boy had gone to use the toilet when he slipped and fell into the latrine.

Meanwhile, a matatu was on Sunday night carjacked and several passengers robbed of their valuables and cash along Thika Road, Nairobi.

The matatu was headed for Githurai when the thugs, who had posed as passengers, commandeered it towards Lucky Summer estate and robbed the others.

The gang of six later abandoned the matatu and escaped; police say they are yet to make an arrest.

The incident came days after another bus was carjacked along Thika Road. Two passengers were killed and 20 others wounded.



WATER RESOURCES MANAGEMENT AUTHORITY

ISO 9001:2008 Certified

PUBLIC NOTICE

In accordance with the Water Act 2002 and the WRM Rules (2007) the Water Resources Management Authority (WRMA) has received the following applications for water permit. WRMA invites the public to submit written comments and/or objections to any WRMA office, with copies to the local Water Resource Users Association (WRUA) within 30 days of the date of this notice. Any submission must state: (i) the reference number of the application to which the comments apply, (ii) the contact of the person making the comments and (iii) grounds for objections, if any. Detailed designs for works can be viewed at the respective WRMA Sub Regional office between 8 am and 5 pm, Monday to Friday.

No	File No.	Applicant	Water body	Sub-Region	L/R No.	Category	Intended Use	Total Amount Applied for (m³/day)	Nearest market centre	Village	Location	District	SW, GW, EFFLUENT
1	WRMA/11/ELD/1FE/10222/S	KAPTIS HYDROPOWER LIMITED	YALA	ELDORET	22 NO. LAND HOLDINGS	D	HYDROPOWER GENERATION	208,750	SHIRU	KAPTIS	SHIRU	HAMISI	SW
2	WRMA/20/NSA/2GC/10330/S	NORTH KINANGOP CATHOLIC HOSPITAL	KABARISKI RIVER	NAIVASHA	NYANDARUA KITHI 858	C	DOMESTIC	300	KINJA	NDINDA	KINJA	NYANDARUA SOUTH	SW
3	WRMA/20/NSA/2FC/10585/C	SARJIT SINGH RAI	ANGUS RIVER	NAIVASHA	10386/29	C	DOMESTIC & OTHERS	40	KIMAMB	DIRANI	KIMAKIA	NIJORO	GW
4	WRMA/20/NSA/2GD/10603/G	BIGOT FLOWERS LTD	LAKE NAIVASHA	NAIVASHA	5212/2	C	COMMERCIAL IRRIGATION	999	GITUAMBA	GITUAMBA	NAIVASHA EAST	NAIVASHA	GW
5	WRMA/20/KAB/2EB/10215/G	SUBUKI FLOWERS	OLENTA / SUBUKIA	KABARNET	SUBUKIA / SUBUKIA 1/23 (TETU)	D	COMMERCIAL IRRIGATION	100	SUBUKIA	TETU	SUBUKIA	NAKURU	GW
6	WRMA/20/NSA/2GD/10453/G	NORTH KINANGOP CATHOLIC HOSPITAL	KINANGOP RIVER	NAIVASHA	NAIVASHA / MARAIGUSHU 19/10/15	D	DOMESTIC	300	LONGONOT	KENDONG	LONGONOT	NAIVASHA	GW

Issued by:
Chief Executive Officer,
Water Resources Management Authority
NHIF Building, 9th Floor Wing B
P.O. Box 45250-00100 NAIROBI - KENYA
Tel 254 20 2729048/9, 254 20 2729229, Fax +254 20 2729935

Accounting for every drop

Handwritten notes and signatures at the bottom of the page, including a date "19/12/2014" and a circled number "3".



WATER RESOURCES MANAGEMENT AUTHORITY

PUBLIC NOTICE

In accordance with the Water Act 2002 and the WRM Rules (2007) the Water Resources Management Authority (WRMA) has received the following applications for water permits. WRMA invites the public to submit written comments and/or objections to any WRMA office with copies to the local Water Resources Users Association (WRUA) within 30 days of the date of this notice. Any submission must state (i) the reference number of the application to which the comments apply, (ii) the details of the person making the comments and (iii) grounds for objections. Draft Detailed design for works can be viewed at the respective WRMA Sub-Regional office between 9.00 am and 4.00 pm, Monday to Friday.

Sl. No	File No.	Applicant	Project/Activity	Location	Category	Water Use	Volume/Rate	Period	Comments	Remarks	Area	County	Sub-County	Ward	Sub-Ward	Water Right
1	WRMA/20/18/14/14/S	Machakos Irrigation District	Water Project (CBO)	Kithika/Machakos	Production	Irrigation	72,880	1/1/14	Gangara	Gangara	Machakos	North	SW			
2	WRMA/20/18/14/14/S	McKenya Community Based Organisation	Water Project	Kithika/Machakos	Production	Hydro Power	85,400	1/1/14	Gangara	Gangara	Machakos	North	SW			
3	WRMA/20/18/14/14/S	Kithika Water Project	Water Project	Kithika/Machakos	Production	Hydro Power	8,540	1/1/14	Makengi	Makengi	Machakos	North	SW			
4	WRMA/20/18/14/14/S	National Irrigation Board (NIB)	Water Project	Lower Tana	Production	Domestic & Irrigation	181,764,041	1/1/14	Mudoy	Mudoy	Machakos	North	SW			
5	WRMA/20/18/14/14/S	Water Project	Water Project	Kithika/Machakos	Production	Domestic & Irrigation	10,568	1/1/14	Karuri	Karuri	Machakos	North	SW			
6	WRMA/20/18/14/14/S	Water Project	Water Project	Kithika/Machakos	Production	Domestic & Irrigation	14,428,500	1/1/14	Mwinyi/Karuri	Mwinyi/Karuri	Machakos	North	SW			
7	WRMA/20/18/14/14/S	ENTASAKA LIMITED	COMMUNITY BASED ORGANIZATION	Karuri	Production	DOMESTIC AND LIVESTOCK WATER USE	12,550	1/1/14	LOITA	MALEIA	ENTASAKA	NAROK	SW			
8	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	DOMESTIC AND LIVESTOCK AND IRRIGATION	574	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
9	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	DOMESTIC	22	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
10	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	96	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
11	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	96	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
12	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	DOMESTIC	80	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
13	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	DOMESTIC AND INDUSTRIAL	50	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
14	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	DOMESTIC IRRIGATION AND LIVESTOCK	35	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
15	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	LIVESTOCK AND DOMESTIC	402	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
16	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	200	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
17	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	200	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
18	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION AND DOMESTIC	25,944,755	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
19	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	7,400	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
20	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	216	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
21	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	2,400	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
22	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	3,600	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
23	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	3,600	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			
24	WRMA/20/18/14/14/S	KAB/20/10249/S	KAB/20/10249/S	Kabaret	Production	IRRIGATION	3,600	1/1/14	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	KAB/20/10249/S	SW			

25	WRMA/20/ NSV/230/10520/G	MARULA ESTATES LTD	LAKE NAVASHA	NAVASHA	11367	D	IRRIGATION	3600	NAVASHA	SERENUIK	TARAM BETA	NAVASHA	GW
26	WRMA/20/ NSV/230/10521/G	MARULA ESTATES LTD	LAKE NAVASHA	NAVASHA	11367	D	IRRIGATION	3600	NAVASHA	MBHEVU	TARAM BETA	NAVASHA	GW
27	WRMA/20/ NAR/230/10275/S	OLORTO WATER PROJECT	SINDIGA RIVER	NAROK	MEMBERS HOLDINGS	D	IRRIGATION	3758	LOWER MELLI	MOTONY	OLORTO	MAROT NORTH	GW
28	WRMA/20/ NSA/208/10076/S	RITUALI WATER SERVICE BOARD (OLKALOU WATER COMPANY)	MALEWA	NAVASHA	AAERDARE FOREST	D	PUBLIC	2500	OLKALOU	OLKALOU	OLKALOU	NYAM DARHA CENTRAL	SW
29	WRMA/20/ RRE/230/10163/S	DELAUNTE KENYA LIMITED	AIHI	KAMBU	12203	D	COMMERCIAL IRRIGATION	650	GATUANYAGA	GATUANYAGA	NGOLEA	THIKA	SW
30	WRMA/20/ LUM/230/10163/S	TURIRE CHALIA HARMBEHOCA TION SCHEME	LUMI	LOITOKITOK	MEMBERS HOLDINGS	D	COMMERCIAL IRRIGATION	8,763,636	CHALIA	CHALIA	CHALIA	TAVEIA	SW
31	WRMA/20/ LUM/230/10163/S	CHALIA IRRIGATION SCHEME	LUMI	LOITOKITOK	MEMBERS HOLDINGS	D	DOMESTIC AND COMMERCIAL IRRIGATION	7,178 AND 100	LUDUWAI	KIMAJI	KIMAJI	TAVEIA	SW
32	WRMA/20/ MSA/230/10010/S	VITAL BIO ENERGY	SABAKI	Mombasa	14248	D	COMMERCIAL IRRIGATION AND DOMESTIC	15,000 AND 25	KULAU	KULAU	CHAKAMA	MALINDI	SW
33	WRMA/20/ KBU/230/10196/S	HERACLES LTD	KAMITI	KAMBU	28078	D	DOMESTIC	2500	TATU	TATU	RUIRU	RUIRU	SW
34	WRMA/20/ MAN/230/10196/S	MUNICIPAL COUNCIL OF MACHAKOS WATER SUPPLY	MANZA	KIBWEZI	28385	D	PUBLIC	3500	MIKUYU	MIKUYU	KATHEKA (K)	MACHAKOS	SW
35	WRMA/20/ MSA/230/10976/S	KEMU SALT PRODUCTION (KEMU SALT PRODUCTION) LTD	INDIAN	Mombasa	27583	D	ABSTRACTION FOR SALT PRODUCTION (INDUSTRIAL)	32,000	KANACONI	MAREREN	FUNDISA	MALINDI	SW
36	WRMA/20/ MSA/230/10604/G	ALLFRUITER LTD	BORHOLE	Mombasa	12739/93574	D	INDUSTRIAL USE	650	KUWEINYA	MALINDI	MALINDI	MALINDI	SW
37	WRMA/20/ NRB/230/10104/S	ROSSLYN ACADEMY	KARURA	Nairobi	207/155111	D	RIVER DIVERSION	N/A	KARURA	HIGHRIDGE	HIGHRIDGE	WEST LANDS	SW
38	WRMA/20/ NRB/230/10104/S	TRUMPH POWER GENERATION COMPANY LIMITED	MARACATHI	Nairobi	MAVOKO TOWN COUNCIL	D	ABSTRACTION OF WATER FOR OPERATION OF POWER PLANT	1800	MAVOKO	KATHANI	MAVOKO	MAVOKO	SW
39	WRMA/20/ LUM/230/10209/S	KASOKONI IRRIGATION SCHEME	MANDULU STREAM TRIBUTARY OF LUMI RIVER	LOITOKITOK	MEMBERS HOLDINGS	G	COMMERCIAL IRRIGATION	125	TAVEIA	KASOKONI	KASOKONI	TAVEIA	SW

Issued by: Chief Executive Officer
Date of Notice: 3rd December 2013

Accounting for water drop

**MINUTES OF THE STAKEHOLDERS CONSULTATIVE MEETING ON
THE ISIOLO WATER AND SANITATION PHASE II HELD ON 2ND
OCTOBER 2012 AT THE RANGELAND HOTEL FROM 9.30 AM**

Min 01/10/2012 Attendance

1)	Mr. Andrew Wako	CAAC Chairman (Chairing);
2)	Mr. S. W. Wangombe	DTCM, ENNCA;
3)	Capt. Umar F. Husseinali	Chairman, NWSB;
4)	A. N. Osman	CEO, NWSB;
5)	Dr. Jennifer Kinoti	CETRAD;
6)	Mr. Bashir Jillo	SRC, NWSB;
7)	Eng. David Njue	RE, Isiolo Watsan;
8)	Mr. Samuel Ndungu	ADO, NWSB;
9)	Ms Batula Learapo	CAAC Member;
10)	Mr. Saita Kitonga	CAAC Member;
11)	Mr. Felix Karimba	Chairman IWRUA;
12)	Mr. David Mwaniki	Mutunyi Irrigation Project;
13)	Mr. David Mwiti Nabea	Secretary IWRUA;
14)	Mr. John Kinoti	CAAC Member;
15)	Mr. Samuel N. Mburu	Ag. DC, Isiolo;
16)	Pst. James Kabuna	Chairman, Mwenda Antu CBO;
17)	Mr. Cipriano Kiugu	Elder;
18)	Ms Christine Gatwiri	Secretary, Mwenda Antu CBO;
19)	Mr. Charles Kimaita	Treasurer, Mwenda Antu CBO;
20)	Mr. Misheck Maingi Muthuri	Chief, Kithima Location;
21)	Mr. Phares Ruteere	Secretary General, Njuri Ncheke;
22)	Mr. Godfrey Mutuma	Mutunyi Water Project;
23)	Mr. Charles Makathimo	IWRUA;
24)	Ms Josephine Ruuri	Mutethia Water Project;
25)	Mr. Benson Marangu	Kongo Acheke Water Project;
26)	Mr. David Ntoinya	Kithima Water Project;
27)	Mr. Kiugu Manyara	Nkando Water Project;
28)	Mr. Eric Thurania	Nkando Water Project;
29)	Mr. Silas Mugambi	Kireinye Water Project;
30)	Mr. Stephen Muthuri	Kithima Water Project;
31)	Ms Martha Kaburo	Mutethia Water Project;
32)	Mr. John N. Kinyanjui	ATCM – MEN (Taking Notes)

Min 02/10/2012 Agenda

- a). Registration;
- b). Opening prayers;
- c). Adoption of Agenda;
- d). Chairman's Opening Remarks;
- e). Brief on Issues and Progress on Proposed IWASCO Intake (RM – ENNCA);
- f). Clarification on issues;
- g). Application for Water Abstraction from Kithima and Rugusu;
- h). Way forward;

Min 03/10/2012 Opening Remarks

The Chairman called meeting to order at 9.30 am with a word of prayer. He informed the meeting that the purpose of the meeting was to seek for an amicable solution o the impasse on the Isiolo Water and Sanitation Project Phase II which has pitted the Northern Water Services Board and the residents/stakeholders of Isiolo river sub-catchment. He informed the meeting that during the 19th Catchment Area Advisory Committee meeting held on 19th September 2012, the applications from the NWSB were tabled for discussion. They were however deferred for further consultations and a CAAC sub-committee consisting of the 6 members was constituted to meet with the stakeholders and seek for a suitable solution, with the following as members:

- | | | |
|------|----------------------|----------------------|
| i. | Bishop John Michuki | CAAC member |
| ii. | Capt.Umar Husseinali | Chairman NWSB |
| iii. | Mr Saita Kitonga | CAAC member |
| iv. | Dr Jeniffer Kinoti | Rep CETRAD |
| v. | John M. M'Kirigia | Rep LEWA Conservancy |
| vi. | Ms Batula Learapo | CAAC Member |
| vii. | Mr S.W.Wangombe | RM,ENNCA |

The sub-committee scheduled a meeting on 2nd October 2012 and invited key stakeholders.

