THE UNIVERSITY OF NAIROBI
SCHOOL OF ENGINEERING

A GIS BASED WATER QUALITY MANAGEMENT - A CASE STUDY OF WATER SUPPLY FOR THE CITY OF NAIROBI

A THESIS SUBMITTED IN PARTIAL FULFILLMENT FOR THE DEGREE OF MSC IN CVIL ENGINEERING (ENVIRONMENTAL HEALTH ENGINEERING OPTION) IN THE DEPARTMENT OF CIVIL AND CONSTRUCTION ENGINEERING OF THE UNIVERSITY OF NAIROBI

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DECLARATION

This thesis is my original work and has not been presented to any other University

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This thesis has been submitted with my approval as University Supervisor(s).

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ABSTRACT

The ever increasing global population and associated socio-economic development activities have increased the need for abstraction of fresh water and consequently release of wastes to the aquatic environment. Due to lack of controlling mechanisms and treatment facilities, wastes from industries, domestic sewage and agricultural practices find their way into water sources and result in large scale deterioration of the water quality. As a result, it has been recognized that water pollution constitutes a much broader threat than expected and continues to pose serious health risks to the public as well as aquatic life. These anthropogenic impacts make the definition of water quality to more complex, which requires simultaneous consideration of multiple aspects. For possible identification and mitigation of point and non-point contaminant sources that results from these anthropogenic impacts, geographically referencing water quality data and relating these data to other information, such as demography and land use, information is highly important.

Water quality assessment with aid of Geographical Information System (GIS) and ultimately its application in the monitoring and analyzing processes is a recent technology driven development. It is a powerful mechanism for establishing relationships between impacts due to natural as well as human activities and its effect on water quality. This thesis has explored a water quality assessment with the aid of Geographical Information System (GIS) and its applications for subsequent manipulations and analyses based on a case study of water supply for the City of Nairobi. The study has focused on exploratory analyses of existing water quality data of Nairobi City Water and Sewerage Company (NCWSC) and relevant field information with application of GIS software.

For exploratory analyses of existing water quality data, a GIS software package, the statistical function “Analyzing Patterns and Mapping Clusters” was applied for data manipulations and analyses. The analyses were made based on selected indicator parameters of existing water quality data.

The analyses result showed that some of indicator parameters of the water sources and distribution are spatially or regionally variable while others are randomly distributed. Parameters’ values were also evaluated in relation to established water quality standards. Based on parameters variability and assessments, it was possible to get information with respect to water quality conditions and status of sources and distributions. The information is useful for implementing control measures and improvements to the water supply system. Furthermore, the study result has revealed some constraints and allowed development of recommendations on the current water quality management system for the City of Nairobi Water Supply. Thus, this case study has proved the validity and applicability of GIS for water quality management.

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ACRONYMS AND ABBREVIATIONS

AWWA - American Water Works Association

DBMS - Database Management System

FAO - Food and Agriculture Organisation

GEMS - Global Environmental Monitoring System

GEMS/Water - GEMS Water Quality Programme

GIS- Geographical Information System

NCWSC - Nairobi City Water and Sewerage Company.

SA - Spatial Analysis

THMs - Trihalomethanes (THMs)

TDS – Total Dissolved Solids

USEPA - United States Environmental Protection Agency

USDA- United States Department of Agriculture

WHO – World Health Organisation

1. INTRODUCTION

1.1. BACKGROUND INFORMATION

Increased population growth and the need for fresh water have increased for excessive abstraction of water and consequently release of wastes. The effect has put the water sources quantity and quality at risk (http://www.un.org/). The problem will continue to pose irreversible damage to the environment unless sound water quality management is in place as one of core strategy for protection. Even though the content, methodology and procedures of water quality management vary worldwide, common objectives and foreseen activities have been stated by different specialist working in the field of water quality. Water Quality Management is a complex activity that requires the accomplishment of compliance to water quality monitoring to enforce regulations, as well as assessments at periodic intervals to verify the effectiveness of management decisions (Chapman, 1996). The cores of water quality management are thus water quality monitoring and assessments.

Water quality monitoring, one of the functions of water quality management, is the collection of the relevant information on physical, chemical and biological characteristics (Sanders, et al., 1983). Chapman (1996) has also described water quality monitoring as a collection of the relevant information that will help to determine conditions and trends in the quality of the aquatic environment and how that quality is affected by the release of contaminants and anthropogenic activities.

Water quality assessment, which is also one of the main tasks in water quality management is the overall analyses and process evaluation of the physical, chemical and biological nature of water in relation to natural quality and human effects (establishment of cause-effect relationships) and intended uses through applications of monitoring system (Chapman, 1996). A study by Machiwal and Jha (2010, cited by Freeze and Cherry 1979; Sara and Gibbons 1991) has also presented that an important task in water quality assessment is synthesis, compilation, presentation and interpretation of enormous water quality data in a convenient manner for visual inspection. The assessment will also involve systematic methods to explore, analyze and interpret the monitoring results (Chapman, 1996). Information generated through standard method of assessments will thus be used for management decision making. For example, the following are a few questions that water-use managers or similar authorities can reasonably expect the assessment programme to yield information (summarised from Bartram and Balance, 1996).

a) How is the quality of water at surface and ground water sources and distribution system in relation to established water quality standards?
b) How is the quality of water in a water body affected by human activities in the catchment?
c) Are the control strategies and management actions for pollution controls are appropriate and effective?
d) What is the trend of water quality with time due to change of human activities in the catchment area?
e) Where, how and why does the water quality conditions change over time?
f) What are the control measures that should be implemented to improve or prevent further deterioration of water quality?

For response to the above queries, a Geographical Information System (GIS)-based decision support system has been developed to help policy makers and other stakeholder to assess and examine in detail the impact of alternative water quality management scenarios (Assaf and Saadeh, 2008).

A geographic information system (GIS) is defined as "an organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information" (ESRI, 1992). Geographical referenced information can also be defined robustly as information linked to specific locations on the Earth's surface (Maasdam, 2000).

The use of geographical information system (GIS) in the field of water quality is relatively recent and still undergoing development. This system is a powerful tool, not only for geographically presenting water quality data, but also for relating these data to other information, such as demography and land use, contributing to water quality interpretation and highlighting facts previously not available (Chapman, 1996). Thus, the use of GIS in the field of water quality requires water quality data collections with accurate and careful geographical information, data processing, analyzing and interpretation.

When data are referenced with geographical information, it is called spatial data and the method of analysis is termed as spatial analysis (Fotheringham and Rogerson, 2005). In a broad sense spatial analysis (SA) is defined as a collection of techniques for analyzing geographical events where the results of analysis depend on the spatial arrangement of the events. By the term 'geographical event' is meant a collection of point, line or area objects, located in geographical space, attached to which are a set of (one or more) attribute values. In contrast to other forms of analysis, therefore, SA requires information both on attribute values and the geographical locations of the point to which the collection of attributes are attached. These spatial data manipulations, analyses, modeling, interpretations and retrieval of required information can effectively be carried out with the use of computer based Geographical Information System (GIS). This is due to the fact that GIS has a potential for facilitating spatial researches (Parker and Asencio, 2009).

Fotheringham and Rogerson (2005) have also presented as a shift of paradigm to exploratory from confirmatory, due to the GIS revolution and the increasing availability of geographical information system databases. The adjective 'exploratory' usually describes those analytical methods where the results suggest hypotheses, while 'confirmatory' analyses are used to test hypotheses. Techniques are required that are able to hunt out what might be considered to be localized pattern or 'database anomalies' in geographically referenced data but without being told either 'where' to look or 'what' to look for, or 'when' to look. The increasing availability of geo-referenced data suggests the need for a new style of data-driven, exploratory forms of analysis that greatly reduces the traditional emphasis on hypothesis proofing.

This thesis has focused on "A GIS based water quality management - a case study for the City of Nairobi". The study is dedicated to processing and analyzing of existing water quality data and generating information on water quality conditions of sources and distributions of water supply for the City of Nairobi. The result of these exploratory analyses will assist in evaluating the water quality conditions of the water resources and distributions as well as identifying possible causes of deteriorations or improvements. In general, the study will be used as a pioneering tool for improving the current effort of water quality assessment system of water supply sources, treatment and distribution. It will also be used to generate information and hypothesis for further studies. Furthermore, it will also lay foundation for improving the experience of water quality monitoring and evaluation systems of the country.

1.2. PROBLEM STATEMENT

The Drinking Water Quality and Effluent Monitoring Guideline established by Water Services Regulatory Board has set clear objective why drinking water quality and effluent monitoring is required by water service providers like the Nairobi Water and Sewerage Company. As stated in the guideline the objective is to ensure provision of potable water and safe treatment and disposal of wastewater as per established standards.

Nevertheless, the following are problems observed:

a) Even though the guideline has set clear objective, there is no clear strategy to achieve the objective. It is important to set clear methodologies or design of each monitoring activities for the achievement of the objectives. Lack of methodology leads to inconsistent method of data collection and analysis which impacts the result and the objective in general,

b) Method of data handling from site to laboratory and then to data storage is not clear. Methodology of data management (water quality data storage and retrieval systems) and quality assurance should also be stated,

Water quality monitoring and data analyses methods are site or problem specific (Biswas and Tortajada, 2011) and therefore require flexible and minimum standard practical guide for design and implementation. Besides limited knowledge of processes taking place in water body (Chapman, 1996), failure to recognize the requirements of sound water quality monitoring system will not be representative, marred with errors and the end results will lack credibility (Maasdam, 2000). The problems with respect to (a) and (b) were highlighted in the literature review under the title “GIS Based Water Quality Assessment Introductory Guide”.

c) The water quality test results are reported in terms of water quality variables on monthly or annual basis. This is just operational indictors. However, analyses and assessment of water quality variables is important to generate full information for appropriate decisions. Methodology of data analysis and reporting should also be stated in the guide of water quality monitoring.

The initial objective of monitoring is data collection. However, it is also important to note that the ultimate objective of monitoring is to provide information, but not data. As a result many monitoring programmes have been characterized by the "data rich, information poor syndrome (Ward et al., 1986). It is therefore prudent to analyze and further use of collected data so that the end result of monitoring is to generate information. The information generated could be used for subsequent decisions. The problem of not further manipulating and analyzing water quality data can be explained well in the case of Nairobi City Water and Sewerage Company (NCWSC) Ltd where the water quality data exists and continuous to be collected. As further manipulation of existing water quality data has not been made so far, it is unlikely that there is understanding of water quality conditions of the sources and the distribution system. There is no understanding of how the water quality is affected by the anthropogenic impacts taking place in the watershed and in the water bodies.

1.3. OBJECTIVES OF THE STUDY

1.3.1. BROAD OBJECTIVES

The broad objective of the study is exploratory analyses of existing water quality data of Nairobi City Water and Sewerage Company Ltd with GIS applications to generate information that can be used for water quality management.

1.3.2. SPECIFIC OBJECTIVES

The specific objectives of the study are to:

(1) Analyze and evaluate spatial and temporal trend of existing water quality data;

(2) Relate water quality data to activities in the land with respect to major pollution indicator variables. This will assist in identifying possible causes of deterioration or improvement of the water quality;

(3) Evaluate water quality conditions of the water resources and distributions in relation to recommended water quality standard.

1.4. LIMITATIONS OF THE STUDY

A continuous record of water quality data is necessary. However, only limited and intermittent data was available and this thesis research has been based on these data. Moreover, there are also large numbers of missing water quality data, as well as inconsistence of sampling frequency. Non-recording of flow at the time of sampling water quality data made flow adjustment on the parameters difficult. For most water quality parameters such as conductivity, nitrates, nitrites, etc., whose concentration influenced by flow, the observed trends may not be accurate representation of the actual trend. Non-recording of flow data at the time of sampling has also made difficult to analyse the total mass load of pollutants from non-point sources particularly from agricultural activities (fertilisers and other agricultural chemicals) and domestic wastes that tend to be delivered during periods of rainy season with surface runoff.