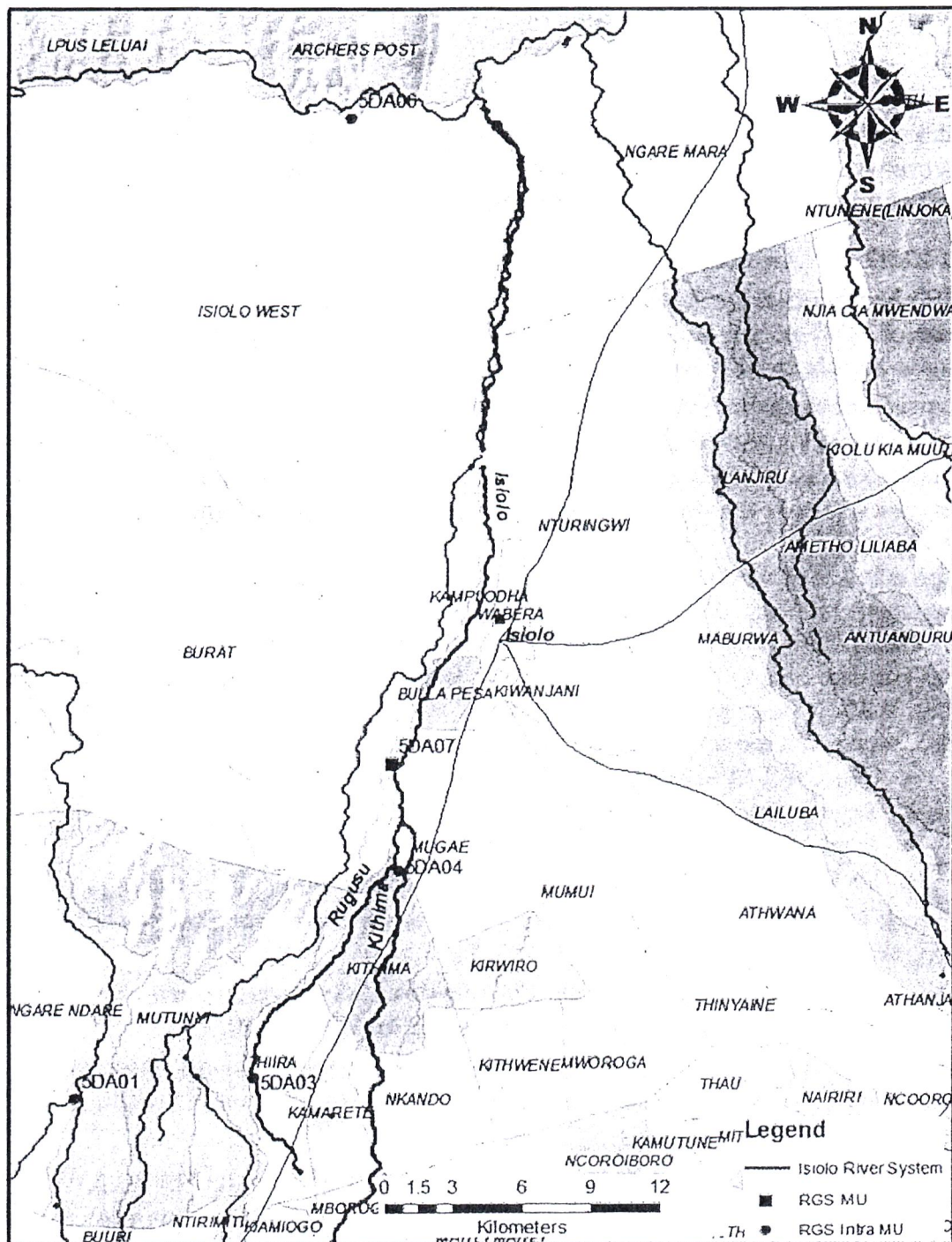
Min 04/10/2012 Brief on Isiolo Water and Sanitation Project Phase II

The ATCM – MEN give a brief on the NWSB applications for Authorisation to Construct Works as follows:

- a). NWSB requested for 5,000 and 1,800 m³ per day from Rugusu and Kithima rivers, tributaries of Isiolo river;
- b). The applications including the attachments were evaluated and it was found that the amount of water applied for from the two sources was unavailable. After due consideration, it was proposed that the NWSB be allocated 1,000 and 500 m³ per day from Rugusu and Kithima rivers respectively;
- c). 2 No Stakeholders Consultative Meetings were held with key stakeholders on 23rd April 2012 and 28th June 2012 to try and reach an agreement but no firm commitment was given by the stakeholders to allow the project to proceed;

Plenary

During the plenary discussion, it was apparent that though there was no explicit opposition to the project, the residents are set against it. Isiolo river, though supposedly perennial, has become ephemeral due to over-abstraction for subsistence irrigation. The Isiolo river stretches from the northern slopes of Mt Kenya all the way to its confluence with Ewaso Ngiro North river, and is approximately 61.5 kilometres long from its headwaters to the confluence. In the upper reaches of the sub-catchment, the river is composed of two tributaries, the Kithima and Rugusu rivers which confluence at coordinates 37N 338694 UTM 0032269 to form the main Isiolo river. A map of the Isiolo river system from its headwaters to the confluence with the Ewaso Ngiro North river:



Due to over-abstraction, the river dries up in the upper reaches before it reaches the Meru – Nanyuki road. Further downstream, river flow resumes, fed by the numerous springs that sprout out along its course. The main concerns, though not explicitly expressed included:

- The size of the pipes being laid is large with the stakeholders fearing it will drain the river;
- The points where the intakes are to be located is upstream of most of the existing community water projects. Since the river is being fed by springs that sprout along its course, the stakeholders fear their projects will not get water;

- c). Majority of the people are involved in irrigated agriculture though they have no permit or storage facilities to enable them undertake irrigation. It appears that the fear of missing water is the main driving force to oppose the project;

Min 05/10/2012 Application for Authorization to Construct Works

The NWSB had applied for Authorizations to construct intakes on Kithima River for the abstraction of 1,800 m³ per and Rugusu River for the Abstraction of 5,000 m³ per day for public water supply in Isiolo town.

After perusal and evaluation of the technical reports, the following were agreed upon:

- a). The current IWASCO intake is permitted to abstract 5,000 m³ per day from the Isiolo river and which capacity is rarely achieved due to water shortage. NWSB proposes to vary the permitted amount downward from 5,000 m³ per day to 2,000 m³ per day;
- b). The amount of 3,000 m³ per day realised above is transferred to upstream to the two new proposed intakes where they will be shared as per the water availability determined by WRMA. This 3,000 m³ per day will be added together with the 500 m³ per day and 1,000 m³ per day from Kithima and Rugusu rivers respectively that WRMA had proposed be allocated to the new water supply. The new allocation will therefore be distributed as follows:

♦ Current IWASCO intake	2,000 m ³ per day
♦ Rugusu Intake (Proposed)	2,700 m ³ per day
♦ Kithima Intake (Proposed)	<u>1,800 m³ per day</u>
♦ Total Allocation	<u>6,500 m³ per day</u>

Therefore the additional water to be allocated to Isiolo town water supply will only be 1,500 m³ per day.

This formula for allocating water to the two new intakes is based on the amount as agreed upon during the 2nd stakeholders meeting held on 28th June 2012

While this formula will not fully address the Isiolo town water problems in the future, it will alleviate the current water shortages while a more lasting solution is sought.

The CAAC sub-committee recommended that:

- i. The two applications be approved on condition that NWSB amend the application for Rugusu river and reduce the amount of water applied for from 5,000 to 2,700 m³ per day;
- ii. The variation for the water abstracted at the current intake be varied downwards from 5,000 m³ per day to 2,000 m³ per day when the new intakes are completed;

Min 06/10/2012 A. O. B

There being no other business, the meeting ended at 4.00 pm with a word of prayers.

Confirmed:

Secretary: Date

Signed:

Chairman: Date

MINUTES OF THE STAKEHOLDERS MEETING ON ISIOLO WATER SUPPLY AND SANITATION PHASE II MEEETING HELD AT THE ARIDLANDS BOARDROOM -ISIOLO ON 28th JUNE 2012 FROM 11.00 AM

Min 01/06/2012 Attendance

Present.

- | | | |
|-------------------------|---|-----------------------------|
| 1. Mr S. W. Wangombe | - | DTCM - ENNCA Chairing |
| 2. Mr S. G. Kabue | - | Ag. ATCM – MEN |
| 3. Bishop J. Michuki | - | CAAC Member |
| 4. Mr Leonard Onyango | - | NWSB |
| 5. Eng. David Njue | - | Uniconsult Ltd |
| 6. Mr J. N. Kinyanjui | - | SSWO |
| 7. Phares Rutere | - | Sec. Gen Njuri Ncheeke |
| 8. Maitima M'Mukindia | - | Elder Njuri Ncheeke |
| 9. Michael Kibet | - | DO I Buuri |
| 10. R. M. Wakape | - | DO I Isiolo |
| 11. Job K M'Ituru | - | NWSB |
| 12. Felix Karimba | - | Isiolo WRUA |
| 13. Charles M'Makathimo | - | Isiolo WRUA |
| 14. Mugambi Muthinja | - | ENNCA |
| 15. Lewis Chege | - | KWS |
| 16. Onesmus Mutinda | - | Catholic Diocese of Isiolo |
| 17. Boniface Kuliambu | - | KFS |
| 18. Saita Kitonga | - | CAAC Member |
| 19. Kithinji Ndegwa | - | Isiolo WRUA |
| 20. Hellen Murungi | - | Isiolo WRUA |
| 21. Guyo A. B. | - | District Irrigation Officer |
| 22. Odhiambo Nyegenye | - | DO Timau |

Apologies

- | | | |
|------------------------|---|-------------|
| 23. Eng. Joseph Kinyua | - | WRMA – TM |
| 24. Mr John M'Kiriaga | - | CAAC Member |

Min 02/06/2012 Agenda

1. Opening prayers;
2. Introduction;
3. Confirmation of minutes of previous meeting;
4. Matters Arising;
5. Briefs:
6. Hydrological Assessment Reports evaluation – WRMA;
7. EIA Report – NWSB;
8. Way Leave/Easement – NWSB;
9. Way Forward

Min 03/06/2012 Opening Remarks.

The meeting started with prayers led Bishop Joseph Michuki. The Deputy Technical Coordination Manager Mr. S. W. Wangombe informed the meeting that WRMA Technical Coordination

Manager Eng. Joseph Kinyua, who was to chair the meeting was held up and had sent his apologies. The meeting proposed that the DTCM chairs the meeting..

Min 04/06/2012 Confirmation of minutes of previous meeting

The minutes of the meeting held on 23rd April 2012 were confirmed as true record of the proceedings with the following corrections:

Job K M'Ituru;

Karani Mungania;

Martin Mugambi was from the Isiolo WRUA;

The minutes were proposed by Mr. Phares Rutere and seconded by Bishop Joseph Michuki.

Min 05/06/2012 Matters Arising

Matters arising were handled together with the substantive agendas

Min 06/06/2012 Hydrological Assessment Reports

The meeting was informed that the NWSB had submitted the revised hydrological assessment reports which after assessment were found to be fairly well done. The Board had also made the application for water permits for the two proposed intakes. The evaluation showed the following:

Kithima Spring

1. The application is for 1,800 m³/d of normal flow from the Kithima spring, tributary of Isiolo River for domestic water supply;
2. The application falls in Category "C";
3. The analysis of the flow for the Kithima springs, tributary of Isiolo river indicates the following:
 - ♦ *The estimated Normal Flow (NF) of the river that can be allocated is 5,490 m³/day;*
 - ♦ *Of this amount 2,103 m³/day is already allocated, leaving a balance of 3,387 m³/day. However, the springs contribute 49% of the Normal Flow of Isiolo river as gauged at the RGS 5DA07;*
 - ♦ *Of the allocation of 5,368 m³/day from the main Isiolo river downstream of the confluence of Kithima and Rugusu springs, 49% of the volume, equivalent to 2,644 m³/day is being contributed by the Kithima springs. This implies that the unallocated balance of normal flow that can be attributed to Kithima springs is 743 m³/day;*
 - ♦ *The unallocated normal flow from the springs cannot support the application for 1,800 m³/day as proposed in the application;*
4. The granting of a permit to the applicant will adversely affect the surface water situation downstream;

Rugusu Spring

1. The application is for 5,000 m³/d of normal flow from the Rugusu springs, tributary of Isiolo River for domestic water supply;
2. The application falls in Category "D";
3. The analysis of the flow for the Rugusu spring, tributary of Isiolo river indicates the following:
 - ♦ *The estimated Normal Flow (NF) of the river that can be allocated is 5,025 m³/day;*

- ◆ Of this amount 821 m³/day is already allocated, leaving a balance of 4,204 m³/day. However, the springs contribute 45% of the Normal Flow of Isiolo river as gauged at the RGS 5DA07;
 - ◆ Of the allocation of 5,368 m³/day from the main Isiolo river downstream of the confluence of Kithima and Rugusu springs, 45% of the volume, equivalent to 2,420 m³/day is being contributed by the Rugusu springs. This implies that the unallocated balance of normal flow that can be attributed to Rugusu springs is 1,599 m³/day;
 - ◆ The unallocated normal flow from the springs cannot support the application for 5,000 m³/day as proposed in the application;
4. The granting of a permit to the applicant will adversely affect the surface water situation downstream;

The meeting observed that according to the available data, there was little chance that the Board could be allocated the full amount requested for.