2. LITERATURE REVIEW

2.1. OVERVIEW OF EXISTING WATER SUPPLY

2.1.1. EXISTING WATER SUPPLY SYSTEM

Existing water supply of Nairobi City comprises of sources, treatment, transmission, storage and distribution systems. The major water supply source of Nairobi City is surface water supplied from Sasumua, Ruiru and Thika Dams and Kikuyu Spring. There are also a few boreholes connected to the water distribution system. The boreholes are strategically sited within the pressure zones for possible additional water injection to the distribution network or as standby. Private boreholes and other local water sources such as ponds, stream/river and spring well also constitute considerable supply.

2.1.2. WATER SUPPLY SOURCES AND TREATMENT

Nairobi City is supplied from four principal sources. These are Sasumua Dam, Thika Dam, Ruiru Dam and Kikuyu Springs.

Sasumua Dam– Sasumua Dam is located at about 90 km north of Nairobi City. It was constructed on the Sasumua Stream, a tributary of the Chania River, on the south end of the Aberdare Ranges. A water treatment plant is situated about 0.5 km downstream of the dam with a capacity of 63,700 m^3/day. However, the inlet capacity for raw water abstraction is currently limited to 54,000 m^3/day (BRL and Seureca, 2010).

Thika Dam– Thika Dam is also located about 80 km north of Nairobi City. The dam was constructed under Third Nairobi Water Supply Project (TNWSP) between 1989 and 1994. The management is assumed by the Nairobi City Water and Sewerage Company Limited (BRL and Seureca, 2010).

Water is transported from Thika Dam to the Ngethu Water Treatment works through a series of tunnels and pipeline Figure 2.1 below:

Ngethu Treatment Plant full design capacity is 457,900 m^3/day or 5.3 m^3/s after undergoing improvement with rehabilitation works at Mwagu Intake and Mataara Chamber (BRL and Seureca, 2010).

Ruiru Dam– Ruiru Dam is located at about 40 km north of Nairobi City. Raw water released from the dam is transported to Kabete Water Treatment Works through three transmission lines, namely 225, 300 and 400 mm diameter steel pipelines. Water can be transported by gravity, however, two booster stations have been constructed to increase the capacity. The designed capacity of the transmission lines is 30,000 m^3/day. The actual capacity is estimated at 23,100 m^3/day by gravity, because the two boosters were reported to be out of order (BRL and Seureca, 2010).

Kikuyu Spring - Kikuyu Spring is a small source located at about 19km west of Nairobi City. A supply from Kikuyu Spring with an estimated capacity of 4,800 m^3/day is directly injected into its small distribution zone (BRL and Seureca, 2010).

Schematic layout of water sources, treatment and transmission system is shown in Figure 2.1below:

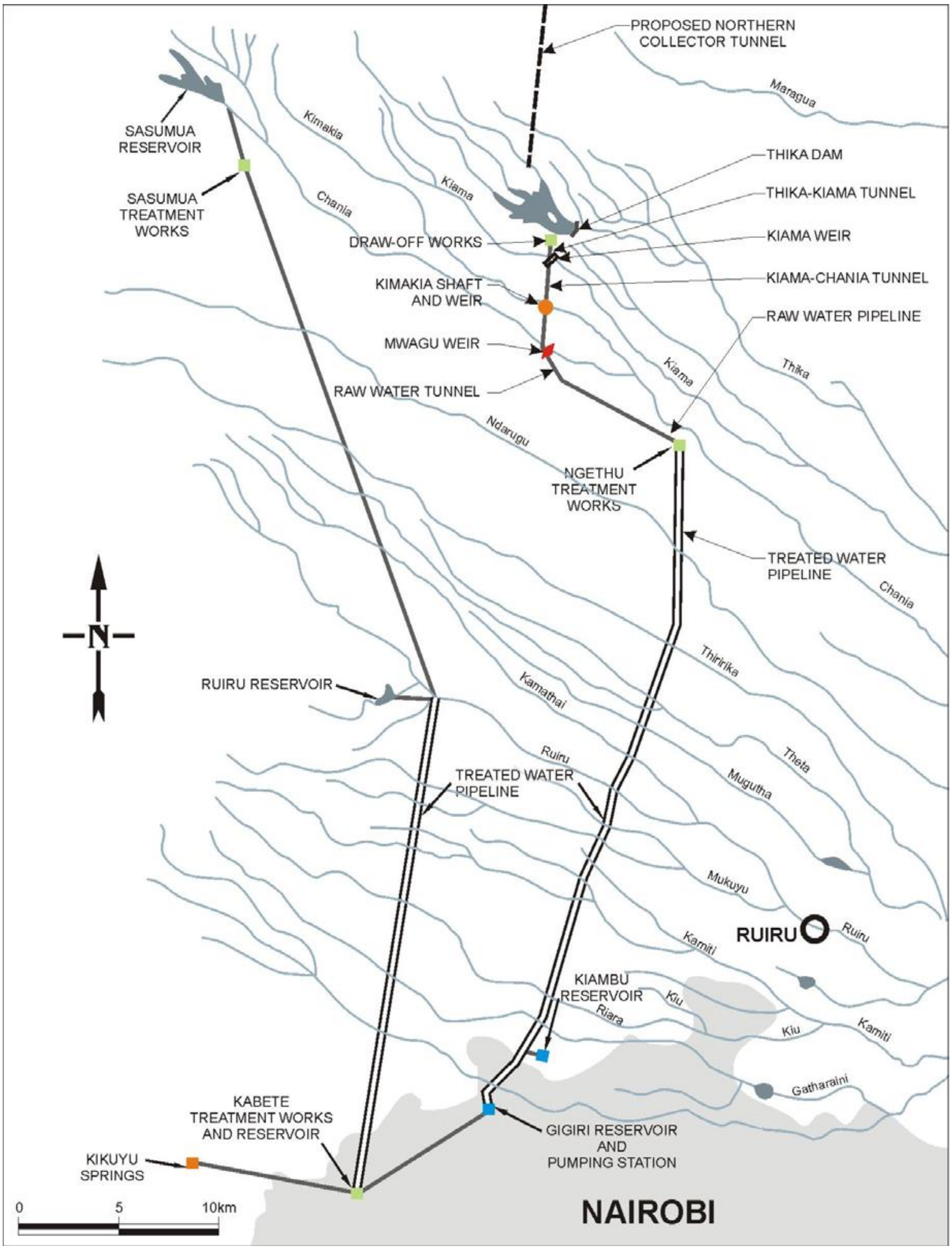


Figure 2.1: Schematic layout of water sources, treatment and transmission system (BRL and Seureca, 2010)

2.1.3. DISTRIBUTION SYSTEM

The area coverage of distribution network is about 480 km^2. The city is conveniently divided into 11 distribution pressure zones (BRL and Seureca, 2010). The distribution system integrates storage tanks and booster stations strategically sited in terms of demand and hydraulic operation requirements.

General layout of Distribution Network is shown in Figure 2.2 below:

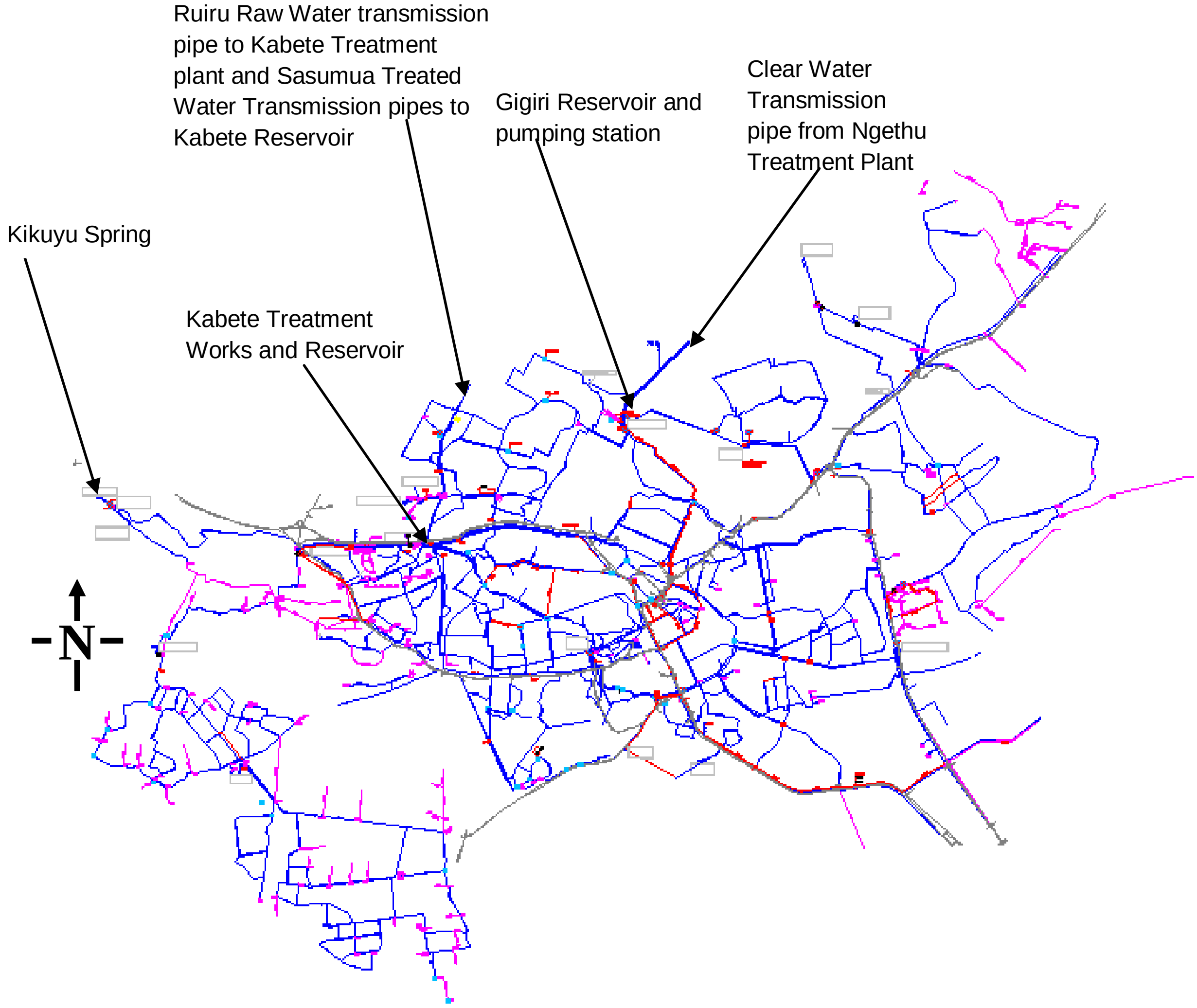


Figure 2.2: General layout of Distribution Network (Seureca, 2007)

2.1.4. EXISTING WATER QUALITY MONITORING SYSTEM

Currently, water quality sampling and testing is conducted at sources, treatment plants, storages and distributions by the Water Quality Assurance Department of the Nairobi City Water and Sewerage Company (NCWSC). The objective of sampling and testing is for compliance with established standards. Sampling and testing is also conducted at the request of customers or when there is complaint from customers with respect to water quality.