It was therefore resolved that the Board to revise the applications volumes downward in line with the available water.

Min 07/06/2012 Environmental Impact Assessment

The meeting was informed that the Environmental Impact Assessment report which had been submitted to National Environmental Management Authority (NEMA) had been approved and a licence issued.

It was resolved that the NWSB circulates copies of the EIA report to the key stakeholders and hold discussions with them in order to gain their confidence and support

Min 08/06/2012 Way Leave and Easement

The meeting was informed that the proposed pipeline route is along public roads under the Kenya National Highways Authority (KeNHA) and the Kenya Urban Roads Authority (KURA). KeNHA has already granted the way-leave. Part of the pipeline was to traverse the Lewa Conservancy who have indicated they need to see the water permit from WRMA in order for them to grant the way-leave. The meeting was however informed that the way-leave is actually a pre-condition for the issuance of a permit.

The meeting resolved that the NWSB employ better public relations in approaching Lewa Conservancy and other land-owners in order to gain their trust and acquire the way-leave/easement.

Min 09/06/2012 Way Forward

The meeting observed that the provision of adequate water to Isiolo town was of great importance but the availability of water to the communities along the Isiolo river system was equally important. Thus any action to address the Isiolo town water supply from both Kithima and Rugusu springs have to take into account the water requirements of the communities relying on the river.

- i. In the short term, NWSB should:
 - ◆ Equip the boreholes which have already been drilled to alleviate the water shortage;
 - ◆ Improve the reticulation system in order to reduce the unaccounted for losses currently at 40%;
- ii. In the long term NWSB should look for a source that can sustainably meet the water demand for the town now and into the future taking cognisance of the town projected growth as a resort city;
- iii. NWSB should make deliberate effort to reach out to stakeholders to discuss the EIA report, especially the Environmental Management Plan so as to build consensus on its implementation;

- iv. NWSB will consult WRMA in order to determine the amount of water that can be allocated from the two springs;

Min 010/06/2012 AOB

There being no other business, the meeting ended at 3.00 pm. The next meeting will be called on notice.

Confirmed:

Secretary: Date

Signed:

Chairman:..... Date



WATER RESOURCES MANAGEMENT AUTHORITY

MIDDLE EWASO NGIRO SUB CATCHMENT OFFICE
P.O. Box 171- 60300,
ISILOLO.

Telephone: 064-52067
Fax: 064-52065
E-mail: wrma.isiolo@yahoo.com

REF:
DATE 23rd April 2012

MINUTES OF ISILOLO WATER SUPPLY PHASE II STAKEHOLDERS MEETING HELD AT THE ARIDLANDS BOARDROOM -ISILOLO

PRESENT. (See attached list).

The Chairman's remarks.

The meeting started with the Deputy Technical Manager Mr. S.W.Wang'ombe proposing the WRMA Technical Manager for the days chairmanship because being from the headquarters and the fact that he knew few people, he was bound to be neutral and partial.

The chairman then moved on to propose the meeting start with prayers led from both the Christian and muslim faith sides. The payers were then led by mr. Bashir of muslim faith and bishop Joseph michuki of the Christian faith.

After prayers the chairman spelt the business of the day as a discussion where the Northern Service Board had requested for water from certain sources. The stakeholders had raised some issues which were now to be presented to the meeting for discussion to help the move forward with a win win for all parties concerned.

The first speaker was the Deputy Technical coordination manager mr. Wangombe who described how the project was started several years back. . The water company had experienced water shortage in Isiolo town. They then decided to move the intake works upstream to address the issue of adequacy and quality for the benefit of Isiolo town.

It was at this point that DO I for Buuri District, Mr. Kibet, was invited to talk to the meeting as one person who had seen the upcoming of the project which was in his district. Isiolo town was experiencing water inadequacy. The MD decided to meet the people where he called a meeting. The WRUA and the communities decided to call on the DC Buuri where they presented issues of the meeting which they did not agree with. They actually presented a memorandum of the things or issues they did not agree with. The meeting was told that the Isiolo water and sanitation company also presented a memorandum. The DC Buuri district called a meeting At Mali Saba in which he invited the ENCA Regional Manager. He, the DO I, also attended. The issue at hand here was that if no solution was arrived at the isiolo river flow would stop.

It was suggested from the DC meeting that the WRMA, WRUA and Isiolo water Company MD should seat together and deliberate on the issue. Even after several meetings this issues have not been sorted out and hence there being no way forward found as yet. It is these outstanding issues which has necessitated this meeting today.

The Isiolo water and Sanitation Company, in its effort to sort out the issue of water supply inadequacy, moved to Lewa with a request of easement. Lewa declined citing lack of such documents like EIA and the WRUA comments plus those other important documents which would inform the stakeholders to make informed decisions. The company later approached a neighbour to lewa with a similar request. The other neighbour also declined to give his comments for similar reasons.

The Northern service board presented an application after a consultant's report which recommended moving the intake upstream to cater for both adequacy and quality requirements. After the Sub-region office pointed out the other missing documents, they provided the documents but still did not provide easement document. It was not possible, therefore, to process the application from the sub-regional office and this necessitated the application being forwarded to the regional office because it could not be processed through the normal permit data base system (pdb). The meeting was told to note that permitting is the responsibility of the WRMA CEO.

The Isiolo WRUA Chairman Karimba commented the EIA document by the Northern Service board as not a good document. One reason cited being that not all stakeholders were consulted. It was reported in this meeting that the document was written on the strength of few comments from only 12No persons who were from isiolo town. The consultation was not, therefore, all inclusive because it left out important stakeholders. The meeting eventually agreed that this documents need to be redone with proper consultations and thereafter be brought to the stakeholders for discussion and approval after which it will be accepted for implementation. It was also noted that the hydrological survey report was not well done. Wrong data was reportedly used and this was bound to give misleading conclusions. This document was also agreed should be redone and finally presented to the stakeholders for adoption.

Isiolo population has continued to increase needing more water. We need to now quantify the flows in this river and work from that point. When we know what we have we can easily devise ways of sharing. The meeting also heard that there is no irrigation permitted from normal flows and any irrigator will need to have storage to store flood flow water for irrigation purposes. Any abstractor using domestic water permit to abstract water for irrigation is an illegal abstractor. The meeting was reminded that in the water act 2002 water belongs to the state but in the new Constitution water belongs to the people but managed by the state.

The Northern water Service board agreed to address the issue of easement. He expressed the need to increase water for the town residents which now stands at 2800 m³/day against a water demand of 9000 m³/day. Their efforts are aimed at achieving the vision 2030. After the ADB agreed to fund they called the stakeholders to tell them of their intention to start the project.

The Njuri Ncheke Secretary General told the meeting that we should aim at solving the problem satisfy the needs by providing enough and not solve one problem when creating another one elsewhere. The Chairman told the meeting of the government effort of increasing the water where we have advertised a consultancy for a dam in the upper reaches of the problem area.

One member reminded the meeting of the need for the contractor to think of proper way of handling the issues at hand. He mentioned of an incidence where the contractor is using excavators leaving the locals with whom he started working with. Including these locals in some parts of the construction work will endear the contractor and the project the people where the project is located. It was also highlighted that the contractor unprofessional in that he is mindful of the locals' welfare especially when it comes to points of entry into their homesteads and the existing pipelines in the area.

The WRUA leadership also expressed concern that they have been misunderstood by the community to be compliances to the Northern Service Board because, though they keep telling the locals that the project has not been okayed , they can see the construction work has started with trenching and pipe laying is going on. The meeting therefore asked the Northern service board to reschedule to have the contractor do water reticulation system (water distribution system) in town as they work on the above mentioned documents which will be done with a timeline of one month. The contractor was asked apply good public relations approach because the people in the project area are very much part of the stakeholders community.

S.G. Kabue – taking Minutes

Ag. ATCM – Middle Ewaso Ngiro sub-region

MINUTES OF THE STAKEHOLDERS MEETING ON ISIOLO WATER SUPPLY AND SANITATION PHASE II MEETING HELD AT THE ARIDLANDS BOARDROOM -ISIOLO ON 23RD APRIL 2012 FROM 10.00 AM

Min 01/04/2012 Present.

- | | |
|-------------------------|------------------------|
| 1. Eng. Joseph Kinyua | WRMA – TM Chairing |
| 2. Mr S. W. Wangombe | DTCM - ENNCA |
| 3. Mr T. M Mutie | ATCM – SW |
| 4. Mr S. G. Kabue | Ag. ATCM – MEN |
| 5. Bishop J. Michuki | CAAC Member |
| 6. Mr Bashir Jillo | NWSB |
| 7. Mr Leonard Onyango | NWSB |
| 8. Eng. David Njue | Uniconsult Ltd |
| 9. Mr John M’Kiriaga | CAAC Member |
| 10. Mr J. N. Kinyanjui | SSWO |
| 11. Phares Rutere | Sec. Gen Njuri Ncheeke |
| 12. Karani Mungania | Elder, Njuri Ncheeke |
| 13. Gedion Mbaabu | Elder, Njuri Ncheeke |
| 14. Bernard Kaaria | Elder, Njuri Ncheeke |
| 15. Paul Muthaka | Elder, Njuri Ncheeke |
| 16. Jacob Mwongera | Elder, Njuri Ncheeke |
| 17. Michael Kibet | DO I Buuri |
| 18. Mwangi Mburu | DO I Isiolo |
| 19. Qalicha Diba | ENNDA |
| 20. Job K M’Ituru | NWSB |
| 21. Felix Karimba | Isiolo WRUA |
| 22. Charles M’Makathimo | Isiolo WRUA |
| 23. David Mwiti | Isiolo WRUA |
| 24. Martin Mugambi | Isiolo WRUA |
| 25. Silas Muriithi | KWS |
| 26. Christine Gatwiri | MPURIA |
| 27. Francis M’Muriku | ATUR |
| 28. Saita Kitonga | CAAC Member |
| 29. Kithinji Ndegwa | Isiolo WRUA |
| 30. Hellen Murungi | Isiolo WRUA |
| 31. John Kinyanjui | ENNCA |

Min 02/04/2012 Agenda

1. Introduction
2. Application for water permits from Kithima and Rugusu Springs

Min 03/04/2012 Opening Remarks.

The meeting started with prayers led Mr. Bashir and Bishop Joseph Michuki. The Deputy Technical Coordination Manager Mr. S. W. Wangombe proposed that WRMA Technical Coordination Manager Eng. Joseph Kinyua, being from outside the region, chairs the meeting. The proposal was The chairman spelt the business of the day as a discussion on the application by the Northern Service Board for allocation of water from both Kithima and Rugusu springs. The stakeholders had raised some issues which were now to be presented to the meeting for discussion to help the move forward with a win win for all parties concerned.

Min 04/04/2012 Application for water permits from Kithima and Rugusu Springs

The DTCM gave a brief background on the Isiolo Water and Sanitation Project Phase II which started in 2008 and aims at augmenting/rehabilitating the Isiolo town water supply to meet the demand which has outstripped the supply leading to severe water shortages.

IWASCO called a stakeholders meeting where they presented the proposal to the communities around the springs, who being dissatisfied with the explanation, sought audience with the DC Buuri where they presented their objections in the form of a memorandum. IWASCO also presented a memorandum to the DC explaining its side of the story. Since then various meetings and consultations have taken place without any breakthrough. The contention of the Isiolo WRUA and stakeholders is that if the project is allowed to go on, the Isiolo river will dry up completely, leaving the residents who rely on the river with no source of water.

The following issues were noted with regard to the application:

- i. The Hydrological Assessment Reports for Kithima and Rugusu springs contained water allocation/abstraction and water availability data that showed the rivers were over-allocated. The reports were disputed by WRMA who clarified that the data used to compile the reports did not originate from them and was not factual;
- ii. The Isiolo WRUA and stakeholders declared that author of the Environmental Impact Assessment report for the project did not visit them as would have been expected but concentrated his sampling within Isiolo town. This led to the land owners approached by the Board for way-leave/easement to decline the request;

The meeting resolved that the following be carried out within one month from the date of the meeting:

1. NWSB requests its Consulting Hydrologist to move to the ground and re-do the Hydrological Assessment Reports afresh and ensure he gets validated data from WRMA – ENNCA;
2. NWSB requests its Environmental Impact Assessment expert to re-do the report and ensure wide consultations with stakeholders are carried out especially with the Isiolo river WRUA;
3. The Resident Engineer in consultation with the contractor, explore ways of halting work on the main pipeline and first concentrate on the reticulation system within the town in order to allow for consultations to take place for an amicable solution. The contractor to also explore the possibility of using manual labour to assist the local youth, if this will not de-rail his work schedules;

Min 05/04/2012 AOB

The meeting resolved to meet in the next one month, subject to the resolutions with regard to the revision of the Hydrological Assessment Reports and Environmental Impact Assessment being submitted.

There being no other business, the meeting ended at 1.40 pm. The next meeting will be called on notice.

Confirmed:

Secretary: Date

Signed:

Chairman: Date

ANNEX V

**DOCUMENTS CONFIRMING COMPLIANCE TO
SECTION 29(4) OF THE WATER ACT, 2002**

ANNEX VI

WATER ALLOCATION GUIDELINES

GUIDELINES FOR WATER ALLOCATION

WORKING DOCUMENT

WATER RESOURCES MANAGEMENT AUTHORITY

23rd March 2009

TABLE OF CONTENTS

1 INTRODUCTION	1
1.1 General Considerations.....	1
1.2 This Document.....	2
1.3 Exceptions to the Guidelines	2
1.4 Justification for Updating Water Allocation Procedures	2
1.4.1 Previous Arrangements	2
1.4.2 Changing Conditions	2
2 BASIS FOR WATER ALLOCATION	3
2.1 Underlying Principles	3
2.2 Planning Stage for Water Allocation	4
2.3 Management Stage for Water Allocation.....	4
2.3.1 Prioritisation	5
2.3.2 Reallocation and Proportional Allocation	5
2.4 Water Demand Management, Efficiency and Compliance.....	5
3 QUANTIFICATION OF THE RESERVE.....	6
3.1 Environmental Demand	6
3.1.1 Situations where water resource records are available	6
3.1.2 Situations where water resource records are not available	6
3.1.3 Reliability of the Reserve	6
3.1.4 Discussion on Reserve and Design Criteria for Water Supply Intakes	6
3.2 Basic Human Needs	7
3.3 Compensation Flows from On-Line Storage Structures	7
4 QUANTITIFICATION OF WATER AVAILABILITY FOR ALLOCATION.....	7
4.1 River Water.....	7
4.1.1 Point Measurements of Discharge.....	9
4.2 Spring Water.....	10
4.3 Lake Water.....	10
4.4 Groundwater	10
4.4.1 Previous Method.....	10
4.4.2 2009 Method.....	10
5 WATER DEMAND	12
5.1 Introduction.....	12
5.2 Design Period.....	12
5.3 Domestic Demand.....	12
5.3.1 Population Projections.....	12
5.3.2 Analysis of Population	12
5.3.3 Classification of Urban Service Centres.....	12
5.3.4 Urban Housing Classes	12
5.3.5 Classification of the Land Potential	13
5.3.6 Service Type.....	13
5.4 Institutional Demand.....	14
5.4.1 Schools	14
5.4.2 Health Facilities.....	14
5.5 Commercial and Industrial Demand	14
5.5.1 Small Shops, Workshops, Restaurants, Bars etc.	14
5.5.2 Large Enterprises, Tourist Hotels, Military Camps, etc.	14
5.6 Fire Fighting	14
5.7 Water Consumption Rates	14

5.8 Livestock Demand	15
5.8.1 Livestock Units.....	15
5.8.2 Livestock Population.....	15
5.8.3 Service Level.....	16
5.9 Water Demand for Subsistence Irrigation.....	16
5.10 Water Demand for Commercial Irrigation.....	16
5.10.1 Introduction	16
5.10.2 Approximate Method for calculating Irrigation Water Demand	17
5.10.3 Detailed Method for calculating Irrigation Water Demand.....	18
5.10.4 Irrigation Efficiencies	18
5.10.5 Allocation of Water for Irrigation Use	19
5.11 Non-Consumptive Uses of Water	20
6 CONCLUSIONS	20
6.1 Comments on Water Allocation, Compliance and Enforcement.....	20
7 RECOMMENDATIONS	21

APPENDIX A WAB Standards for Water Allocation (1982)

1 INTRODUCTION

Water allocation is the process of sharing the water resources and therefore reflects an important component in the management, control and regulation of the water resources. The water allocation process can have a significant bearing on the availability of the resource to meet basic human needs, the needs of the environment, economic development, water security and water use conflicts.

The water allocation process must follow the provisions of the Water Act 2002, the National Water Resources Management Strategy (NWRMS), the Catchment Management Strategies (CMS) and the Water Resource Management Rules (2007).

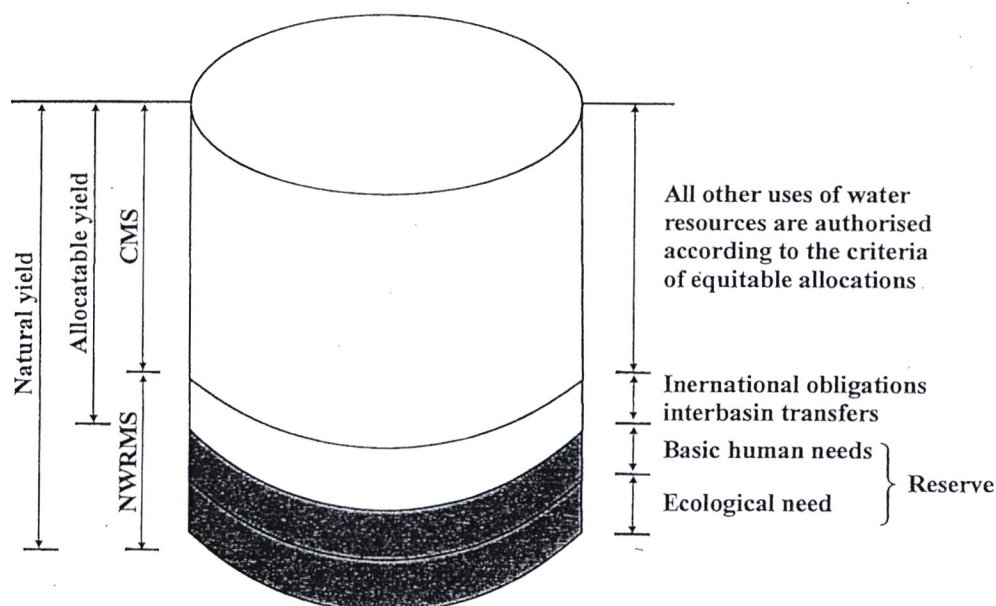
The Water Act 2002 Section 8(1)(a) charges WRMA with the responsibility “to develop the principles, guidelines, and procedures for the allocation of water resources”. This document compliments other documents in setting out further details on the allocation of water resources by WRMA.

Water allocation decisions are usually focused at the time of deciding any one particular water permit application. This decision should be made on the basis of an assessment of the resource, clear information regarding existing allocations and on the basis of reasoning which is clear and transparent. This document provides guidelines to support this decision making process to enable WRMA to make fair and appropriate decisions.

1.1 General Considerations

The allocation of water from a water body should take into consideration four demands on the water, namely:

1. The portion of the water resource required to meet ecological demands which forms part of the Reserve.
2. The portion required to meet basic human needs (BHNs) which forms the second part of the Reserve. Basic human needs have been quantified in the WRM Rules as 25 l/person/day.
3. The portion of water for which commitments have been made in international treaties and water transfers;
4. The portion of water that can be allocated to individual uses by means of a permit.



1.2 This Document

The Water Act 2002 sets out the requirement for water permit applications to be made to WRMA. The WRM Rules (2007) set out details which the applicant should include in the application. It is WRMA's roles to verify the details in the application and availability of the resource, and to evaluate the merits of the permit application against other competing or existing lawful uses.

This document sets out WRMA's approach towards the evaluation of permit applications.

The preparation of this document has made reference to the *Design Manual for Water Supply (MWI October 2005)* and *Handbook for the Assessment of Catchment Water Demand and Use (DFID, May 2003)*.

1.3 Exceptions to the Guidelines

Reasonable and justifiable exceptions to the guidelines are likely as one set of guidelines cannot address all possible cases with respect to water allocation. The Guidelines provide a bench mark which it is hoped will cater to the majority of cases. The Guidelines help to define exceptions which may be legitimate and reasonable which for which further details and justification can be expected.

1.4 Justification for Updating Water Allocation Procedures

In analysing the water resource management problems, it is important to distinguish between water allocation and compliance/enforcement problems. For example, a river may run dry, not because of any problem in the allocation of the resource, but rather because the water users fail to comply with and WRMA fails to enforce the conditions of the permits.

1.4.1 Previous Arrangements

Standards for the allocation of water were previously set out by the Water Apportionment Board (WAB), as constituted under the Water Act (Cap 372). These standards are reproduced in Appendix A, based on WAB minutes (No. 1142/82). These standards have prevailed with mixed results.

The standards provided a simple basis for quantifying the water to be allocated in respect of any individual water use application.

The main constraints faced in using the standards were related to the calculation of water for irrigation use. Since irrigation constitutes a major water use, this constraint impacted a significant component in the proper functioning of the water allocation process.

The main constraint relates to the quantity of water allocated for irrigation, namely 22 m³/ha/day. Although providing a simple and uniform basis for computing the irrigation demand, it does not actually reflect the irrigation requirement for many crops in many parts of Kenya, which is generally closer to 40 - 60 m³/ha/day. The net result has been over abstraction by irrigators and a compliant from irrigators that the basis for water allocation is not reasonable or practical.

1.4.2 Changing Conditions

WRMA seeks to streamline the water allocation process so that water allocation can support WRMAs need to control and regulate the water resources. The competing demands for the water resources provide a huge challenge to the process of water allocation to ensure a system that is fair and efficient.

WRMA has developed the Water Resource Management Rules (2007) which sets out a revised system of water use permits. One key element is the requirement for the applicant to provide a Hydrological Assessment Report which documents, among other things, the water demand requirement by the user and whether the water resource has sufficient unallocated resources to support the intended application.

This means that WRMA should (i) set out the basis for calculating the water demand in a way that is acceptable to WRMA, (ii) set out the basis on which the report will be evaluated and (ii) the role of WRMA is to provide an independent check the calculations and conclusions in the report.

This report seeks to support this revised process.

2 BASIS FOR WATER ALLOCATION

This section looks at some general considerations that affect water allocation.

2.1 Underlying Principles

A number of underlying principles have guided the formulation of the 1999 Policy on Water Resources, the Water Act 2002 and Water Resources Management Rules (2007).

1. The water resources are *vested in the state* to be managed by the government on behalf of the public. Rights of use over and above basic human needs are conferred to users through a system of permits, which is administered by the Water Resource Management Authority;
2. The water resources are *finite and valuable*. This implies that the resources must be managed, conserved, and allocated in a manner that serves the public interest. In addition, where resources are insufficient to meet all the demands, priority of allocation will need to be established;
3. There is a tangible *risk* to the environment, economy and social well being if the water resources are not properly allocated. It is in the public interest to establish a reasonable, transparent water allocation process and to require compliance to the same;
4. The *precautionary principle* implies that decisions can or indeed must be made even where information is incomplete in relation to;
 - taking preventive action in the face of uncertainty;
 - shifting the burden of proof to the proponents of an activity;
 - exploring a wide range of alternatives to possibly harmful actions; and
 - increasing public participation in decision making.
5. *The Reserve* commands the highest priority in terms of water allocation. This implies that in the context of a very severe drought, even domestic water supplies may need to be rationed;
6. To ensure transparency, water allocation is subject to a process of *public consultation* which provides opportunities for *stakeholder participation*. The basis of water allocation (i.e. this document) is also subject to public scrutiny;
7. *Water use conflicts* cause social and economic disruption. Unequal allocation or access to the water resources provides fertile ground for water use conflicts. Stakeholder participation is encouraged to provide mechanisms to mitigate water use conflicts;

8. *Equity*. This is difficult to define precisely as it can often have different meanings for different stakeholders. Essentially equity implies that there should be a transparent basis for evaluating the water demands of different water users and that this basis seeks to find a fair and acceptable balance between environmental, livelihood and commercial benefits.
9. *Efficiency*. Efficiency in allocation implies that uses with higher 'public benefits' will be prioritised over other uses. This implies that social, economic, environmental and commercial returns per quantity of water are legitimate criteria in prioritising water for allocation.

2.2 Planning Stage for Water Allocation

The planning stage looks at whether there are sufficient water resources to meet all the water demands within a specific area or from a specific water body. This exercise typically involves the development of a water balance for a catchment which provides information regarding whether all the expected demands can be met and whether seasonal storage is required.

The different types of water demand include:

- Environment;
- Basic human needs;
- Agriculture (Irrigation);
- Livestock;
- Energy;
- Urban and Industrial;
- Tourism, recreation and wildlife;
- Aquaculture.

The Water Supply Design Manual (GOK, 2005) should be consulted to establish bulk water demand values as appropriate for each sector. Typically current and future water demand values are established to ascertain the likelihood of the resource meeting future demand scenarios.

The water balance can be summarised as follows:

Water Balance = Available Water – (Reserve + Transfers + Summation of All Water Demands).

A positive water balance implies the condition where the resource is sufficient to meet all the water demands.

A negative water balance implies the condition where the resource is insufficient to meet all the water demands.

The planning stage of the water allocation process is meant to support long term planning for water resource management.

2.3 Management Stage for Water Allocation

The management stage in water allocation involves the allocation of water to specific users. The right to use water is conferred by the government to the user by means of a water permit which is issued by the Water Resources Management Authority (WRMA).

In evaluating a water permit application, two clear cases arise:

1. **Water allocation where there is sufficient resource**

In this case, although the permit details will be checked to establish that the appropriate quantities of water have been applied for and allocated, there is no need for prioritisation as all demands can be met.

2. Water allocation where there is insufficient resource

Where there is insufficient resource to meet all demands, in addition to verifying that the correct quantities of water have been applied for, WRMA will need to apply one of three approaches:

- a. Prioritisation;
- b. Reallocation;
- c. Proportional allocation.

In many parts of Kenya the water resources are insufficient to meet all the different water demands. It is this situation which, if not properly managed and controlled, can result in situations where either the Reserve is violated (which can lead to water use conflicts), strategic or domestic supplies are threatened, economic opportunities are denied, inefficiency is not discouraged, and potential water users denied legitimate access to the resource.

2.3.1 Prioritisation

It is important to reinforce that the first priority on the water resources is the Reserve. Details on the quantification of the Reserve are provided below.

With respect to the portion of water that can be allocated to specific users, domestic water has a higher priority than other uses (Water Act 2002, Section 32(2)).

With respect to all the other types of demand, the Water Act 2002 is silent with respect to priority, although various considerations must be made (Section 32(1)) in regard to:

- a. Existing lawful uses;
- b. Efficiency and public benefit;
- c. Commitments or priorities stated in the Catchment Management Strategies;
- d. Potential impacts on other water users and the water resources;
- e. The class and resource quality objectives;
- f. Existing and future investments by the applicant;
- g. Strategic importance of the application;
- h. Quality of the water resource which may be required for the Reserve;
- i. Probable duration of the water use activity;

2.3.2 Reallocation and Proportional Allocation

Sections 35 and 36 of the Water Act 2002 provide the basis for reallocation and proportional allocation of the resource. Essentially these sections provide WRMA with the authority to review and amend or cancel a permit or permits where there is reasonable cause so as to promote sustainability, equity, public beneficial interests, efficiency and to protect the water resource quality.

2.4 Water Demand Management, Efficiency and Compliance

In the process of water allocation, there is an inherent tension between allocating a “fair” quantity of water for a particular use, and the long term need to manage and reduce the demand and promote water use efficiency. It is recognised that many factors, including compliance and enforcement, are important to ensure that water allocated is used appropriately and within the conditions of the permit.

In this regard, these guidelines for water allocation are considered to represent a “fair” allocation for each particular form of water use. This means that where there is a discrepancy between these guidelines and the water demand required, adequate justification is required to show why exceptions to the guidelines are warranted.

3 QUANTIFICATION OF THE RESERVE

The Reserve is the portion of the water resource which is set aside to meet the demands of the environmental demand and basic human needs.

The Reserve needs to be defined with respect to the quantity, reliability and quality. The discussion below focuses on the specification of the Reserve with respect to quantity.