Sampling and testing is conducted predominantly at spatially distributed locations of specific stations of the sources, treatment plants, storages and distributions. Sampling and testing for compliance is also conducted up on demand and complaint. Figure 2.3 below shows regular sampling stations:

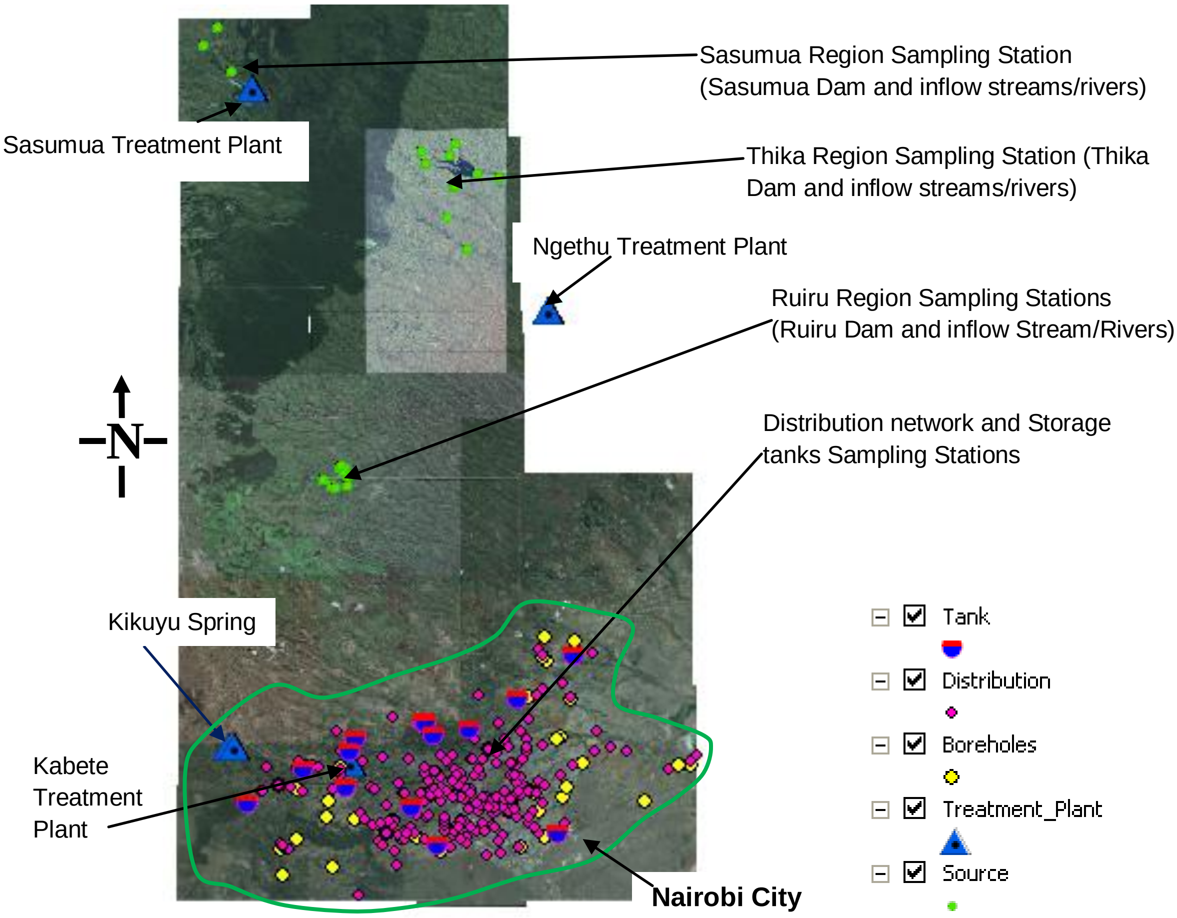


Figure 2.3: Water Sources, Treatment Plants, Distribution areas and Water Quality Sampling Stations

Monthly testing results with problem areas (non-compliance) and corrective measures taken are reported to Water Services Board and copied to Water

Services Regulatory Board on monthly and annual basis. Results are reported as individual monthly data sets without synthesis and assessments. Also appropriate data management system for test results, related information of samples and sampling stations was not in place. The problems associated with existing water quality monitoring system are described under sub-sections 1.2 and 1.4 above.

2.2. GENERAL OVERVIEW OF WATER QUALITY

2.2.1. ANTHROPOGENIC IMPACTS ON WATER QUALITY

A continuing increase in global population and associated socio-economic development activities has increased the need for abstraction of fresh water and consequently release of wastes to the aquatic environment. Due to lack of controlling and treatment facilities, wastes from industries, domestic sewage and agricultural practices find their way into water sources resulted in large scale deterioration of the water quality. Most often, the discharge of these wastes result into levels that are of health threat to the aquatic environment and human being (Anhwange, et al., 2012; Peters and Meybeck, 2000; Chapman, 1996).

2.2.2. POLLUTION OF AQUATIC ENVIRONMENT

The following are some of definitions given to pollution:

1) Pollution refers to a condition of water within a water body caused by the presence of undesirable materials (USDA, 2003);
2) Pollution is anything that downgrades the integrity of the water body (Novotny, 2004);
3) Chapman (1996) has also broadly defined pollution of the aquatic environment as the introduction of substances or energy by man, directly or indirectly, which result in the following deleterious effects:
    i. Harm to living resources,
    ii. Hazards to human health,
    iii. Hindrance to aquatic activities including fishing,

iv. Impairment of water quality with respect to its use in agricultural, water supply, industrial and often economic activities, and
v. Reduction of amenities.

2.2.3. SOURCES OF POLLUTION IN WATER SUPPLIES

It is important to monitor parameters that make up physical and chemical characteristics of water from source to distribution. Some of these parameters constitute a risk to human health, others affect the aesthetic quality of the water supplied and others relate to treatment issues. Monitoring of these impairments could be achieved through measurements of individual pollutants in water bodies to determine whether violations of water quality standards are occurring (U.S.EPA, 1997).

Water pollutants are categorized as point sources or non-point sources (Weiner and Matthews, 2007). Point source pollution comes mainly from industrial and municipal water treatment facilities and certain agricultural activities, such as animal husbandry (Weiner and Matthews, 2007). The major sources of non-point source or diffuse source pollutants to fresh water are agricultural activities such as pesticides, fertilizers, dredging, navigations and harbors, urban-runoff, etc. (Cooke, et al., 2005; Tong and Chen, 2002; Novotny, 2004; Weiner and Matthews, 2007; Pisinaras, et al., 2007).

An important difference between a point and diffuse sources is that a point source may be collected, treated or controlled. Diffuse sources consisting of many point sources may also be controlled provided all point sources can be identified (Weiner and Matthews, 2007).

2.3. WATER QUALITY MANAGEMENT

2.3.1. WATER QUALITY MONITORING AND INFORMATION PROCESSES

It has long been recognized that effective management of the water supply chain is an essential part of safeguarding public health (Razak, et al., 2009; Ratnayaka, et al., 2009). The management will be achieved through continuous monitoring of individual pollutants in the water bodies whether compliance with the standards have been achieved or not.

Water quality monitoring is the practice of assessing the chemical, physical, and biological characteristics of water in streams, lakes and coastal waters and groundwater relative to set standards and providing information on whether these waters are adequate for specific uses such as drinking, swimming, irrigation, and ecosystem services (Li and Migliacco, 2011). Water quality monitoring is the foundation on which water quality management is based (Bartram and Ballance, 1996).

Monitoring objectives are set according to the focus of water management and water pollution control activities and according to the issues that are capturing public attention. Monitoring objectives may be of many kinds, but fall mainly within the following basic categories (Helmer and Hespanhol, 1997):

a) Assessment of water bodies by regular testing for compliance with standards that have been set to define requirements for various functions and uses of the water body concerned,
b) Testing for compliance with discharge permits or for setting of levies,
c) Verification of the effectiveness of pollution control strategies, i.e. by obtaining information on the degree of implementation of measures and by detection of long-term trends in concentrations and loads,
d) Early warning of adverse impact for intended water uses, e.g. in case of accidental pollution,
e) Increasing awareness of water quality issues by in-depth investigations, for example by surveys investigating the occurrence of substances that

are potentially harmful. Surveys provide insight into many information needs for operational water management.

Monitoring is the principal activity that meets information needs for water pollution control (Helmer and Hespanhol, 1997). In any water use system, it is common to have some form of continuous monitoring systems that will provide information for subsequent actions of potential contamination.

The ultimate goal of a monitoring programme is to provide the information needed to answer specific questions during decision making process. But it is a concern that many in the past and present monitoring programs are characterized by data rich, but information poor syndrome ‘‘DRIP syndrome’’ (Ward et al., 1986). (Timmerman et al., 2000) have also pointed out that, too often the information presented does not satisfy the information need of users. The reasons are the following:

1) Specification of information need is insufficient,
2) The information need as specified is not the ‘‘real’’ information need (too little effort went into the process of defining the information need),
3) The strategy of collecting information has not produced the right information.
4) The obtained information generates new questions, making the originally agreed upon information need appear inadequate,
5) The situation has changed, for example, new policies have been developed, causing other information to be needed.
6) New methods have been developed.

Proper identification of information need require to be defined in advance by decision-making information users (UN/ECE TFMA, 2000). Following specification of the information needs and the setting strategies of assessment, monitoring and assessment to obtain the required information will progress. The information required and information obtained is in a continuous cycle of improvement. Improved strategy and methods will be followed by information required and information obtained, which leads to constantly improving quality of information (Timmerman et al., 2000).

A design of monitoring cycle that will assist in constantly generating improved quality of information (UN/ECE TFMA, 2000), is shown in Figure 2.4 below:

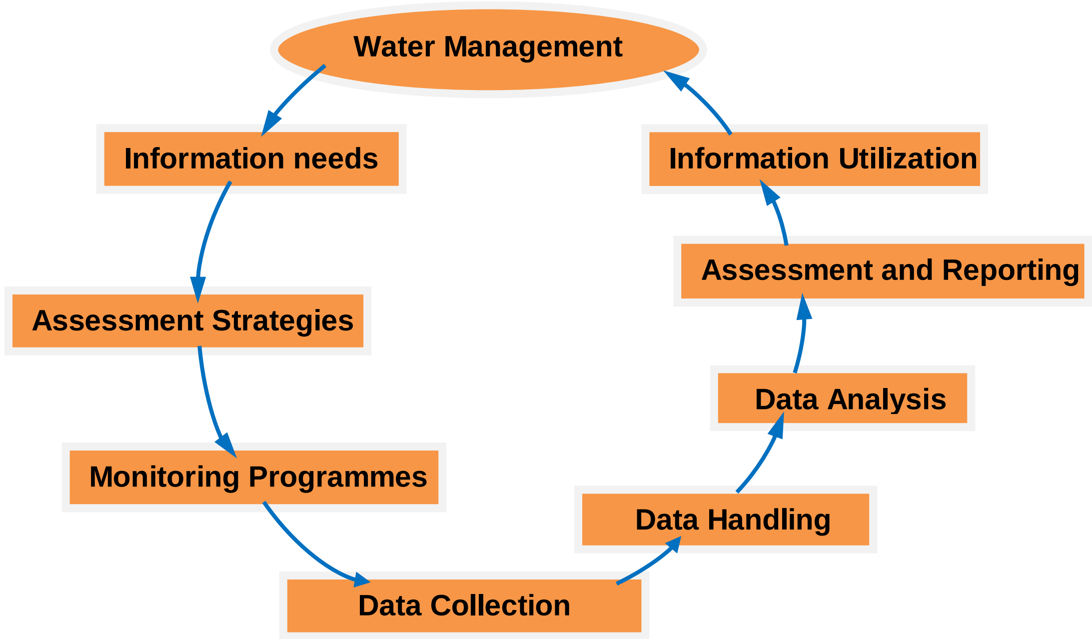


Figure 2.4: The Monitoring Cycle (UN/ECE TFMA, 2000)

2.3.2. GEOGRAPHICAL INFORMATION SYSTEM

A geographic information system (GIS) is defined as “an organized collection of computer hardware, software, geographic data, and personnel designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information” (ESRI, 1992). Geographical referenced information can also be defined robustly as information linked to specific locations on the Earth’s surface (Maasdam, 2000). Enotes.com (2012) has also described Geographical Information System (GIS) as any information system that integrates, stores, edits, analyzes, shares, and displays geographic information for informing decision making. GIS applications are tools that allow users to create interactive queries (user-created searches), analyze spatial information, edit data, maps, and present the results of all these operations.

GIS performs a central role in support of efforts to monitor water-quality changes within a water body such as a river or bay, to calculate pollutant concentrations and loads to a surface-water body, and modeling water quality of aquatic systems (Johnson, 2009). GIS is also used to prove or disprove a cause-and-effect relationship between a specific land activity and water quality degradation. Land-use characteristics pertaining to water quality are often determined using land-use classification maps developed from various sources, including aerial photography and remotely sensed imagery. A study conducted with geographic information systems (GIS) spatial analyses has identified watersheds that have high levels of contaminants with high proportions from agricultural and urban lands (Tong and Chen, 2002).

Moreover, as water quality data have many constituents that result with large volumes of data, it can be overwhelming to analyze, interpret and understand (Maasdam, 2000). GIS applications could thus be valuable attributes to analyze these data. These technologies could be operational for a monitoring audience with minimum training.

2.3.3. DATA MANAGEMENT AND RETRIEVAL SYSTEM

Data management comprises all activities related to managing of data by all disciplines as a valuable resource. It is a general term that covers are broad range of data applications. It may refer to basic data management concepts or to specific technologies. Some notable applications include data design, data storage, and data security (TechTerms.com, 2012). Rob and Coronel (2009) have also defined data management as a discipline that focuses on the proper generation, storage and retrieval of data.

Database Management System (DBMS) is the recent but progressively improving method of data management methods due to technology driven developments. DBMS is a collection of programs that manages the database structure and controls access to the data stored in the database. In a sense, database resembles a very well- organised electronic filing cabinet in which powerful software, known as a database management system, helps managing the cabinets (Rob and Coronel, 2009).

The volume of raw primary data is often very large, and so can only be used effectively if held in a Data Base Management System (DBMS). The functions of a DBMS are (FAO, 1998):

a) To ensure data conform to standard classifications,
b) To ensure validity of the data,
c) To ensure data integrity and internal consistency,
d) To secure and maintain primary data,
e) To allow easy access to primary data,
f) To process the data efficiently as required,
g) To allow different data sets to be integrated, thereby increasing their overall utility.

A fundamental principle is to hold all data as they were collected, in their primary form. This allows flexibility in the way data can be processed for example, filtered, aggregated and transformed, and ensures all calculations are reproduced from source data incorporating all revisions. Considering the considerable investment in data collection and low costs for storage and processing, there is little reason for not holding complete data in its primary form.

2.3.4. DATA ANALYES METHODS

2.3.4.1. SPATIAL VARIABILITY

GIS technology enhances spatial analyst either the quality of inputs, or the outputs or both. Such benefits essentially fall under three general headings (Fotheringham and Rogerson, 2005):

1. Flexibility to geographically visualise both raw and derived data,
2. Provision of flexible spatial functions for editing, transformation, aggregation and selection of both raw and derived data, and
3. Easy access to the spatial relationships between entities in the study area.

To facilitate spatial analysis, a set of spatial statistical tools designed specifically for analyses of spatial data were built as GIS core functionality. Unlike traditional (non-spatial) statistics, spatial statistics methods actually use space-area, length, proximity, direction, orientation, or some notion of how the features in a dataset interact with each other-right in the mathematics (Esri ArcWatch, 2010).

Spatial Statistics toolbox in ArcGIS includes both statistical functions and general purpose utilities. The statistical functions are grouped into four tool sets (Scott and Janikas, 2010): (1) Measuring Geographical Distributions, (2) Analysing Patterns, (3) Mapping Clusters, and (4) Modelling Spatial relationships.The tool sets are described in the following section:

2.3.4.1.1. Measuring Geographical Distributions

Measuring the distribution of a set of features allows to calculate a value that represents a characteristic of the distribution, such as the center, compactness, or orientation. This value can be used to track changes in the distribution over time or to compare distributions of different features (http://webhelp.esri.com/).

The Measuring Geographic Distributions tool set addresses questions such as:

i. Where's the center?
ii. What's the shape and orientation of the data?
iii. How dispersed are the features?
iv. Which variables have the broadest territory?

The tools in the Measuring Geographical Distribution toolsets (Table 3.1) are descriptive in nature (Scott and Janikas, 2010).

Table 2.1: Tools in the measuring geographical distributions tool set

Tool	Description
Central feature	Identifies the most centrally located features in a point, line, or polygon feature class
Directional distribution (standard deviational ellipse)	Measures how features are concentrated around the geographic mean, and whether or not they exhibit a directional trend
Linear directional mean	Identifies the general (mean) direction and mean length for a set of vectors
Mean centre	Identifies the geographic centre for a set of features
Standard distance	Measures the degree to which features are concentrated or dispersed around the geographic mean centre

2.3.4.1.2. Analyzing Patterns

Although it is possible to get a sense of the overall pattern of features and their associated values by mapping them, calculating a statistic quantifies the pattern. This approach makes it easier to compare patterns for different distributions or for different time periods (http://webhelp.esri.com/).

The tools in the Analyzing Patterns tool set are inferential statistics that are applied to evaluate whether the pattern expressed is clustered, dispersed, or random. Probability testing may be important if a high level of confidence in a particular decision is required. Testing for pattern starts with the null hypothesis that the features or the values associated with the features, exhibit a spatially random pattern. In statistical definition, the null hypothesis is what is assumed to be true about the system under study prior to data collection, until indicated otherwise. It usually states the "null" situation – no difference between groups, no relation between variables (Helsel and Hirsch, 2002). The alternate hypothesis is the situation anticipated to be true if the evidence (the data) show that the null hypothesis is unlikely. ArcGIS (http://webhelp.esri.com/) interprets the results as follows:

A Z score which is a test of statistical significance that helps to decide whether or not to reject the null hypothesis will be calculated. It is a measure of standard deviation or a measure of a spread of data around the mean. For example, if a tool returns a Z score of +2.5 it is interpreted as "+2.5 standard deviations away from the mean". A p-value which is the probability that has falsely rejected the null hypothesis is calculated for the corresponding Z score. In other way, it is the probability of incorrectly rejecting the null hypothesis when it is in fact true. Both statistics are associated with the standard normal distribution. This distribution relates standard deviations with probabilities and allows significance and confidence to be attached to Z scores and p-values.

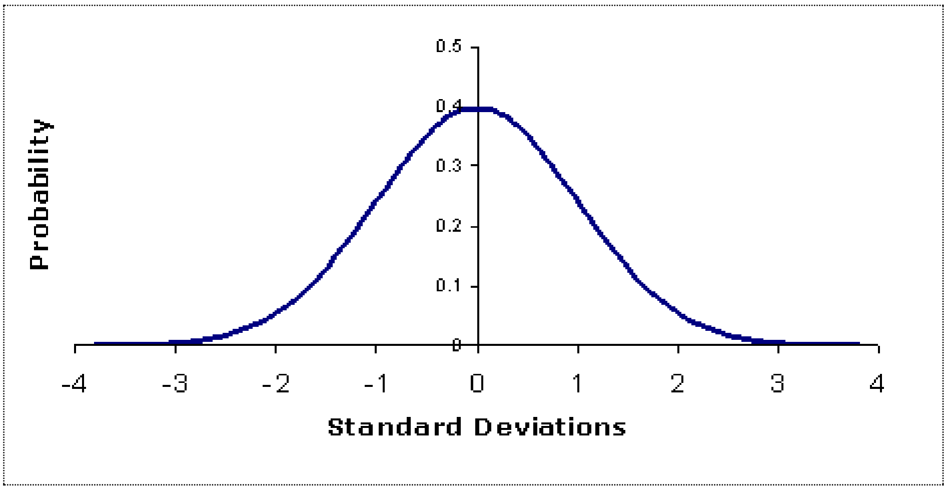


Figure 2.5: Standard Normal Distribution

The null hypothesis for the General G statistic states "there is no spatial clustering of the values". When the absolute value of the Z score is large and the p-value is very small, the null hypothsis can be rejected. If the null hypothesis is rejected, then the sign of the Z score becomes important. If the Z score value is positive, it means that high values cluster together in the study area. If the Z score value is negative, it means that low values cluster together.

The analyzing patterns tool set (Table 2.2) contains methods that are most appropriate for understanding broad spatial patterns and trends (Scott and Janikas, 2010).

Table 2.2: Summary of the tools in the analyzing patterns tool set

Tool	Description
Average nearest neighbor	Calculates the average distance from every feature to its nearest neighbour based on feature centroids
High/low clustering (Getis-Ord general G)	Measures concentrations of high or low values for a study area
Spatial autocorrelation (global Moran's I)	Measures spatial autocorrelation (clustering or dispersion) based on feature locations and attribute values
Multi-distance spatial cluster analysis (Ripley's K function)	Assesses spatial clustering/dispersion for a set of geographic features over a range of distances

The following are few of many questions in the water quality assessment that these toolsets can answer:

i. Are the water quality parameters clustered, dispersed, or random?
ii. Which parameters of water quality are most concentrated in areas of interest?
iii. Is the spatial pattern of water quality parameters related to the land use activities?

For analysing of existing water quality data, High/low clustering (Getis-Ord general G) statistical tool is applied as presented in Section 8.1 of the Appendices.

2.3.4.1.3. Mapping Clusters

The tools discussed above in the Analyzing Patterns tool set are global statistics that answer the question: Is there statistically significant spatial clustering or dispersion? Tools in the Mapping Clusters tool set (Table 2.3), on the other hand identify where spatial clustering occurs, and where spatial outliers are located (Scott and Janikas, 2010).

Table 2.3: Summary of the tools in the mapping clusters tool sets

Tool	Description
Cluster and outliers analysis (Anselin's local Moran's I)	Given a set of weighted features, identifies clusters of high or low values as well as spatial outliers
Hot spot analysis (getis-Ord G^*_I)	Given a set of weighted features, identifies clusters of features with high values (hot spots) and clusters of features with low values (cold spots)

In water quality assessment, Mapping Clusters tool sets can answer the following concerns required for managerial decision:

i. Is there any improvement at areas where control measures already in place?
ii. Where is specific parameter of water quality most concentrated?
iii. Which areas of the water sources and distributions need control measures that should be implemented to improve or prevent further deterioration of water quality?

Hot spot analysis (getis-Ord G^*_I) statistical tool located in Mapping Clusters tool set is applied for analysing existing water quality data as presented in Section 8.1 of the Appendices.

2.3.4.1.4. Modelling Spatial Relationships

The tools in the Modelling Spatial Relationships tool set (Table 2.4) fall into two categories (Scott and Janikas, 2010). The first category includes tools designed to help the user define a conceptual model of spatial relationships among features by providing a pathname to spatial weights file. Spatial weights are numbers that reflect the distance, time, or other cost between each feature and every other feature in the dataset.

The options available for modelling spatial relationships include inverse distance, fixed distance, polygon contiguity (rook's and queen's case), k nearest neighbours, Delaunay triangulation, travel time and travel distance.

The second category of the tool in the modelling Spatial Relationships tool set are Regression analysis tools used to model, examine, and explore spatial relationships in order to obtain better understanding of the factors behind observed spatial patterns or to predict spatial outcomes. These tools include Ordinary Least squares (OLS) and Geographically Weighted Regression (GWR).

In water quality assessment, regression analysis tools can answer the following questions:

i. What are contributors for seasonal variability of water quality parameters?
ii. What is the relationship between conductivity and total dissolved solids?
iii. Are agricultural activities sources of pollutants in water sources? Agricultural activities, whether are sources of pollution or not will be analysed based on nitrates, ammonia, and phosphorus mass loads or total amount of a substance that is transported as runoff from large rainfall events mainly during rainy season and discharge measured at sampling stations.