3.1 Environmental Demand

3.1.1 Situations where water resource records are available

In all instances where water resource records are available, the environmental demand will be quantified as follows unless more accurate methods are utilised to quantify downstream demands:

- For streams and rivers, the Reserve Quantity shall not be less than the flow value that is exceeded 95% of the time as measured by a naturalised flow duration curve at any point along the water course;
- For lakes and naturally occurring stagnant waters, the Reserve Quantity shall not be less than the water volume that is exceeded 95% of the time as measured by a naturalised volume duration curve or failing bathymetric data a naturalised level duration curve;
- For aquifers, the Reserve Quantity shall be 40% of the mean annual aquifer recharge in the case of aquifers whose recharge rate has been determined by the Authority.
- For aquifers whose recharge rate has not been determined by the Authority, the Reserve Quantity for each point of abstraction shall be 40% of the tested yield expressed in cubic metres per day as determined by test pumping analysis;

3.1.2 Situations where water resource records are not available

In all instances where water resource records are not available or where there are significant ambiguities, the Reserve will be established by use of flow data from neighbouring streams and an evaluation of site conditions taking into consideration the following factors:

- Ecological vulnerability;
- Vulnerability of local populations dependant on that water resource;
- Local observations with respect to the naturalised flows or water levels of minimum values observed during periods of prolonged droughts;

3.1.3 Reliability of the Reserve

In all instances where water flow is known to be normally perennial, then the Reserve quantity should be sufficient to ensure perennial flow. Effectively this means that perennial rivers should remain perennial. Seasonal rivers will be expected to remain seasonal.

3.1.4 Discussion on Reserve and Design Criteria for Water Supply Intakes

The *Design Manual for Water Supply (MWI 2005)* sets out the criteria for the Safe Yield of a river for the purposes of the design of a water supply intake. In the case of a principle town or city (population > 10,000) the criteria is Q_{96} based on a frequency analysis of the annual series of minimum daily

recorded flows. In the case of a small rural towns or centres (population < 10,000) the criteria is Q_{96} based on a frequency analysis of the annual series of minimum mean monthly recorded flows.

The case being proposed above is to use the Q_{95} , based on naturalised daily flows (or mean monthly flows where daily flows are not available).

In practice, the Q_{95} is a higher and therefore more conservative value. However, it should be noted that a water supply intake, designed to capture or abstract the Q_{96} would be capable of abstracting the entire remaining flow of a river which would violate the requirements of the Reserve.

It is recommended that the design of water supply intakes recognises the requirements of the Reserve and include adequate storage or alternative sources to ensure that (i) the Reserve is not violated and (ii) the required supply reliability is achieved.

In effect this means that the design of a water supply intake must be made within the context of (i) the normal flow available for allocation and (ii) the existing water allocations. In addition, the intake structure should be designed to release the Reserve at all times.

3.2 Basic Human Needs

Basic human needs (BHN) have been quantified in the WRM Rules (2007) to be 25 l/person/day.

Effectively this means that if the resource level drops to the level of the Reserve, then abstraction for domestic supplies would be curtailed to that of basic human needs. This means that water service providers must take account of the needs of the Reserve and therefore must take responsibility for any developments required to ensure the reliability of supply.

3.3 Compensation Flows from On-Line Storage Structures

On line storage structures such as dams across water courses provide a particular case that needs to be addressed. Essentially the compensation flow should be equal to or exceed the Reserve plus downstream water allocations.

However, in the case of a dam whose total storage is a significant proportion (i.e. > 30%) of the mean annual volume, the storage structure has the capacity to significantly impact the downstream hydrology. In this case a detailed study is required to determine the downstream flow compensation requirements, particularly during the initial impoundment period.

4 QUANTITIFICATION OF WATER AVAILABILITY FOR ALLOCATION

The first step in the allocation of the water resource is to determine the availability of the resource.

4.1 River Water

River water can be quantified using the Mean Annual Flow (MAF – measured in m^3/day or $m^3/year$) or by means of the flow with a certain reliability. The flow duration curve is the set of information that describes the relationship between flows and reliability. The flow duration curve is relatively easy to develop.

Section 49 of the WRM Rules 2007 define the “flood flow” and “normal flow” where the threshold used is the Q_{80} (i.e. the flow value that is exceeded 80% of the time).

In consideration of the priority of use to domestic water, WRMA has established that water for irrigation purposes may be allocated from flood water.

This implies that analysis of the water availability requires a methodology to quantify the water available within "normal" and "flood" flow conditions separately.

There are many parameters that might be used to quantify the resources.

This system implies that certain uses (e.g. domestic water) would be allocated from the normal water. These uses tend to require a relatively consistent quantity of water throughout the year with a high reliability (though by definition of the Reserve, these uses might not expect 100% reliability from the resource). In this regard normal water is allocated on the basis of a daily rate in cubic metres per day. WRMA Form 001 supports this approach in which an application for water allocation is made on the basis of a daily rate in cubic metres per day.

A problem arises in regard to allocations from flood flow because in some instances flood flow is allocated on the basis of a daily rate in cubic metres per day, and in some instances water should be allocated on the basis of a total volume per year. This latter case is appropriate where storage is involved. Unfortunately the water allocation table in WRMA Form 001 does not provide any possibility of allocating water by volume. In this case, the total volume allocated should be captured as one of the conditions of the water permit.

The issue is therefore to provide a simple methodology to quantify the availability of "normal" and "flood" water. The procedure in Text Box 1 is proposed as a simple system that provides conservative results.

It is important to note that on any given day, it is not the quantity of water allocated that dictates whether a particular abstractor can get the water allocated, but the status of the resource, the arrangement of the abstraction infrastructure and the effectiveness of WRMA enforcement systems.

Methodology for Estimating Normal and Flood Water Available on a particular water course		
Step	Action	Remarks
1	Develop Flow Duration Curve based on naturalised daily streamflow data	Obtaining naturalised flow record is usually difficult given the paucity of abstraction data. Utilisation of reliable historic records (when abstraction was significantly less than at present) is an option. The hydrological record should represent the hydrological unit under consideration
2	Extract the Q_{95} , Q_{80} and Q_{50} values (m^3/day) from the naturalised flow duration curve	
3	The Reserve is equivalent to the naturalised Q_{95} (m^3/day)	
4	Normal Flow available for allocation (NF) = $(Q_{80} - Q_{95})$ (m^3/day)	Although crude, this method provides a reasonable estimate on which to base allocation decisions.
5	Normal Water available for allocation to any new application = $(Q_{80} - Q_{95}) - (\text{Sum of existing allocations from normal flow})$	The existing allocations may include bulk transfers. Existing allocations upstream and downstream should be considered within the boundaries of the hydrological unit
6a	Flood Volume available for allocation (FV) = Area above Q_{80} on the Flow Duration Curve ($m^3/year$)	This approach makes the assumption that the probability of occurrence over an entire record period is reasonably similar to what might be expected in any one "average" year. This provides an estimate of the Average Flood Volume ($m^3/year$).
6b	Establish a time series of Annual Flood Volumes (AFV) based on a summation of daily flood volume ($DFV_i = Q_i - Q_{80}$) where DFV is daily flood volume on day i and Q_i is the actual daily flow on day i. Undertake a frequency analysis to determine the AFV value with 80% reliability (i.e. fails once in 5 years).	This is likely to result in a value that is more conservative than the methodology shown above (6a).
7	Flood Water available for allocation to any new application = $FV - (\text{Sum of existing allocations from flood volume})$ ($m^3/year$)	All existing allocations should be translated into a volume

4.1.1 Point Measurements of Discharge

It will be noted that the point measurement of discharge is not recommended as a way of determining the availability of the resource for allocation. Point measurement of discharge can be used to confirm or cross check the extent to which the analysis of flow and permit records tallies with conditions on the ground. Where the conditions do not tally, there are grounds to cross check the accuracy of the records and the analysis. In addition, this condition may expose illegal and over-abstraction which could be harmful to other water users.

Therefore, where possible, WRMA requires analysis of flow and permit records. On its part WRMA will make these records available and affordable as provided for in the WRM Rules (2007).

4.2 Spring Water

Estimation of the quantity of water available for allocation from a spring takes recognition of the fact that spring yields are much less variable than flow from rivers.

The Reserve from a spring should be estimated as 5% of the average daily flow (m^3/day).

Effectively this means that 95% of average daily flow is available for allocation (units m^3/day).

If the spring yield is variable, then the method proposed for rivers should be adopted.

4.3 Lake Water

Estimation of the quantity of water available for allocation directly from a lake needs to take into account the overall water balance of the lake. A lake acts as a flood water reservoir, receiving water from rainfall, local runoff, and inflow streams and losing water to outflow streams, evaporation, groundwater, riparian evapo-transpiration, and abstractions. Therefore, in addition to understanding the water balance one needs to assess the impact of any individual abstraction on the lake level and how that might affect other users.

Therefore in order to assess the water available for abstraction from a lake, a detailed assessment is required for each individual lake. SEEMS PRETTY WEAK. Need to think about this!

4.4 Groundwater

The mean annual recharge for most of the aquifers in Kenya is desirable but generally unavailable or difficult to estimate due to paucity of data.

A more practical and conservative approach to determine a safe abstraction from a boreholes has therefore been used in the past. This practise will be continued with a significant change.

The process is based on the tested yield as determined by the WRMA approved results of a standard 24 hour test pumping.

As stated previously 40% of the tested yield is set aside for the Reserve. The remaining 60% is available for abstraction.

4.4.1 Previous Method

The previous practice as established by the Ministry of Water (Ref???Mike Lane) was to restrict abstraction to 10 hours per day. Therefore the maximum daily amount (m^3/day) that could be abstracted was calculated as 60% of tested yield (m^3/hr) for 10 hours per day.

The result of this arrangement has been over abstraction by water users who pump for more than 10 hours per day.

4.4.2 2009 Method

The approach has therefore been modified and the maximum daily amount (m^3/day) that can be abstracted should be calculated as 25% of tested yield (m^3/hr) multiplied by 24 hours or it can be defined by the maximum abstraction rate of 25% of tested yield (m^3/hr).

The maximum abstraction rate is a value that can be tested by WRMA during inspection at any point in time and does not rely on meter readings to ascertain total daily abstraction. In this regard, a maximum abstraction rate is easier to enforce.

It can be noted that the abstraction rate as expressed in cubic metres per day is the same when calculated as 25% of tested yield for 24 hours or 60% of tested yield for 10 hours. The difference is that the 25% of tested yield sets a lower abstraction rate (m^3/hour) and therefore reduces the likelihood of over-abstraction and makes enforcement easier.

5 WATER DEMAND

5.1 Introduction

The basis for estimating water demand is drawn from the Ministry of Water and Irrigation *Design Manual for Water Supply (MWI 2005)*.

5.2 Design Period

Water demand projections should normally be made for the “initial”, the “future” and the “ultimate” year. The “initial” year is the year when the supply is expected to be taken into operation that may be assumed to be 0-5 years from the date of the commencement of the preliminary design. The “future” is 10 years and the “ultimate” year 20 years from the initial year. Once the initial, future and ultimate years have been determined for a project they should not normally be changed during the design period.

The water allocation should be made with respect to the ultimate demand since this is the period on which the design and investments are based. If it is found that there are insufficient water resources to support the ultimate demand, then the initial or future demand should be considered and the design and investment plan modified to be consistent with available water resources.

WRMA cannot be held accountable where investments are made without due reference to the availability of the water resources.

5.3 Domestic Demand

Water demand for domestic purposes was previously based on a figure of 45 l/person/day. The *Water Supply Manual in Kenya (2005)* provides a more detailed methodology for determining the amount of water required in any particular case. This methodology should be used where possible. The methodology has various steps which are discussed below. The steps involve determining the population or type of demand and then applying the correct consumption rate. The consumption rates are shown in Table XX after the discussion on determining the demand category.

5.3.1 Population Projections

The present population should be estimated based on the latest census and projected into future for the appropriate planning horizons. Population figures and growth rates are available from CBS.

5.3.2 Analysis of Population

Water demand is closely related to the type of service that is available and this is generally a function of the urban context and economic potential of an area. It is therefore to determine what level of service should be anticipated for any given area.

5.3.3 Classification of Urban Service Centres

The *Water Supply Manual in Kenya (2005)* provides information regarding which areas in Kenya are considered urban areas. Updated information can be obtained from the Ministry of Housing and Settlement.

5.3.4 Urban Housing Classes

Housing is generally classified as high, medium or low class housing and is defined for planning purposes as follows: -

High-class housing: generally low-density development plots of 0.2-0.8 hectares. Houses furnished with internal pipes and hot water, electricity supply, refrigerator, electric cooker, bathrooms, WC and internal arrangement for cloth and dish washing.

Medium-class housing: generally low-density development plots of about 0.05 – 0.1 hectares. Houses furnished with at least internal piped cold water, gas or electric refrigerator and cooker, shower, WC and internal arrangement for dish washing, splash area outside for cloth washing.

Low-class housing: generally high-density development. Houses furnished with very simple piping for cold water or only external water points for cloth and dish-washing (splash area). Includes site and service scheme housing.

5.3.5 Classification of the Land Potential

The following method, which takes into account only the rainfall, may be used for a very rough classification.

High-potential area is normally considered to be an area with an annual rainfall more than 1000mm. However, local factors such as very concentrated annual rainfall, adverse topography, soil conditions, special attitudes, tourism, roads, irrigation etc., should be taken into account.

Medium-potential area is normally considered to be an area with an annual rainfall of between 500mm and 1000mm. However, local factors may be adjusted as above.

Low-potential area is normally considered to be an area with an annual rainfall of less than 500mm. However, local factors may be adjusted as above. In low-potential areas the schemes are invariably small, which serve trade centers, institutions and some people around the center.

A more accurate classification where also the soil type, location and other factors are being considered is shown in Appendix A.

5.3.6 Service Type

The distribution between individual connection users (IC) and non-individual connection users (NC) (i.e. consumers using kiosks or communal water points or share connections for the purpose of the demand projection for new supplies) should be assumed to be as shown in the table below.

Table XX: Service Type

	IC %			NC %		
	Initial	Future	Ultimate	Initial	Future	Ultimate
<u>Urban Areas</u>						
High and Medium Class Housing	100	100	100	0	0	0
Low class Housing	10	30	50	90	70	50
<u>Rural Areas</u>						
High potential	20	40	80	80	60	20
Medium potential	10	20	40	90	80	60
Low potential	5	10	20	95	90	80

However, local factors may warrant deviation from the figures in the table, which only shall be construed as indicative. When the designed supply is an extension or completion of an existing supply, then the distribution of IC and NC is estimated after the monitoring of the existing situation.