Table 2.4: Summary of the tools in the modelling spatial relationships tool sets

Tool	Description
Generate network spatial weights	Builds a spatial weights matrix file specifying spatial relationships among features in a feature class based on a Network dataset
Generate spatial weight matrix	Builds a spatial weights matrix file specifying spatial relationships among features in a feature class
Geographically Weighted Regression	A local form of linear regression used to model spatially varying relationships among a set of data variables
Ordinary Least Squares Regression	Performs global linear regression to model the relationships among a set of data variables

2.3.4.2. TEMPORAL VARIABILITY

While spatial variability (variables versus positions) deals with simultaneous analysis of water quality parameters of different sampling locations for defined water body or distribution system, temporal variability (variables versus time) deals with water quality parameters within certain time interval for a single sampling location (Chapman, 1996). The time units will range from minutes to year based on the objectives of monitoring. According to Chapman (1996), with temporal variability analysis, the values of water quality parameters are plotted against the date the respective samples were collected in chronological order usually called time series plots.

Temporal variation (time series plots) is used for:

a) Assessing general distribution of data, unusual sampling patterns, outliers and data gaps (U.S.EPA, 1997),
b) Visualizing changes in water quality parameters over a period of time. For regular water quality measurements, it can point out possible trends (Chapman,1996; U.S.EPA, 1997),
c) Visualizing cyclical variations of water quality data (seasonal, weekly, tidal, diurnal) (Helsel and Hirsch, 2002),
d) Assessing influences of seasonal variability on water quality parameters. For example, the influence of seasonal flood or rain on water quality parameters (Chapman,1996),
e) Understanding relationships (correlation) between different water quality parameters (Chapman,1996),
f) Selecting appropriate method for further analysis including statistical packages.

One of the most common objectives of evaluating temporal variability of water quality data is to understand whether there is an increase or decrease of pollutants over time. If there are such tendencies, it is called trend (U.S.EPA, 1997). Trend can be examined visually with caution from time series plots of water quality parameters (U.S.EPA, 1997) as graphical presentation of water quality data is an excellent approach for visual examinations (Helsel and Hirsch, 2002). It consists of plotting the values of one or more water quality parameters (y-axis) against the date of sampling (x-axis) (Chapman, 1996). Based on an inspection of the data, the analyst should be able to make a qualitative assessment. ArcGIS is the most powerful software for graphical manipulations of large volumes of data. Based on the type of analysis whether trends, relationships, distributions or proportions of data, appropriate type of graph can be used (http://webhelp.esri.com/). However, it is important to note that interpreting water quality data with visual observation can be misleading as decision are based on analyst's knowledge of the system. Usually, statistical tests are recommended to analyze trend.

The following are factors which could contribute to serious distortion of outputs of any analyzing methods (Chapman, 1996; Helsel and Hirsch, 2002): (1) small sample size, (2) data outliers, (3) missing data values, (4) irregular sampling frequencies, (5) censored data or below limit of detection, (6) non-normality, (7) seasonality and serial correlations.

2.3.5. WATER QUALITY INDICATORS

Water quality indicators are the physical, chemical and biological markers of a particular water source that provides a means of determining the quality of the water source (Pharino, 2007). Indicators are used to illustrate the different aspect of the desired information (UN/ECE TFMA, 2000). Some of water quality indicators in drinking water are reviewed below:

2.3.5.1. PH

The pH of a solution is a measure of hydrogen ion [H+] concentration, which is in turn a measure of acidity (Weiner and Matthews, 2007). Many fresh waters are relatively well buffered and about neutral, with pH ranging from 6 to 8 (Dallas and Day, 2004).

Changes in pH can alter the aspects of water chemistry, and thus affect the solubility and toxicity of both metals and non-metallic ions in water (Dallas and Day, 2004). For instance, ammonium ions ($NH4^{+}$) are non-toxic at lower pH. At pH above about 8, however, they are gradually converted to the highly toxic unionized ammonia ($NH3^+$) (Dallas and Day, 2004). Cyanide, too, become more toxic in acidic conditions. As pH decreases, the concentration of metal may increase because higher acidity increases their ability to be dissolved from sediments into the water. As a result, metals such as aluminium, cadmium, cobalt, copper, mercury, manganese, nickel, lead and zinc are toxic to aquatic organisms (Dallas and Day, 2004).

While the pH in natural waters is influenced by geology and biotic activities, human activities will also alter the pH of water body substantially and have detrimental effects. For instance, the chemicals, pulp and paper, and tanning/leather industries, wastewater, mine drainage water and air pollution which results in acid precipitation (acid rain) will substantially lower pH of water. Increases in pH can also result from certain alkaline effluents from industries such as food canning and textile production, as well as from anthropogenic eutrophication when excessive primary production leads to depletion of CO_2 from water in the presence of sunlight (Dallas and Day, 2004; Weiner and Matthews, 2007).

In treatment and distribution systems, it is necessary to know the pH of water, because

a. Effectiveness of coagulants are highly dependent on pH (Ratnayaka, et al., 2009),
b. pH determines effectiveness of disinfection. More alkaline water requires a longer contact time or a higher free residual chlorine level at the end of the contact time for adequate disinfection (0.4–0.5 mg/L at pH 6–8, rising to 0.60 mg/L at pH 8–9; chlorination may be ineffective above pH 9) (WHO, 2004: Ratnayaka, et al., 2009),
c. pH is influential for control of solubility and rate of reaction of most of the metal species involved in corrosion reactions. It is particularly important in relation to the formation of a protective film at the metal surface. For some metals, alkalinity and calcium hardness also affect corrosion rates (WHO, 2004).

The optimum pH will vary in different water supplies according to the composition of the water and the nature of the construction materials used in the distribution system. It is usually in the range of 6.5 to 8 (WHO, 2004).

2.3.5.2. ALKALINITY

Alkalinity is the concentration of H^+ that can be neutralized or the acid neutralizing capacity of water (AWWA, 2011). Alkalinity is a measurement of acid neutralizing capacity. It is the total concentration of strong acid required to reduce the pH to an end point of say 4.5 (AWWA, 2011). In natural water, pH is determined largely by the concentration of hydrogen ions (H^+) and alkalinity by the concentrations of hydroxyl (OH^-), bicarbonate (HCO_3^-) and carbonate (CO_3^{-2}) ions in water. Other species often present in small concentrations such as silicates, borates, ammonia, phosphates and organic bases contributes for alkalinity (Dallas and Day, 2004; Snoeyink and Jenkins, 1980).

Information concerning alkalinity is used in the following ways in practice.

a) Chemical Coagulation

Chemicals used for coagulations in conventional treatment system are usually metallic salts that have acidic character. When dosed into water, the formation of hydroxide floc is the result of the reaction between the acidic coagulant and the natural alkalinity of the water, which usually consists of calcium bicarbonate. The hydrogen ions released react with the alkalinity of the water. If the raw water has insufficient alkalinity or 'buffering' capacity, additional alkali such as hydrated lime, sodium hydroxide, or sodium carbonate must be added. Thus, the alkalinity acts to buffer the water in a pH range where the coagulant can be effective. For effective and complete coagulation to occur, alkalinity must be present in excess of that destroyed by the acid from the coagulant (Ratnayaka, et al., 2009; AWWA, 2011).

b) Water Softening

Water softening is a removal of calcium, magnesium, and other polyvalent cations, including Ba^{2+}, Sr^{2+}, $Fe^{2+,}$ and Mn^{2+}, achieved through cation exchange with addition of lime and soda ash. Alkalinity is a major item that must be considered in calculating the lime and soda ash requirements in softening of water by precipitation methods. The alkalinity of softened water is a consideration in terms of whether such waters meet drinking water standards (AWWA, 2011; Ratnayaka, et al., 2009; WHO, 2004).

c) Corrosion Control

Many factors determine whether water will be corrosive but three specific characteristics are important (Ratnayaka, et al., 2009):

i. Low pH value, i.e. acidity;
ii. High free carbon dioxide (CO_2) content; and
iii. Absence or low amount of alkalinity.

To control corrosion in water distribution networks, the methods most commonly applied are adjusting pH, increasing the alkalinity and/or hardness or adding corrosion inhibitors, such as polyphosphates, silicates and orthophosphates (WHO, 2004). Alkalinity must be known in order to calculate the Langelier saturation index that measures the corrosiveness of water.

d) Buffering

Alkalinity is important for fish and aquatic life because it protects or buffers against rapid pH changes. Aquatic organisms are sensitive to pH change of water. Few aquatic organisms tolerate waters with pH less than 4 or greater than 10 (Dallas and Day, 2004; Weiner and Matthews, 2007). Higher alkalinity levels in surface waters will buffer acid rain and other acid wastes and prevent pH changes that are harmful to aquatic life.

There are three kinds of alkalinity referred to in environmental literature. Phenolphthalein alkalinity, methyl orange alkalinity, and total alkalinity (Sawyer, et al., 2003).

(1) Phenolphthalein alkalinity: A measure of concentrated acid required to reduce a base as strong as or stronger than the carbonate ion. If the sample water has a pH level higher than approximately 8.3, you will see two equivalence points in the titration curve instead of just the one around

4.5.The first drop in pH at around 8.3 is the phenolphthalein equivalence point, and the amount of acid used to titrate to this point is used to calculate the phenolphthalein alkalinity. If the sample water is initially below pH 8.3, the phenolphthalein alkalinity is zero.

(2) Methyl orange alkalinity: A measure concentrated acid required to reduce a base as strong as, or stronger than the bicarbonate ion. This is calculated using the volume of acid needed to titrate to the lower pH equivalence point of 4.5.

(3) Total alkalinity: The sum of the phenolphthalein alkalinity and the methyl orange alkalinity.

2.3.5.3. HARDNESS

Hardness is generally defined as the sum of the polyvalent cations present in water and expressed as an equivalent quantity of calcium carbonate ($CaCO_3$). The most common such cations are calcium and magnesium. Although no distinctly defined levels exist for what constitutes a hard or soft water supply, water with less than 75 mg/L $CaCO_3$ is considered to be soft and above 150 mg/L $CaCO_3$ as hard (AWWA, 1999).

Hardness also relates to the scale that precipitates in kettles and utensils when water is boiled. The precipitate formed on heating is the temporary or carbonate hardness consisting of the bicarbonates of calcium and magnesium. Permanent or non-carbonate hardness which is not precipitated by heating is due to other salts of calcium and magnesium present in the water, usually in lesser quantities than the bicarbonates. Where the alkalinity is less than the total hardness (carbonate hardness + non-carbonate hardness), the excess hardness is termed as permanent hardness. Conversely, where the alkalinity is greater than the total hardness, the excess alkalinity is usually due to the presence of sodium bicarbonate, which does not affect the hardness of the water. Because bicarbonate ions can exist at pH values below pH 7.0, a measurable alkalinity is still obtained with ‘acidic’ waters down to pH values of 4.5 (Ratnayaka, et al., 2009).

Water is commonly classified in terms of the degree of hardness as follows (Ratnayaka, et al., 2009):

Table 2.5: Categories of Hardness

Hardness description	***Hardness as $CaCO_3$ mg/L***
Soft	0–50
Moderately soft	50–100
Slightly hard	100–150
Moderately hard	150–200
Hard	>200
Very hard	>300

(Source -Ratnayaka, et al., 2009)

Depending on pH and alkalinity, hardness above 200 mg/L can result in scale deposition, particularly on heating. Soft waters with a hardness of less than about 100 mg/L have a low buffering capacity and may be more corrosive to water pipes (WHO, 2004).

2.3.5.4. TURBIDITY

The presence of colloidal solids gives liquid a cloudy appearance which is aesthetically unattractive and may be harmful. Turbidity in water may be due to clay and silt particles, algae, organic matter, discharges of sewage or industrial wastes or the presence of large numbers of micro-organisms (Weiner and Matthews, 2007). Turbidity affects the efficiency of disinfection adversely. Turbidity is measured to determine what type and level of treatment are needed. Turbidity measurement can be carried out with a simple turbidity tube that allows a direct reading in nephelometric turbidity units (NTU) (WHO, 2004). Most guidelines limit turbidity in drinking water to be less than 5 NTU.

2.3.5.5. ELECETRICAL CONDUCTIVITY (EC)

Electrical Conductivity is a measure of the ability of a sample of water to conduct an electrical current. The higher the conductivity value, the greater is the number of ions in solution. Electrical Conductivity is also another measure of dissolved material and is often used as a surrogate for TDS, for the following reason. Because the electrical conductivity of water is a function of the number of charged particles (ions) in solution, it is also a measure of the total quantity of salts, and, therefore, of total dissolved solids. (Dallas and Day, 2004).

The majority of material dissolved in most water is ionic. Therefore, TDS and conductivity usually correlate closely for a particular type of water. It is commonly reported as umhos/cm (micromhos per centimeter) or dS/m (deciSiemens per meter).

2.3.5.6. TOTAL DISSOLVED SOLIDS (TDS)

A high total dissolved solids (TDS) concentration is usually associated with high concentrations of ions that increase the conductivity of the water. This increased conductivity in turn increases the water's ability to complete the electrochemical circuit and conduct a corrosive current. The dissolved solids may also affect the formation of protective films, depending on their particular nature. If sulfate and chloride are major anionic contributors to high TDS, it is likely to show increased corrosivity toward iron-based materials. If the high TDS is mainly composed of bicarbonate and hardness ions, the water may tend to be noncorrosive toward iron and cementitious materials, but highly corrosive toward copper (AWWA, 1999).

The presence of high levels of TDS in drinking-water (greater than 1,200 mg/L) may be objectionable to consumers (WHO, 2004). However, some standards suggest a concentration limit up to 1,500 mg/L.

2.3.5.7. FREE RESIDUAL CHLORINE

Free Residual Chlorine is the concentration of chlorine remaining in water at the end of specified contact period after rapidly oxidizing all the ammonia nitrogen in the water. This free residual chlorine will protect the water against re-infection from the point of chlorination to the point of use (WHO, 2004). WHO (2004) suggests that if bulk supplies in tankers are used, sufficient chlorine should be added to ensure that a free residual chlorine concentration of at least 0.5 mg/L after a contact time of at least 30 min is present at the delivery point. Minimum target concentrations for free chlorine at point of delivery are 0.2 mg/L in normal circumstances and 0.5 mg/L in high-risk circumstances.

For effective disinfection with chlorine, WHO (2004) suggests that the pH should preferably be less than 8; however, lower-pH water is likely to be corrosive. Hence, the pH of the water entering the distribution system must be controlled to minimize corrosion of water mains and pipes in household water systems.

2.3.5.8. IRON

Iron is found in most natural waters and can be present in solution, or in suspension as a colloid, or as a complex with other mineral or organic substances (Ratnayaka, et al., 2009). Iron is usually available as ferric (Fe^{3+}) form where there is sufficient oxidation such as in surface waters and soluble ferrous (Fe^{2+}) form in deoxygenated conditions that may occur in some deep boreholes or in the bottom waters of lakes and reservoirs.

Although iron is found in water naturally, rusting of iron or steel pipes in water wells and treated distribution system can also increase the dissolved iron concentration (AWWA, 1999). This will arise as a result of excessive corrosion of iron pipes normally by dissolved oxygen and ultimately forms a precipitate of iron (III) that in turn yields red water.

The major water quality factors that determine whether the precipitate of iron forms a protective scale are pH and alkalinity. The concentrations of calcium, chloride and sulfate also influence iron corrosion. Successful control of iron corrosion has been achieved by adjusting the pH to the range 6.8–7.3, hardness and alkalinity to at least 40 mg/L as calcium carbonate, oversaturation with calcium carbonate of 4 to 10 mg/L and a ratio of alkalinity to Cl^- and SO_4^{2-} of at least 5 when both are expressed as calcium carbonate (WHO, 2004).

The availability of ferrous and manganous ions in water also favours the growth of iron bacteria. For example, anaerobic ground waters or waters containing several milligrams per litre ferrous and manganous salts would be observed without discoloration or turbidity in the water when directly pumped from a well. However, oxidation by iron bacteria over time (or by exposure to air) may cause rust-coloured or black deposits (slimy coating) on the walls of tanks, pipes and channels in low flow areas of the distribution system and carry-over of deposits into the water (Ratnayaka, et al., 2009; WHO, 2004).

WHO (2004) recommends level of iron concentration in drinking water of less than 0.3 mg/L. At levels above 0.3 mg/L, iron stains laundry and plumbing fixtures. There is usually no noticeable taste at iron concentrations below 0.3 mg/L, although turbidity and colour may develop.

2.3.5.9. MANGANESE

Manganese is often present in significant amounts in groundwater. Man-made sources include discarded batteries, steel alloy production, and agricultural products (AWWA, 1999).

Manganese is an essential element in the human diet for a catalytic role in various cellular enzymes. Levels as low as 0.1 mg/L, can cause staining of laundry and sanitary ware. Manganese is undesirable even in small quantities in water supplies as it can precipitate out in the presence of oxygen or after chlorination. The precipitate forms a black slime on internal surfaces in the distribution system and, if disturbed, gives rise to justifiable consumer complaints (Ratnayaka, et al., 2009; WHO, 2004).

2.3.5.10. LEAD

Lead is rarely found in detectable concentrations in natural waters, except in areas where soft acidic waters come into contact with galena or other lead ores (Ratnayaka, et al., 2009). Lead occurs in drinking water primarily from corrosion of lead pipe (plumbosolvency) and solders and faucets constructed with leaded brass, especially in areas of soft or acidic water (AWWA, 1999). Wherever practicable, lead pipe work should be replaced or alternatively the pH needs to be increased to 8.0–8.5 after chlorination possibly by dosing orthophosphate (WHO, 2004).

Lead at very low concentrations will have adverse neuro-toxic and carcinogenic effects on human. Infants, children up to 6 years of age and pregnant women are the most susceptible to these adverse health effects (WHO, 2004). WHO (2004) recommends a concentration limit of lead in drinking water to 0.01 mg/L. However, some standards suggest a limit up to 0.05 mg/L.

2.3.5.11. COPPER

Copper is commonly found in drinking water. Low levels can be derived from rock weathering and industrial contamination. However, the principal sources in water supplies are corrosion of brass and copper pipes and fixtures and the addition of copper salts during water treatment for algal control (AWWA, 1999).

Water containing as little as 1 mg/L of copper can cause blue/green stains on sanitary fittings. Although copper is an essential element in the human diet, concentrations above 2.5 mg/L can impart an unpleasant and astringent taste to the water and some individuals may suffer acute gastric irritation at concentrations above 3 mg/L (Ratnayaka, et al., 2009). WHO (2004) recommends a concentration limit of copper in drinking water to be 0.1 mg/L.

2.3.5.12. ZINC

Zinc tends to be found only in trace amounts in unpolluted surface waters and ground waters. However, it is often found in the water at consumers' taps as a result of corrosion of galvanized iron piping or tanks or dezincification of brass fittings (Ratnayaka, et al., 2009).

Based on taste and acceptability to consumers, WHO (2004) suggests a concentration limit of zinc to be 3 mg/L. However, some standards suggest a limit up to 5 mg/L.

2.3.5.13. FLUORIDE

Naturally occurring fluoride is found in varying concentrations in most drinking waters (Ratnayaka, et al., 2009). Even though fluoride is essential in drinking water to a low limit for protection against dental caries particularly in children, exposure to high levels of fluoride, can lead to mottling of teeth and, in severe cases, crippling skeletal fluorosis (WHO, 2004). As a result, WHO (2004) limits the concentration of fluorides to 1.5 mg/L in drinking water.

2.3.5.14. NITRATES AND NITRITES

Nitrates are the end products of the aerobic stabilization of organic nitrogen and may enter surface waters and ground waters through excessive fertilizers and agricultural runoff and leaching of wastewater or other organic wastes (WHO, 2004; Dallas and Day, 2004; Ratnayaka, et al., 2009). High level of nitrates in water is an indication of pollution. In spite of their many sources, nitrates are seldom abundant in natural surface waters, normally < 0.1 mg/L as N, because photosynthetic action is constantly converting them to organic nitrogen in plant cells. They are, however, often found in high concentrations in ground water (Dallas and Day, 2004).

Nitrate levels in surface waters often show marked seasonal fluctuations, with higher concentrations occurring in winter when runoff increases due to winter rains at a time of reduced biological activity. During summer, the nitrate levels are likely to be reduced by biochemical mechanisms and by algal assimilation in reservoirs (Ratnayaka, et al., 2009).

Nitrite is the intermediate oxidation state between ammonia and nitrate and can be formed by the reduction of nitrates under conditions where there is a deficit of oxygen particularly in ground waters. The presence of nitrites in surface waters in conjunction with high ammonia levels indicates pollution from sewage or sewage effluent. Industrial production of metals, dyes and celluloids are also sources of nitrites. The presence of nitrites in groundwater may also be a sign of sewage pollution (Ratnayaka, et al., 2009; Dallas and Day, 2004).

The primary health concern regarding nitrate and nitrite is the formation of methaemoglobinaemia, which is nitrate reduced to nitrite in the stomach of infants. Nitrite is able to oxidize the oxygen carrying haemoglobin to methaemoglobin which is unable to transport oxygen around the body (WHO, 2004). Based on this effect, WHO (2004) has suggested a concentration limit of nitrate to 50 mg/L as nitrate. The recommended concentration limit of nitrite is also set to 3 mg/L.

2.4. GIS BASED WATER QUALITY ASSESSMENT INTRODUCTORY GUIDE

2.4.1. GENERAL

Water quality management requires water quality assessment guide that will provide strategies and methodologies of data collection, data management, analyses and information generation. Thus, this section highlights introductory guiding for GIS based water quality assessment strategies. The guiding was prepared based on comprehensive collection and review of relevant documents, studies, publications and experiences of water quality assessment methods. The review includes fundamentals of GIS based water quality management system and guidance to address information needs.

Some of critical points addressed in the assessment guide are:

a. Scrutinizing objectives of the assessment and information need,
b. Information on sampling stations that include, co-ordinates, land use, discharge of effluents and other activities in the water catchments,
c. Hydrologic conditions and other related information during sampling,
d. Sampling station selection and sampling frequency. These require considerations of objectives of monitoring, water quality influences, and water quality variability,
e. Analysing, interpreting and information generating (reporting) methods.
f. Data validating and management system. Relational database management system was recommended to handle data input, editing and retrieval of numerical data and text.

The guide is brief and, therefore, not compressive. However, further information is available in the cited references or other relevant literatures.

2.4.2. BASICS OF WATER QUALITY ASSESSMENT

2.4.2.1. DEFINITIONS

Definitions used in this guide (Chapman, 1996) are as follows:

Water quality Assessment: is the overall process of evaluation of the physical, chemical and biological nature of water in relation to natural quality, human effects and intended uses, particularly uses which may affect human health and the health of the aquatic system itself.

Water quality Monitoring: is the actual collection of information at set locations and at regular intervals in order to provide the data which may be used to define current conditions, establish trends, etc. It is long-term, standardised measurement and observation of the aquatic environment in order to be used for interpretation and assessment.

Survey: is a finite duration, intensive programme to measure and observe the quality of the aquatic environment for a specific purpose.

Surveillance: is a continuous, specific measurement and observation for the purpose of water quality management and operational activities.

2.4.2.2. OBJECTIVES OF WATER QUALITY ASSESSMENT

a) Designated uses and level of protection

Designated uses of a water resource can include the following (Cooke, et al., 2005):

i. Drinking water;
ii. Recreational uses and aesthetics;
iii. Protection of aquatic life;
iv. Agricultural uses (irrigation and livestock watering); and
v. Industrial supplies.