5.4 Institutional Demand

5.4.1 Schools

The school population can be determined from field consultations, records from the Ministry of Education. In the absence of other data, a rough calculations can be made by assuming that 30% of the population attend primary and/or secondary school.

5.4.2 Health Facilities

The development of health facilities should be based on the existing situation, the plans of Ministry of Health and the anticipated growth of the population. In the long term, one-health center and two to four dispensaries will be planned to serve about 35-40,000 people. The number of hospital beds can be assumed to 0.8 beds per 1000 people. Regional and District hospitals should be analysed in an individual basis.

5.5 Commercial and Industrial Demand

5.5.1 Small Shops, Workshops, Restaurants, Bars etc.

The development of small-scale enterprises should be based on the existing situation. It should be anticipated that the future increase in commercial activity would be directly related to the growth of population.

5.5.2 Large Enterprises, Tourist Hotels, Military Camps, etc.

The development of large establishments should be examined in detail on an individual basis.

5.6 Fire Fighting

Since water for fire fighting is only used in the event of an emergency, it does not normally apply in regard to water allocation. It is usually a consideration that is made during the design of a water supply system. Water allocation for fire fighting in urban and rural centers will therefore need to be justified on an individual basis for each project, user or supply.

5.7 Water Consumption Rates

- The water consumption figures include about 20% allowance for water losses through leakage and wastage.
- The figures are the consumption rates for which the supply system shall be designed. No additional peak-factors shall be applied to calculate the design demand.
- The rates are proposed as a guide and may be adjusted if different rates are shown to be more appropriate in a particular case. The rates represent the consumption of the average consumer category. Within a consumer category there may be considerable variations.

Table 2.2: Consumption Rates

CONSUMER	UNIT	RURAL AREAS	URBAN AREAS
----------	------	-------------	-------------

		High potential	Medium potential	Low potential	High Class Housing	Medium Class Housing	Low Class Housing
People with individual connections	1/head/ day	60	50	40	250	150	75
People without connections	1/head/ day	20	15	10	-	-	20
Livestock unit	1/head/ day	50			-		
Boarding schools	1/head/ day	50					
Day schools with WC	1/head/ day	25					
Day schools without WC	1/head/ day	5					
Hospitals Regional District other	1/bed/ day	400 200 100			+ 20 1 per outpatient and day (minimum 5000 1/day)		
Dispensary and Health Centre	1/day	5000					
Hotels High Class Medium Class Low Class	1/bed/ day	600 300 50					
Administrative offices	1/head/ day	25					
Bars	1/day	500					
Shops	1/day	100					
Unspecified industry	1/ha/day				20,000		
Coffee pulping factories	1/kg coffee	25 (when re-circulation of water is used).					

5.8 Livestock Demand

5.8.1 Livestock Units

There are many different forms of livestock. Therefore the livestock unit used as a standard for purposes of estimating water demand is the Livestock Unit which is equivalent to a mature grade cow (>2 years old).

For the purpose of estimating the water demand for livestock the following conversion factors apply:

1 Grade cow	equivalent to	1 Livestock Unit (LU)
3 Indigenous cow	„	1 Livestock Unit (LU)
15 Sheep or goats	„	1 Livestock Unit (LU)
5 Donkeys	„	1 Livestock Unit (LU)
2 Camels	„	1 Livestock Unit (LU)

5.8.2 Livestock Population

The livestock population should be determined. This can be done in liaison with the District Livestock Production Officer of the area. If local information is lacking the following tables may be used as approximate guide to determine the livestock population.

Rainfall (mm)	Area per Livestock Unit (ha)
600-800	1.2
800-1000	1.0
1000-1200	0.8
1200-1700	0.6
Over 1700	0.4

Projecting livestock populations generally requires reference to experts in the field of livestock, such as the local District livestock Production Officer.

5.8.3 Service Level

It should be assumed that consumers with individual connections water their cattle from the piped water supply except where reliable alternative sources of water are available on the farms.

Consumers without individual connections will be expected to retain the traditional sources for the watering of cattle.

This implies that care should be taken in determining a reasonable livestock population that would be served under any individual water user.

5.9 Water Demand for Subsistence Irrigation

Section 53 of the WRM Rules indicates that subsistence will be given priority over commercial irrigation. However, in order to limit the scale of what might be termed subsistence irrigation, the Rules state that WRMA, by public notification, can state an upper limit of water that can be allocated to any one permit where the allocation is to be shared among a number of households.

Unless otherwise explicitly stated, WRMA will adopt an upper limit of 300 m³/day. This is consistent with the water rules which provide that the first 300 m³/day shall be charged at a lower rate. In most parts of Kenya 300 m³/day is sufficient to support approximately 6 ha under irrigation, depending on local conditions, climate and irrigation practices.

5.10 Water Demand for Commercial Irrigation

5.10.1 Introduction

Irrigation is a major consumer of water resources with an estimated 80% of the total water consumed nationally being used for irrigation purposes (Check reference). In a situation where water resources are limited and insufficient to meet all the demands, particular care is required in allocating and enforcing water permits related to irrigation.

Water demand for irrigation is a function of many variables, including:

- Rainfall;
- Climate;
- Crop type;

- Soil type;
- Growing calendar;
- Irrigation technology.

There are a number of methods for estimating irrigation water demand. These different methods have different data requirements and result in different levels of detail to establish an estimate of irrigation demand.

5.10.2 Approximate Method for calculating Irrigation Water Demand

An approximate method for estimating irrigation demand is shown in Figure XX. (NOTE: NEED TO FIX CHART TO INCLUDE ET_c)

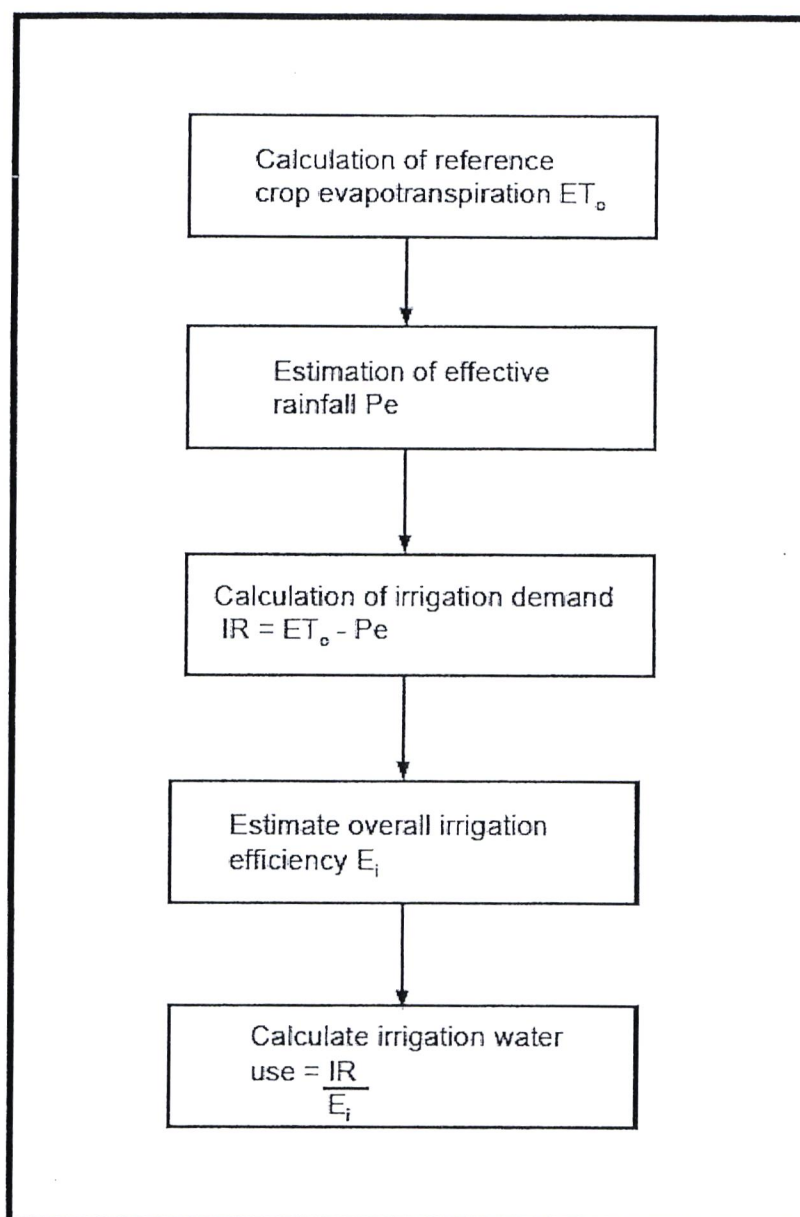


Figure XX: Approximate method for estimating Irrigation Demand

The irrigation water demand can be estimated using the following equations:

$$IRR = \frac{(ET_c - P_e)A}{EFF}$$

And

$$ET_c = ET_o \times K_c$$

Where IRR = Irrigation water demand
 ET_c = Crop Evapotranspiration
 ET_o = Evapotranspiration for Reference Crop (grass)
 K_c = crop factor (depends on crop type)
 P_e = Effective rainfall
 A = Area to be irrigated
 EFF = Overall irrigation efficiency (%)

The Food and Agriculture Organisation (FAO) of the United Nations has provided a program called CLIMWAT for the estimation of irrigation water demand. The program includes a database of 3262 meteorological stations from 144 countries and is widely used.

5.10.3 Detailed Method for calculating Irrigation Water Demand

Detailed methods for calculating irrigation water demand and use are justified in cases where the water user is designing an irrigation scheme.

The Water Supply Design Manual Part B provides details related to the calculation of the irrigation water demand.

5.10.4 Irrigation Efficiencies

It should be noted that often the greatest uncertainty in estimating irrigation water demand is the estimation of the irrigation efficiency. The overall irrigation efficiency is defined as the ratio of water consumed by crops to the water diverted from the water source (e.g. river or reservoir). The overall irrigation efficiency can vary from 10% to 90% and is heavily dependent on the irrigation technology adopted and the operation and maintenance of the irrigation scheme. Typical irrigation efficiencies are shown in Table XX below.

Table XX: Overall Irrigation Efficiencies

Irrigation System	Typical Overall Efficiency (%)
Surface systems (flood)	55
Conventional Sprinkler	75
Mechanical (centre pivot)	80
Micro jet	85
Drip	90

In allocating water, WRMA will be guided by the efficiencies to encourage adoption of more efficient technologies particularly in areas of water scarcity. In this regard, WRMA adopts a minimum irrigation efficiency of 80%, unless a specific case is made to justify a lower overall irrigation efficiency.

5.10.5 Allocation of Water for Irrigation Use

WRMA needs to allocate water in a way that is reasonable and easily understood. In addition, the system should encourage the water user to seek high water use efficiencies.

The way in which water is allocated for irrigation is influenced by whether storage is involved. In cases where storage is involved, the abstraction rate (m^3/day), representing the need to fill the storage from flood flows, is different to the irrigation application rate which is when the water is actually used.

(a) Case A: Abstraction for Irrigation without Storage

This case applies to allocation for irrigation in which the water is abstracted from the resource and applied immediately for irrigation. This case may apply where the water resource is sufficiently abundant to support the irrigation allocation from normal flows. In the event that the allocation is made from flood flows, then the water user should NOT expect to be able to abstract during the dry seasons. This implies that water allocation from flood flows should NOT be made without adequate storage to support the intended irrigation.

WRMA has adopted a value of $50 \text{ m}^3/\text{day}/\text{ha}$ for the purposes of allocating water for irrigation. This is equivalent to an irrigation application of 4 mm per day and an 80% overall irrigation efficiency.

It is known that certain crops and/or climates may require more than $50 \text{ m}^3/\text{day}/\text{ha}$ at certain times of the year. In this case, the justification should be presented in the Hydrological Assessment Report accompanying the permit application.

(b) Case B: Abstraction for Irrigation with Off-line Storage

This case applies to allocation for irrigation, from flood flows, to be stored in an off-line storage reservoir. In this case, the allocation needs to define (i) the proportion of the total flood flow that can be abstracted up to a maximum abstraction rate (m^3/day) and (ii) an annual abstraction volume.

Maximum Proportion of Flood Water to be Abstracted

A water user can abstract up to 50% of the flood flow. This condition means that the arrangement of the weir should ensure that flood flows are equally shared between an abstractor and downstream requirements. This condition therefore requires the water user to install a properly calibrated self regulating weir.

The condition of the self regulating weir and the proportions of the weir should be specified as conditions of the Authorisation to Construct and inspected by WRMA prior to issuance of the permit.

Maximum Abstraction Rate

The maximum abstraction rate is a function of the technology and capacity of the abstraction and conveyance system. The higher the abstraction rate, the quicker a storage structure will fill. It is therefore in the interests of the water user to construct an abstraction system that can economically move as much water as possible during flood flow events. This improves reliability in refilling the storage structure. Therefore there is no fixed guideline on a maximum abstraction rate. A value of 5 to 10 times the daily irrigation requirement may be appropriate. The maximum abstraction rate (m^3/day) is the value entered in WRMA Form 001, but as is shown here, it is not

as important in terms of water allocation as the maximum annual abstraction volume and the maximum proportion of flood flow.

Maximum Annual Abstraction Volume

The total annual abstracted volume is required to meet conveyance and evaporation losses in addition to meeting the irrigation demands.

WRMA has adopted a maximum annual abstraction volume of three times the storage capacity. For example, a water user with 100,000 m³ of storage is eligible to abstract, subject to all other permit conditions, up to a maximum of 300,000 m³ in any one year.

This arrangement provides an incentive for water users to increase their storage capacity in order to ensure sufficient resource to support their irrigation requirements.

This arrangement applies where there is no water allocation plan that specifically sets out the total flood volume of the resource and how this flood water is to be distributed between different competing users.

(c) Case C: Abstraction for Irrigation with On-line Storage

In the case of on-line storage, the maximum annual abstraction volume as stated above for Case B will also apply (i.e. 3 x storage volume).

In the case of on-line storage, the issues of compensation flow are equally significant and these issues are addressed in an earlier section on quantification of the Reserve.