The designated uses determine the level of protection required for the water sources in line with recommended limited of parameters for each designated water uses.

b) Setting objectives of the assessment program

A clear statement of objectives is necessary to ensure collection of all necessary data and to avoid needless and wasteful expenditure of time, effort and money (Bartram and Ballance, 1996). The process of determining assessment objectives should start with an in-depth investigation of all factors and activities which exert an influence, directly or indirectly on water quality. Furthermore, evaluation of existing data will provide a basis for judging the extent to which programme objectives were achieved and thus justify the undertaking. Before observations begin, it is also essential to specify the location of sampling stations, the frequency of sampling and the water quality variables to be determined.

Possible objectives could include (Helmer and Hespanhol, 1997):

i. State assessment;
ii. Compliance with standards or provision of the agreement (related to functions/use);
iii. Emergency response;
iv. Special protection areas;
v. Remediation and restoration.

The objectives could also be set in terms of impact assessments (Cooke, et al., 2005). Impact assessment could also be explained in terms of cause-and-effect relationship between a specific land activity and water quality conditions, like "What is the impact of tea farming on Thika and Ruiru Region surface water sources?", and "what is the impact of urbanisation on Kikuyu Spring and Ruiru surface water sources?" 'What if' scenarios will also determine the changes that may or may not occur if a certain action is taken (Cooke, et al., 2005). For example, "what implication on water quality would be if land activity is changed from current?"

2.4.2.3. INVENTORY OF EXISTING STATUS

The inventories will include describing and ranking of existing and emerging pollutant sources (present and expected), including: domestic, industrial and agricultural, as well as their stage of pollution control and waste treatment facilities.

Review of available water quality studies of the area of interest shall also be conducted before start up of new monitoring programme. If existing data/information is available, it will be used as indicator for further inventory of water quality status and sources of pollutions.

2.4.2.4. VARIABILITY OF WATER QUALITY

Aquatic ecosystems are dynamic systems and are influenced by many factors. Water quality monitoring to assess non-point source contamination in such ecosystems is particularly difficult because there is a large degree of natural variability to account for (Cooke, et al., 2005).

Factors contributing to variability in water quality data include:

1) ***Weather conditions:*** Some water quality parameters may be positively or negatively correlated to weather conditions such as precipitation. For example, runoff from large rainfall events can pick up and deliver more contaminants to a stream than would be transported during dry weather. Conversely, some dissolved contaminants may not be affected by an increase in surface runoff or stream flow.
2) ***Hydrologic conditions and sampling frequency***: Flow conditions in streams or seasonal influences on reservoirs affect water quality. To adequately characterize the quality of a water body, sampling must also account for the range of hydrologic conditions. Sampling streams infrequently or only during low flow periods will yield information that does not adequately characterize the stream's overall water quality. Calculation of mass loads (total amount of a substance that is transported by a stream) and flow-proportionate stream sampling (taking

more samples during high flows and fewer during low flows) are required to describe ambient stream water quality.

3) ***Spatial Variability***: Samples are principally collected at given geographical locations in the water body. Water quality variables are often described by the longitude and latitude of the sampling or measurement site (*x* and *y* co-ordinates) and further characterised by the depth at which the sample is taken (vertical coordinate *z*). These geographical variations of monitoring are called spatial variations. These are particularly applicable to lakes, reservoirs and groundwater aquifers (Chapman, 1996). For example, water quality for certain parameters (e.g. dissolved oxygen, suspended sediment) may differ depending on whether the sample was taken at the surface or bottom of a stream.

4) ***Temporal Variability***: Water quality sampling is also further investigated by flow direction, discharge and time, statistically termed as temporal variation. The data must be characterised and recorded with regard to the time *t* at which the sample is taken or the *in situ* measurement made. Thus the temporal variation of any physical, chemical or biological variable will be measured as a concentration *c*, or number, which is a function of geographical coordinates and time: $c = f(x,y,z,t)$. In rivers, the flux determination and the data interpretation also require the knowledge of water discharge *Q,* thus: $c = f(x,y,z,t,Q)$ (Chapman, 1996).

   i. Temporal variation will require considerations of:
   ii. Minute-to-minute to day-to-day variability resulting from water mixing, fluctuations in flow, etc., mostly linked to meteorological conditions and water body size (e.g. variations during river floods);
   iii. Variability (24 hour variations) limited to eutrophication processes, light/dark; Cycles etc. (e.g. O_2, nutrients, pH), and to cycles in pollution inputs (e.g. domestic wastes).
   iv. Days-to-months variability mostly in connection with climatic factors (river regime, Lake Overturn, etc.) and to pollution sources (e.g. industrial wastewaters, run-off from agricultural land).
   v. The seasonal hydrological and biological cycles (mostly in connection with climatic factors).
   vi. Year-to-year trends, mostly due to human influences.

5) ***Sample Type*****:** Affects water quality. Sample type include (Bartram and Ballance, 1996):

i. Grab sample - is taken at a selected location, depth and time. Grab samples are also known as “spot” or “snap” samples.

ii. Composite or integrated samples - is samples made up of several different parts, are often needed to fulfil some specific monitoring objectives. Composite samples may be of the following types:

a) Depth-integrated: most commonly made up of two or more equal parts collected at predetermined depth intervals between the surface and the bottom.

b) Area-integrated: made by combining a series of samples taken at various sampling points spatially distributed in the water body (but usually all at one depth or at predetermined depth intervals).

c) Time-integrated: made by mixing equal volumes of water collected at a sampling station at regular time intervals.

d) Discharge-integrated: It is first necessary to collect samples and to measure the rate of discharge at regular intervals over the period of interest. A common arrangement is to sample every 2 hours over a 24-hour period. The composite sample is then made by mixing portions of the individual sample that are proportional to the rate of discharge at the time the sample was taken.

6) ***Land use and land management practices***: Human activity is one of the most important factors affecting hydrology and water quality (Peters and Meybeck, 2000). A long period of record is required to determine if change or level of impact is due to the effects of a particular practice or to natural variability. Consequently, a long-term commitment is recommended to adequately assess water quality (Cooke, et al., 2005).

7) ***Analytical error:*** Laboratory analysis and data processing can also introduce a level of variability or error into water quality data. Quality control and quality assurance components, to validate the data, should be part of any water quality monitoring program (Cooke, et al., 2005).

2.4.3. ELEMENTS OF WATER QUALITY ASSESSMENT

2.4.3.1. OBJECTIVES

Before planning of water quality data collection and analyses, it is necessary to define clearly what information is needed and what is already available as a major objective of the monitoring programme is to identify gaps that need to be filled (Bartram and Ballance, 1996). Review of available water quality studies of the area of interest shall also be conducted before star up of new monitoring programme.

The following presented in Figure 2.6 shows links between elements of water quality assessment (extracted from Bartram and Ballance, 1996).

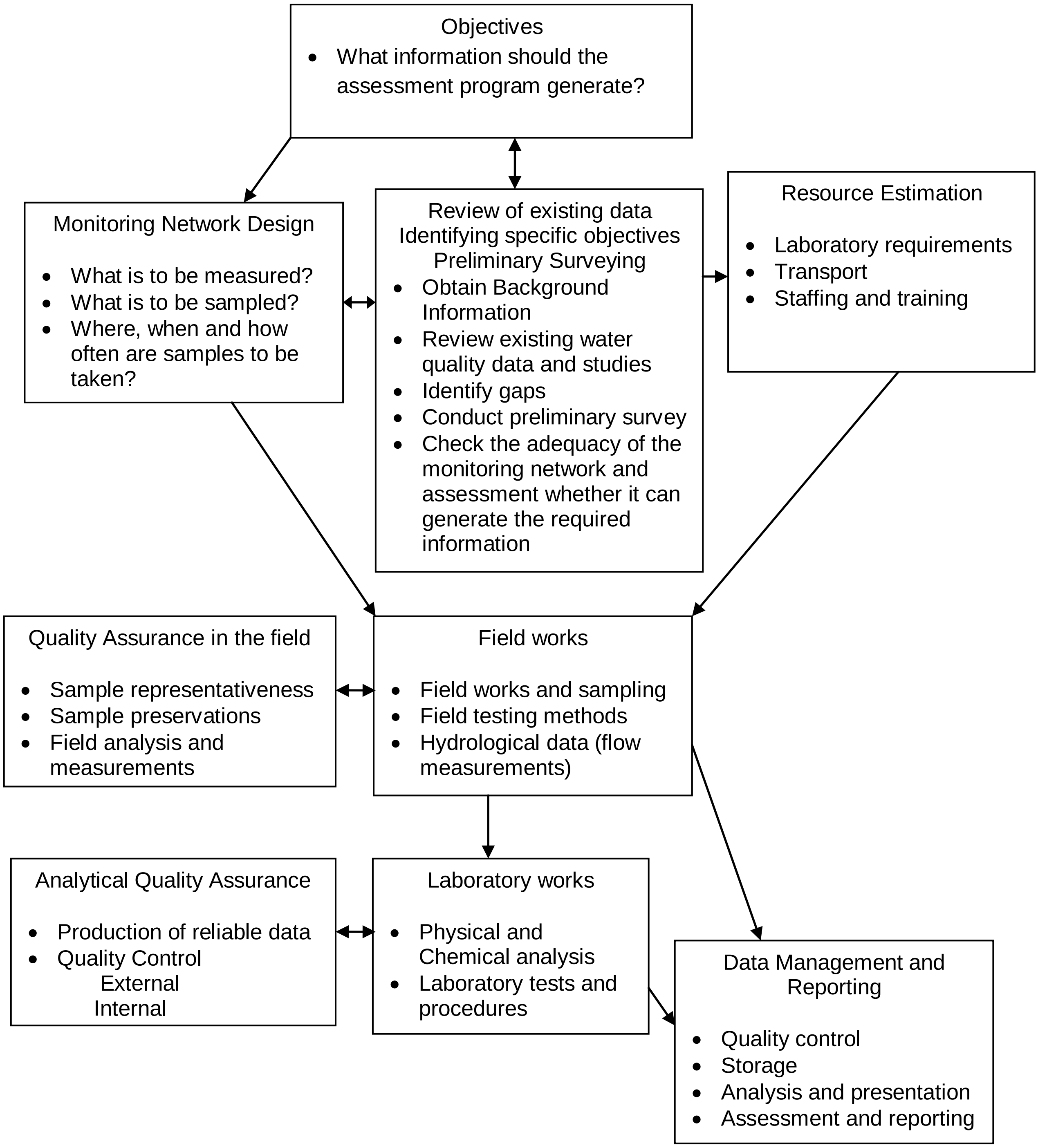


Figure 2.6- links between elements of water quality assessment (extracted from Bartram and Ballance, 1996)

2.4.3.2. REVIEW OF EXISTING DATA

Once the general objectives of water quality assessment have been established, existing data and constraints should be considered. A thorough review of literature pertaining to water quality studies previously conducted in the geographic of interest should be completed before starting new study (MacDonald et al., 1991).

2.4.3.3. IDENTIFYING SPECIFIC OBJECTIVES

Review of existing data should help in determining whether existing data provide sufficient information to address the assessment objectives or what gaps exist.

2.4.3.4. PRELIMINARY SURVEY

These are short-term, limited activities to determine the water quality variability, the type of monitoring media and pollutants to be considered, and the technical and financial feasibility of a complete monitoring programme. This will of course be required for new program before launching comprehensive assessment.

2.4.3.5. MONITORING DESIGN

a) <u>General</u>

The most fundamental step in the development of a monitoring plan is to define the goals and objectives, or purposes of the monitoring program (U.S.EPA, 1997). It is also required to prepare a programme document or study plan, which should begin with a clear statement of the objectives of the programme and a complete description of the area in which the monitoring is to take place. The principal elements of a study plan include (Bartram and Ballance, 1996):

1) A clear statement of aims and objectives,
2) Information expectations and intended uses,
3) A description of the study area (geographical limits of the area, the present and planned water uses and the present and expected pollution sources should be identified),

4) A description of the sampling sites,
5) A list of the water quality variables that will be measured,
6) Proposed frequency and timing of sampling,
7) An estimate of the resources required to implement the design and
8) A plan for control and quality assurance.

b) ***Setting Objectives of Water Quality Monitoring***

Before start up of any monitoring program, clear objectives of monitoring should be set to address the information needed. However, before setting the monitoring objectives, the purposes of the network, in terms of the uses, and
users' of the anticipated data need to be identified (Strobl and Robillard, 2008). Why is monitoring for? What information is required? Who is going to use the monitoring data? and What are they intending to do with the information? are basics that will help in establishing objectives. The following are some of list of typical monitoring objectives that might be used as the basis for design of sampling networks (Bartram and Ballance, 1996):

1) Identification of baseline conditions in the water-course system;
2) Detection of any signs of deterioration in water quality;
3) Identification of any water bodies in the water-course system that do not meet the desired water quality standards;
4) Identification of any contaminated areas;
5) Determination of the extent and effects of specific waste discharges;
6) Estimation of the pollution load carried by a water-course system or subsystem;
7) Evaluation of the effectiveness of a water quality management intervention;
8) Development of water quality guidelines and/or standards for specific water uses;
9) Development of regulations covering the quantity and quality of waste discharges;
10) Development of a water pollution control programme.

While setting objectives of monitoring, the following issues should also be addressed.

1) What is practical in terms of the human and financial resources available for monitoring?
2) Who is responsible for the different elements of monitoring?

c) <u>Description of Monitoring Area</u>

Description of monitoring area should include the following minimum records:

1) A description of the water bodies, basins, sub-basins, catchment areas and summary of actual and potential uses of water;
2) A summary of the environmental conditions, land use practices and processes (including human activities) that may affect water quality;
3) Agricultural practices (e.g. livestock density, cropping patterns, timing and application rates of fertilizers or pesticides) and soil, vegetation, geology and topographic characteristics;
4) Meteorological and hydrological information.

d) <u>Parameter Selection</u>

In these days of increasing monitoring and evaluation needs and relatively small monitoring and evaluation budgets, it is extremely important for program managers to design efficient monitoring and evaluation program (U.S.EPA, 1997). Thus, the parameters to be selected for a monitoring program should be tied directly to the monitoring objectives.

According to Cooke, et al., (2005), water quality variables to be evaluated in a monitoring program should be selected according to:

1) The program’s objectives;
2) The designated uses of the water body being monitored;
3) The land management activities being evaluated, and
4) The budget and manpower allocated for the program.

e) ***Frequency and Timing of Sampling***

Sampling frequency at stations where water quality varies considerably should be higher than at stations where quality remains relatively constant (Bartram and Ballance, 1996). A new programme, however, with no advance information on quality variation, should be preceded by a preliminary survey and then begin with a fixed sampling schedule that can be revised when the need becomes apparent.

Infrequent sampling, commonly monthly has often been the standard procedure in the operation of fixed station monitoring networks. In addition, the sampling frequency was often determined by the available capacity of the analytical laboratory and the samples were frequently equally divided among the existing monitoring stations (Strobl and Robillard, 2008). On the other hand, studies conducted on temporal variability in water quality of agricultural tailwaters show that the mandated monthly sampling frequency was grossly inadequate in addressing the short-term water quality variability (Brauer, et al., 2009). Strategies such as time composite sampling have the potential to mitigate the high costs associated with high-frequency sampling by maintaining accuracy, while significantly reducing sample number.

Statistical analyses have been developed for specifying sampling frequency in the design of water quality monitoring networks. For a series of random events, the confidence interval of the mean decreases as the number of samples increases. Thus, the accuracy of the estimate of the mean is a function of the number of sample observation. Therefore, a sampling frequency, as a number of samples per year, can be determined for a specified statistical confidence interval of the mean (Harman Cioglu, et al., 1999). The student t-statistic is one of the methods used to estimate the relationship between sampling frequency and confidence interval of the mean of the random component. If the observation x_i ($i = 1, ..., n$) are stationary, independent and identically distributed, the variable t can be defined by a student t- distribution.

$$t = \frac{\bar{x} - \mu}{S / \sqrt{n}}$$

Where t = the student's t probability function

$\bar{x}$ = the calculated mean of the independent observations

μ = the theoretical population mean (true mean)

S = sample standard deviation

n = the number of independent observations (Sanders and Adrian, 1978)

For specified level of significance, the variable t will lie in a confidence interval defined by known constants. This means that the probability that the random variable t is contained within the interval is equal to the level of significance (1-α), and the probability that the variable t is not contained within the interval is equal to α. This situation can be written by using the common statistical notation:

$$Pr = \left\{ t_{\alpha/2} < \frac{\bar{x} - \mu}{S / \sqrt{n}} < t_{1-\alpha/2} \right\} = 1-\alpha$$

Where, $t_{1-\alpha/2}$ and $t_{\alpha/2}$ are constants defined from the student t-distribution for specified level of significance and the number of samples.

The confidence limits of the mean quantify the choice of sampling frequency by relating sampling frequency to the water quality variation (Sanders et al., 1983). It should nevertheless be noted that, in practice, a water quality sampling program commonly consists of more than a single water quality variable and of more than one sampling location. Generally, it is desirable to extract equal information from each location, unless there is some way of prioritizing the sampling stations. Furthermore, if the means are approximately equal, then the confidence intervals about the means from one station to the next are equal. Further information is available on Sanders et al., 1983.

Global Environmental Monitoring System Water Quality Programme (GEMS/WATER) has also recommended sampling frequency depending on the water body and its specific characteristics. Possible sampling frequency GEMS/WATER stations are presented in Table 2.6 below:

Table 2.6: Sampling frequency for GEMS/WATER stations

Water body	Sampling Frequency
Baseline stations	
Streams	Minimum: 4 per year, including high- and low-water stages Optimum: 24 per year (every second week); weekly for total suspended solids
Headwater lakes	Minimum: 1 per year at turnover; sampling at lake outlet Optimum: 1per year at turnover, plus 1 vertical profile at end of stratification season
Trend stations	
Rivers	Minimum: 12 per year for large drainage areas, approximately 100,000 km^2 Maximum: 24 per year for small drainage areas, approximately 10,000 km^2
Lakes/reservoirs	For issues other than eutrophication: Minimum: 1 per year at turnover Maximum: 2 per year at turnover, 1 at maximum thermal stratification For eutrophication: 12 per year, including twice monthly during the summer
Groundwater	Minimum: 1 per year for large, stable aquifers Maximum: 4 per year for small, alluvial aquifers Karst aquifers: same as rivers

Source: Bartram and Ballance (1996)

An interval of one month between the collection of individual samples at a station is generally acceptable for characterising water quality over a long period of time (e.g. over a year in a river) (Table 2.6), whereas for control purposes weekly sampling may be necessary.

Individual samples taken at a given station should be obtained at approximately the same time of day if possible, because water quality often varies over the course of the day. However, if detection of daily quality variations or of the peak concentration of a contaminant in an effluent is of interest, sampling at regular intervals (e.g. every two or three hours throughout the day) will be necessary.

Exceptional conditions of stream flow are frequently of interest because it is at maximum and minimum flow rates that extreme values of water quality are reached. For example, when flowing at its peak rate, a river usually carries its greatest load of suspended material, while pollutants will be the least diluted when a river is at minimum flow. The violation of a waste discharge regulation and the seriousness of its environmental effects will often be easier to detect during periods of minimum flow. For quantifying the mass of load of pollutants being delivered from a watershed or non-point sources, stream discharge is also a critical explanatory variable. Therefore, conducting flow-proportionate sampling or sampling during the range of stream flows for a particular stream or river system is recommended for all monitoring programs.

f) Selection of Sampling Station

In line with objectives of monitoring and information need, processes affecting water quality and their influence should be taken into account when sampling sites are selected. For rivers/streams, sampling stations should, as a general rule, be established (Strobl and Robillard, 2008):

1) Systematically by subdividing the stream network into equal portions of contributing tributaries. This procedure will be required to identify and isolate contamination sources in which the pollution sources or the number of tributaries were used to identify sampling locations,
2) By selecting sampling station sites as a function of possible stream standards violations or as a function of stream segments below outfalls.

Whichever approach is employed, a rational systematic approach is needed. In addition, the monitoring objectives need to be satisfied. Often, once fixed station locations have been installed, there is a tendency to limit further modifications of the network. However, fixed stations still can be ‘‘modified’’ and respective sampling methods adjusted to account for any changes in physical, chemical, or biological conditions. Therefore, periodic reviews and analysis of the sampling programs are essential.

Lakes and reservoirs, can be subjected to several influences that cause water quality to vary from place to place and from time to time (Bartram and Ballance, 1996). It is, therefore, prudent to conduct preliminary investigations to ensure that sampling stations are truly representative of the water body. Where feeder streams or effluents enter lakes or reservoirs, there may be local areas where the incoming water is concentrated, because it has not yet mixed with the main water body. Isolated bays and narrow inlets of lakes are frequently poorly mixed and may contain water of a different quality from that of the rest of the lake.

According to Bartram and Ballance (1996), the most important feature of water in lakes and reservoirs, especially in temperate zones, is vertical stratification, which results in differences in water quality at different depths. Stratification at a sampling station can be detected by taking a temperature reading at 1 m below the surface and another at 1m above the bottom. If there is a significant difference (for example, more than 3 °C) between the surface and the bottom readings, there is a “thermocline” (a layer where the temperature changes rapidly with depth) and the lake or reservoir is stratified and it is likely that there will be important differences in some water quality variables above and below the thermocline. Consequently, in stratified lakes more than one sample is necessary to describe water quality.

Sampling points for groundwater monitoring are confined to places where there is access to an aquifer, and in most cases this means that samples will be obtained from existing wells. One sample is usually sufficient to describe the water quality of the aquifer. If the water in the well is corrosive and is in contact with steel pipe or casing, the water samples may contain dissolved iron (Bartram and Ballance, 1996).

Springs can also be useful groundwater sampling points, provided that they are adequately protected against the ingress of contamination with surface water. Springs are often fed from shallow aquifers and may be subject to quality changes after heavy rainfall.

Samples are also collected from various points in the distribution system to determine the quality of water supplied to consumers. In some cases, distribution system samples may be significantly different from samples collected immediately when the water enters the system. For example, corrosion in pipelines, bacterial growth, and algae growth in the pipes can cause increases in color, odor, turbidity, and chemical content (e.g., lead and copper) (Hickey, 2008). More seriously, a cross-connection between the distribution system and a source of contamination can result in chemical or biological contamination of the water.

Considerations to be made in determining the number and location of sampling points in the distribution system are:

1) Sampling stations shall be representative of each different source of water entering the system (i.e., If there are several wells that pump directly into the system, samples should be obtained that are representative of the water from each one) (Hickey, 2008);
2) Sampling stations shall be representative of the various conditions within the system (such as dead ends, loops, storage facilities, and each pressure zones) (Hickey, 2008);
3) Sampling stations should also include areas where a possibility of contamination through cross-connections and back siphonage exists, such as hospitals, schools, public buildings, high-rise apartments, hotels, factories, and residential locations (AWWA, 1999).

The sites chosen should have a sampling tap that will allow the sampler to draw water from within the distribution system with a minimal risk of contaminating the sample during the sampling procedure.

It is also important to note that the water quality in the distribution system are highly variable due to the flow paths and travel time of water through the long kilometres of pipe line because of the single-point feed or the looped layout of the pipe network and the continuous changes in water usage over time. The common use of storage facilities in the system makes things even more variable. At different times of the day, a specific location in the pipe network might be relatively new water from the treatment works when storage tanks are being refilled, or old water when storage tanks are being emptied. It is usually impractical to experiment on the entire distribution system by seeing how changes