5.11 Non-Consumptive Uses of Water

Water allocation for non-consumptive uses (e.g. fish farming) are less concerned with the quantity of water than the impacts of the use on the quality of the water resource which could prevent other/downstream users from their rightful access to the resource. In this case the Environmental Impact Assessment (EIA) Report and the Effluent Discharge Control Plan (EDCP), if appropriate, are the documents that should capture the extent of the quality impacts and WRMA can base its allocation decision on the information within these documents and its own investigations.

6 CONCLUSIONS

Water allocation in a situation of water abundance would not be such a challenging task. However, in many parts of Kenya water is scarce and therefore needs to be allocated in a fair and transparent manner. This is not a trivial task and with ever increasing demands on the resource, the task will only continue to become more challenging. WRMA therefore needs a system of water allocation which is robust and transparent.

This document provides support to the water allocation system by providing documentation on WRMA's approach. WRMA, hydrologists, environmentalists and water users will be able to understand the basis on which water allocation decisions are made.

6.1 Comments on Water Allocation, Compliance and Enforcement

This section provides some general comments regarding the issues associated with compliance and enforcement of water permits.

There is generally a reluctance to allocate water to a water user where there is the perceived risk that the water user will over abstract or not honour the requirements of the Reserve. This situation illustrates the need to see clearly the difference between the allocation process and compliance and enforcement of the conditions of the permit.

A quantity of water is allocated with a variety of conditions, including whether the allocation is from normal or flood flow, provision of the Reserve, requirement of storage, measurement of abstraction, etc. The water allocation process will never of itself prevent over or illegal abstraction. The extent to which water users are willing to comply and the efforts of WRMA to enforce are the main factors determining whether the allocation process is followed.

Given the general pattern in Kenya where water users fail to comply with the conditions of their permit, it is easy to assume that the water allocation system has failed. However, in most cases, it is actually a failure of users to comply and WRMA to enforce conditions on the permits, rather than a failure of the allocation system. However, in some cases, the allocation system has lacked a clear and rigorous approach. This document has attempted to address some of these deficiencies.

7 RECOMMENDATIONS

This document is of primary utility to WRMA staff and water resource professionals. Efforts should be made by WRMA to share the document and seek comments to improve the document. In this regard WRMA should:

- Undertake a workshop for WRMA staff (surface water, groundwater, water quality, water conservation, and water rights staff) to discuss and amend the document;
- Expose the document to review by key WRMA stakeholders, namely:
 - Water service boards;
 - National Environmental Management Authority (NEMA);
 - National Water Conservation and Pipeline Corporation
 - Ministry of Water (WRM);
- Expose the document to peer review by external water resource professionals. This can be undertaken by sharing the document with a selected number of water resource professionals;

APPENDIX A

WAB Standards for Water Allocation (1982)

WAB Standards for Water Allocation
WAB Minute No. 1142/82

	Purpose	Quantity	Units
1	Household use with water borne sanitation	50	gallons per day per person
		230	litres per day per person
2	Household use without water borne sanitation	10	gallons per day per person
		45	litres per day per person
3	Cattle and other large animals	10	gallons per day per large animal
		45	litres per day per large animal
4	Sheep, goats and other small animals	2	gallons per day per small animal
		10	litres per day per small animal
5	Poultry and similar birds	50	gallons per day per 100 birds
		230	litres per day per 100 birds
6	Cattle dips	50	gallons per day per dip for topping
		230	litres per day per dip for topping
7	Spraying of Coffee	300	gallons per acre per month
		1300	litres per acre per month
8	Irrigation at 3 inches per acre per month	2000	gallons per acre day
		22000	litres per hectare per day
9	Coffee pulping and washing with recirculation	5000	per ton of clean coffee 100% returnable
		22000	per ton of clean coffee 100% returnable
10	Fish breeding	2000	gallons per day for topping up - 100% returnable
		10000	litres per day for topping up - 100% returnable
11	Power to operate hydraulic rams		10 times total other requirements - 100% returnable

ANNEX VII

**CORRESPONDENCE ON GAZETTMENT OF
CATCHMENT AREA ADVISORY COMMITTEES**



WATER RESOURCES MANAGEMENT AUTHORITY

NHIF Building, 9th Floor, Wing B
P.O. Box 45250 - 00100, Ngong Road
Nairobi - Kenya

Tel: +254-020-2732291/2729048/

Fax: +254-020-2729951

Email: wrma@wrma.or.ke

Website: www.wrma.or.ke

REF: WRMA/CM/3/14/6 Vol.4/(169)

DATE: 12 May 2015

The Principle Secretary
Ministry of Environment, Water and Natural Resources
State Department of Water
Maji House
PO Box 49720
NAIROBI

GAZETTEMET OF CATCHMENT AREA ADVISORY COMMITTEE (CAAC) MEMBERS

As per the Water Act 2002, CAAC members are appointed to advise the Regional Managers on matters concerning water allocation, protection and conservation. The advisory role is premised from their experience in working in the respective Regions.

The immediate CAAC members' term has since expired and new ones are due for gazettelement.

Enclosed please find a list of the CAAC members from our Regions for Gazettelement as per the Water Act 2002.

Eng. Philip J. Olum, HSC
CHIEF EXECUTIVE OFFICER



28

WATER RESOURCES MANAGEMENT AUTHORITY

NHIF Building, 9th Floor, Wing B
P.O. Box 45250 - 00100, Ngong Road
Nairobi - Kenya

Tel: +254-020-2732291/2729048/9

Fax: +254-020-2729950

Email: wrma@wrma.or.ke

Website: www.wrma.or.ke

WRMA/HQ/CM/3/14/6 Vol.4/(28)

29 October 2015

The Principal Secretary
Ministry of Water and Irrigation
Maji House
P.O. Box 49720
NAIROBI

Dear Sir

REQUEST FOR GAZETTEMENT OF WRMA CATCHMENT AREA ADVISORY COMMITTEES (CAACs)

Further to our letter Reference No. WRMA/CM/3/14/6 Vol.4/(169) dated 12th May 2015, *(copy herein attached for ease of reference)*, I would like to elaborate on the process of selecting the CAAC members as follows:-

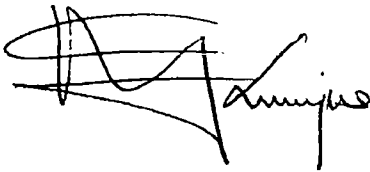
1. The Water Act 2002, Section 16(1) establishes the CAAC as an Advisory Committee to advise the Regional Managers on matters concerning water allocation, protection and conservation. *(A copy of the relevant Section is also attached for your ease of reference)*. The Law provides guidelines for choosing the members as in Section 16(3), from listed interest groups.
2. The term of the then existing CAACs expired on 28th February 2015. The CEO wrote to the Regional Managers, *(copy of the communication Reference No. WRMA/HQ/3/14/6 Vol.3/(132) is attached)*. The communication gave the guidelines for choosing the members of the Catchment Area Advisory Committee, on top of the provisions in the Law. As a result of these guidelines, the attached list was proposed from the Regional Offices and adopted by WRMA Headquarters.

The CAACs deliberates on water permits applications in Classes 'C' and 'D'. These are the classes of permits whose water use has significant impact on the water body. They are large water users typically; irrigation schemes, water suppliers, hydro power production, etc.

Since February 2015, WRMA has not processed permits in the above classes, leading to substantial complaints from the water users.

I am therefore requesting that you approve the list for Gazettment. This will enable the CAACs to be operational and enable WRMA process the pending Class 'C' and 'D' permits promptly.

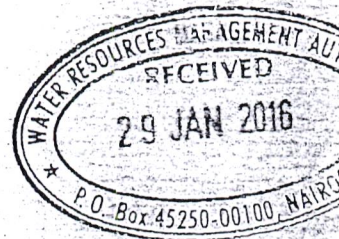
Yours faithfully

A handwritten signature in black ink, appearing to read 'Joseph M. Kinyua', with a stylized flourish at the end.

Eng. Joseph M. Kinyua
for: CHIEF EXECUTIVE OFFICER

Encls

①/1/16
② noted
on 8/2/16



REPUBLIC OF KENYA
MINISTRY OF WATER AND IRRIGATION
STATE DEPARTMENT OF NATIONAL WATER SERVICES
OFFICE OF THE PRINCIPAL SECRETARY

MAJI HOUSE
NGONG ROAD
P. O. BOX 49720-00100
NAIROBI
Website: www.water.go.ke

Telegrams: "MAJI" Nairobi
Telephone: +254 20 4900303
G.L +254 20 2716103
Fax: +254 20 2728703
Email: ps@water.go.ke

Ref. WD/4/1/5/9 Vol. V/(82)

Date: 21st January, 2016

The Attorney General,
P.O. Box 40112 - 00100,
NAIROBI. (Attn: Lilly Samich)

RE: APPOINTMENT OF CATCHMENT AREA ADVISORY COMMITTEE MEMBERS

Please refer to your letter Ref. No. 289/2/1 VOL. III dated 4th December, 2015 on the above subject.

Attached herewith please find the list of Catchment Area Advisory Committee (CAAC) members, including the Governing Board Chairman for your perusal and clearance for gazettelement.

Yours Faithfully,

Gladys Wekesa

Gladys Wekesa
Ag. Director Water Resources
For: PRINCIPAL SECRETARY

③ Made follow-up with AG's office
Informed that file with notice
sent to CS on 18/2/2016, lsf 294/
for his signature
1/3/2016.

CC

✓ The Chief Executive Officer,
Water Resource Management Authority,
NAIROBI - To see for follow-up action.

MEMORANDUM OF UNDERSTANDING

BETWEEN

CETRAD

Centre for Training and Integrated Research ASAL Development
"Building Capacity for Sustainable Regional Development"

P.O. Box: 144, Nanyuki – Kenya
Telephone: 254 6220 31328
Fax: 254 6220 31323
Email: cetrad@cetrad.org
Website: www.cetrad.org

AND



WATER RESOURCES MANAGEMENT AUTHORITY (WRMA)
Accounting for Every Drop

P.O. Box 45250 – 00100, Nairobi- Kenya
Tel No(s): +254-20-2729946 / 2729048 / 9
Fax: +254-20-2729950
Email: wrma@wrma.or.ke
Website: www.wrma.or.ke

This **Memorandum of Understanding** is entered into, this day of 2015

Between

The Centre for Training and Integrated Research in Arid and Semi-Arid Lands Development (CETRAD) is a bilateral institution of Post Office Box Number 144, Nanyuki, 10400, within the said Republic (hereinafter referred to as 'CETRAD').

And

Water Resources Management Authority (WRMA) is a state corporation Post Office Box 45250 – 00100, Nairobi, within the said Republic (hereinafter referred to as 'WRMA' which expression shall where the context so admit include its successors and assignees) of the second part.

WHEREAS, CETRAD was established in 2002 as a bilateral Institution between the Governments of Kenya and Switzerland. It is under the funding of the Swiss Agency for Development (SDC), executed by the Centre for Development and Environment (CDE), University of Bern and the Ministry of Water and Irrigation. It is concerned with research and training to design strategies for sustainable development, promote land use planning for sustained livelihood and optimal resource use, foster sustainable resource use and management for improved productivity and promote non-farm, non-pastoral enterprises, infrastructure and related services.

WHEREAS, The Water Resource Management Authority (WRMA) is a state corporation under the Ministry of Environment, Water and Natural Resources established through a gazette notice No. 8140 of 14th November 2003 pursuant to the Water Act (2002) and was operationalized in July 2005, and charged with being the lead agency in water resources management.

WHEREAS, CETRAD and WRMA (hereinafter individually referred to as the "Party" and collectively as the "Parties" where the context so admits) wish to establish a link to foster cooperation for the development and implementation of collaborative programs.

NOW, THEREFORE, CETRAD and WRMA have decided to enter into this Memorandum of Understanding (hereinafter referred to as MoU), which defines the framework for the cooperation of the two organizations.

1. Areas of cooperation

This memorandum of understanding aims at providing and formalizing the framework of present and future cooperation between CETRAD and WRMA in their endeavours of formulation, planning and implementation of a sustainable Water resources management and governance system especially within the Ewaso Ngiro North River catchment Area and the other Five catchment areas of Kenya. The collaboration will enhance the capacity of each organization to achieve their own goals with the common intent of improving the quality of life of the people living within these Six Catchment Ares.

Deleted: endeavor

Deleted: Basin

Deleted: Ewaso Ngiro North River Basin.

The range of envisaged themes within the framework of this Memorandum of Understanding include, but not limited to;

- Jointly manage, improve and modernize the existing Hydro-Met observatory network in the country, as well as install new ones in order to reduce cost and duplication of the same.
- Jointly engage in data collection activities to improve the baseline information and monitor changes in the environment and resource use in the Country.
- Provide technical and institutional support and assistance in capacity building of both the community and the staff in the areas of mutual interest for the collaborating partners.
- Development of various products which are relevant to water resources management and governance activities.
- Dissemination of relevant information and products to the relevant institutions and community.

Deleted: this basin

Deleted: Basin

To achieve the above goals, the following issues have been agreed on:

a) Data collection and sharing platform

- Instrument installation.
- Instrument ownership.
- Maintenance responsibilities.
- Data collection.
- Data analysis

- Data storage.
- Data accessibility and information dissemination.
- Data sharing protocols.
- Remunerations.

b) Institutional and technical support for both institutions and the community.

1.1. Data collection and sharing platform

1.1.1. Instrument installations.

Each organization has an independent existing network. The two institutions have agreed to merge the stations and manage them jointly and any new installations shall be done jointly. All the stations shall be owned jointly by both parties.

1.1.2. Maintenance responsibilities

There shall be a joint quarterly (or when need arises) inspection of the network and the cost shall be shared between the two institutions. The amount and the extent of involvement shall be mutually discussed and agreed upon.

The cost covers such activities as; rehabilitation, repair, de-silting, replacement of instruments and operational costs.

Deleted: mileage and

WRUAs will be responsible for the security of the stations in their respective sub-catchments.

1.1.3. Data collection

Data collection shall be manual, digital or live depending on the type of the monitoring equipment. Live data shall be relayed automatically into the servers either at CETRAD or WRMA for analysis and other manipulations and shared between the two institutions. Digital and manual data shall be collected jointly and the same copy made to each individual server.

The cost of these activities shall be shared between the two partner institutions. The amount and the extent of involvement shall be mutually discussed and agreed upon.

WRUAs shall be trained to take manual readings and transmit the same through mobile phone applications or any other means on daily basis. WRUA involvement in data collection and transmittance is meant to reduce cases of vandalism of the equipments. WRUA involvement shall

be treated as Agents of the participating Institutions. A common fee will be agreed upon for each specific deliverable.

Deleted: community contribution

1.1.4. Data storage

The live data shall be received through a gate way in Austria or through a local gate way. The received data will then be stored in the respective institutional server and shared with the partner institution.

1.1.5. Data ownership

Historical data from both institutions (River flow discharge, sedimentation, rainfall, temperature, wind speed, wind direction, sunshine hours, radiation and atmospheric pressure) shall be harmonized into a common data base that both institutions have full rights and access to.

1.1.6. Data accessibility and information dissemination

Raw data shall be freely accessible to the two institutions. However, limited accessibility of processed data shall be given to collaborating institutions such as ENNDA, LWF, Mpala Research Centre, Rural Focus and the WRUAs.

The two partner institutions shall hold joint workshops, seminars and conferences to disseminate information relevant information and materials to the public.

Other processed products shall be availed to the general public through the institutional websites, printed analytical products and other media materials.

1.1.7. Data sharing protocols

A common pricing (based on the WRMA rules 2007 as guiding principle) shall be developed and reviewed from time to time as need arises. The proceeds from the sale of data shall be retained by the institution that is dealing with the client. Both CETRAD and WRMA shall be acknowledged by the clients for the use of data.

1.1.8. Remunerations

The honoraria (instrument reader) shall be paid at the following minimum rates;

- ✓ RGS station Ksh 1,000 per month.
- ✓ Met station Ksh 3,000 per month.

Comment [JK1]: I would rather we leave the figures out since they might change during the validity of the MoU. We could have a commitment to a common rate for each specific task.

1.2. Institutional and technical support for both institutions and the community

1.2.1. Technical support

- ✓ CETRAD shall provide backstopping of WRMA activities involving community (WRUAs) mobilization, trainings, awareness creation and empowerment at both regional and national levels.
- ✓ CETRAD will also provide technical support, assistance and capacity building to WRMA staff and the WRUAs through training in areas of mutual interest and benefit to the organizations like; Food security and Drought Management, GIS, Integrated Water Resources Management & Governance, EIA/EA and Resource Use Conflict Management.
- ✓ CETRAD will offer advice on sustainable development planning, implementation and management strategies on the basis of research findings and professional capacities.
- ✓ Both institutions shall provide support in research activities within the entire basin by giving logistics support to researchers, identifying areas of research and jointly implement the research findings.
- ✓ Both institutions will work together in carrying out applied studies on topics of mutual interests. Such studies will be identified jointly or on individual capacity.

1.2.2. Institutional support

- ✓ Both institutions will work together in organizing and holding of joint workshops, seminars or conferences in areas of mutual interests. To this end, both institutions shall make financial and material contributions to the realization of the seminars, workshops, or conferences subject to the prevailing financial situation at the time. The amount and the extent of involvement shall be mutually discussed and agreed upon.
- ✓ Both institutions will work together in facilitating the dissemination and utilization of information and recommendations established through research studies by liaising with the relevant Governmental and Non-Governmental organizations.

2. Methods

Mutual cooperation and assistance shall be carried out, subject to the approval of each institution, through activities;

Deleted: availability of funds and

- i. Joint proposal writing
- ii. Joint organizational training seminars, workshops, roundtables and other policy outreach activities;

Deleted: /

- iii. Exchange of expertise (technical & human etc.)
- iv. Conduct joint research activities within the fields of study to be mutually agreed,
- v. Student and staff exchange;
- vi. Use of each others facilities subject to adequate prior notice convenience and availability;
- vii. Capacity building through exchange programmes and short courses;
- viii. Joint application for funding including donor funds, research grants, contributions subscriptions;
- ix. Participation in joint academic seminars, meetings, including participation with other collaborators;
- x. Exchange of training materials, academic data and information; and;
- xi. Any other collaborative efforts as may be determined from time to time.

Deleted: and subject to availability of funds;

Operational guidelines both academic and budgetary for each activity under the MOU shall be set down in a specific letters of agreement.

Provided that the terms of such mutual cooperation and necessary budget for each activity shall be mutually discussed and agreed upon in writing by both parties prior to its commencement.

3. Intellectual property

The disposition of intellectual property created by the participating parties in the performance of this Memorandum of Understanding shall be guided by the following principles:

For the avoidance of doubt,

- i. **"Existing Intellectual Property"** means all intellectual property of any kind whether registerable or non-registerable, patentable and unpatentable inventions, improvements and/or discoveries as owned, conceived or reduced to practice by CETRAD and WRMA before the Effective Date.

"Intellectual Property" means all patentable and unpatentable inventions, improvements and/or discoveries which are conceived or reduced to practice in the performance of the Project.

- "Joint Intellectual Property"** means the Intellectual Property created jointly by the participants of the Parties pursuant to this Agreement.
- ii. Notwithstanding anything contained in this Agreement, each Party shall own its respective Existing Intellectual Property exclusively. Technologies, methods and materials made available by one of the parties under the present contract will remain its sole property.
 - iii. Prior to any disclosure of proprietary information by one party to the other concerning specific aspect of this collaboration, the disclosing party may require the other to execute a confidentiality agreement in respect of the information. Notwithstanding anything to the contrary contained in this Agreement, the Disclosure Requirements shall not be materially violated by the Parties.
 - iv. CETRAD and WRMA shall periodically carry out evaluation of the MoU.
 - v. CETRAD and WRMA will assume equal responsibilities in administration of any patent obtained under this MoU.
 - vi. Material for publication or presentation arising from the joint projects shall be submitted for clearance to the two institutions to ensure that no patentable discoveries are published prior to protection by patents.
 - vii. All rights created by patent as a result of joint activity shall be shared by CETRAD and WRMA. Unless all the parties agree, no party shall individually, and without prior notice and consent of the other, file or obtain whether in Kenya or elsewhere and anywhere any Intellectual Property Rights over any materials or information under this Memorandum including properties, derivatives or processes including those that may utilize the knowledge of local communities regarding any product or process even if such process has been modified to a more sophisticated level by synthetic or any other method.

4. Mutual Obligations

- i. It is understood that neither party assumes any financial obligations as a result of this MoU but financial arrangements shall be negotiated separately.

Deleted: and shall depend upon the availability of funds.

- ii. The two parties hereto undertake to jointly solicit for funds including donor funds, research grants, contributions, subscriptions and such related funds for the purpose of realizing any or all the objectives of the collaboration.
- iii. The overall Memorandum does not entail any obligation for the two parties to fund any travels for researchers from the other institution. Provided that funds are available from elsewhere (e.g. concrete collaborative projects), both parties will facilitate practical arrangements related to study visits from the collaborating institution including office accommodation and necessary administrative functions (such as flight reconfirmation and hotel reservation) to enable them to carry out programme objectives.
- iv. Both institutions shall seek waiver of duty and value added tax applicable on any equipment and materials obtained for use by students and staff participating in this collaboration. As a general rule, the title and custody of any equipment acquired in the course of the collaboration shall remain with the party that acquired/purchased it upon the expiry of that particular project as specified in individual 'agreements of collaboration'.
- v. Both institutions shall abide by current international guidelines on good research practice and ethics available in relation to all research activities.
- vi. Both institutions further agree to bear the cost of administering the programme on such terms as shall be mutually agreed upon from time to time.
- vii. Both parties shall make rules governing the use of their respective facilities including laboratories, library and workshops where such facilities are used to conduct any of the functions of this collaboration as specified in 'agreements of collaboration' regarding each individual project.
- viii. Both parties jointly and independently agree to make available suitable facilities and personnel as and when required and on such terms as to fees, remuneration, insurance, and any other incidents thereto as specified in 'agreements of collaboration' regarding each individual project.

- ix. The way in which the parties shall share both in gains and losses of the collaboration including skills, inventions/patents, profits and liabilities whether pecuniary or otherwise, as well as the way the parties shall keep each other indemnified against all damages to or losses of any of their respective facilities resulting from the fault of their respective agents and/or servants will be specified in the individual project agreements.
- x. The parties hereto shall be at liberty to employ the services of consultants, or other staff as may be required and on such terms as to remuneration, tenure, or otherwise for the purposes of carrying into effect any or all of the objects of the collaboration upon mutual consultation and agreement.

5. Relationship Between Parties

Nothing contained herein shall be construed as establishing a relationship of agent and principal or master and servant as between the parties. Each party shall have full control of its operations and undertakings and shall have full responsibility for activities and duties carried by and on its behalf.

6. Insurance

In carrying out the functions of this MoU each party will insure its own employees and ensure that all adequate safety precautions are in place.

7. Notices

Any notification, request or consent required or permitted to be given or made pursuant to this MoU shall be in writing. Any such notification, request or consent shall be deemed to have been given or made when delivered in person to the authorized representative at the Head Office of the party to whom the communication is addressed or when sent by registered mail, fax or E-mail (signed attachments) to such party at the following address:-

For: **CETRAD**

THE DIRECTOR,
CETRAD,

P.O.BOX 144-10400
NANYUKI.
Fax: (254)-62-2031323.
E-mail: b.kiteme@africaonline.co.ke/cetrad@cetrad.org

For: **WATER RESOURCES MANAGEMENT AUTHORITY**

THE CHIEF EXCECUTIVE OFFICER,
WRMA,
P.O. Box 45250-00100,
NAIROBI.
Fax: +254-20-2729950
Email: wrma@wrma.or.ke

PROVIDED THAT, a party may change its address, E-mail and fax number for communication hereunder by notifying the other party of such change pursuant to this clause.

Notice shall be deemed to have been received one day after dispatch by electronic means and five days after dispatch by ordinary post

8. Authorized Representatives

Any action required or permitted to be taken and any document required or permitted to be executed under this MoU may be taken or executed:-

- i. On behalf of CETRAD by the Director or any other appointed Officer.
- ii. On behalf of WRMA by the C.E.O. or any other appointed Officer.

9. Third Party Participation

A third party (individual or institution) may on recommendation of either of the two institutions be permitted to participate in carrying out a function of the collaboration. Any such participation shall be carried out through an arrangement mutually executed by the two institutions, provided that no such arrangement shall be executed in contravention of any of the provisions of this MoU.

10. Sharing Of Equipment And Physical Facilities

CETRAD and WRMA will permit researchers carrying out activities for technological development to use the existing facilities **PROVIDED** and is hereby mutually agreed by the parties that the use of the facilities will not operate as a right to pass title thereof to either party or any other person using the facilities **NOTWITHSTANDING** that the parties or any such other person may be required to meet the cost of maintenance of the facilities.

CETRAD and WRMA will permit the use of the appropriate premises and facilities as a research, training or outreach site for the other institution upon such terms and for such duration as shall mutually be agreed upon.

The two institutions will undertake joint activities as required and on such terms as per budgets, remuneration, insurance and any incidentals thereto as shall be mutually agreed with regard to training, research, technology transfer and income generation.

11. Principles

Implementation of this memorandum of understanding and/or any agreement pursuant thereto shall be carried out in accordance with the principles of utmost good faith and fairness on the part of both parties. This will include ensuring that the staff and experts for any joint projects, participants for joint training courses and/or workshops, and compensation and acknowledgement of either party's contribution to any projects are done fairly and in good faith.

All participants, staff and experts working on joint trainings will be treated in the same non-discriminatory manner in carrying out the provisions of this memorandum of understanding or and any agreement(s) made pursuant to it, subject to provisions of the policies and requirements of each of the two institutions.

For the avoidance of doubt: **Per Diem** rates for the joint activities shall be determined by the following: Both institutions if they are sharing the cost of that particular activity or the institution with the budget for that particular activity.

12. Management of the Collaboration

This memorandum of understanding shall be administered jointly by two senior staff who shall be the officers for the time being designated by each of the contracting institutions and shall be designated as co-ordinators for that purpose.

13. Amendment

This memorandum of understanding may be modified or amended at any time with mutual written approval from both parties.

14. Duration of The Memorandum

This Memorandum of Understanding shall come into effect from the date of execution and shall remain in force as long as it remains relevant to both parties. Such amendments or revision shall be effective from the date of signature. Amendments may be decided at any time and shall be made in writing upon mutual consent of the parties.

15. Termination

Either party reserves the right to terminate this memorandum of understanding upon three months written notice to the other.

16. Commencement

This memorandum of understanding shall take effect when signed by all contracting parties.

Deleted: Such amendments or revision shall be effective from the date of signature. Amendments may be decided at any time and shall be made in writing upon mutual consent of the parties.

Deleted: each

Deleted: party

17. Disputes and arbitration

MOU to be within the laws of Kenya and also within the international treaties and conventions which Kenya is a signatory or party to. In this regard, any dispute or disagreement relating to implementation of the Memorandum shall be resolved by negotiation between the two parties. If however, the parties fail to arrive at an amicable resolution, the dispute shall be referred to an arbitrator mutually agreed upon by the parties for a decision in accordance with the provisions of the Arbitration laws of Kenya.

The parties agree that the Arbitrators' decision shall be final except as provided by the Arbitration Act no. 4 of 1995 of Kenya and the governing

law shall in so far as is possible be the general principles of international commercial law.

12. Forces of Majeure

Either party shall promptly notify the other party, in writing, of any situation or event arising from circumstances beyond their control, which they could not have reasonably foreseen, and which make the performance of all or part of the parties obligations under this contract impossible. Upon notification of the occurrence of such a situation or event, the performance of this contract shall be deemed to be postponed for a period of time equivalent to that caused by the Force Majeure and reasonable period not exceeding one (1) week thereafter shall be allowed for remobilisation to continue the performance of this Understanding.

Deleted: c

Deleted: contract

IN WITNESS WHEREOF, the Parties hereto have executed this Memorandum of Understanding this _____ Day of _____ 2015

SIGNED AND SEALED ON BEHALF OF:

CETRAD

SIGNED AND SEALED ON BEHALF OF:

WRMA

Signed..... Signed.....

DR. Boniface P. Kiteme, Director, Eng. Philip J. Olum,

Deleted: Name:

Signed..... Signed.....

Deleted:

Witness: Dr. Sarah Ogalleh. Witness: Ms Janet Olewe.

Deleted: Legal officer

Date: Date: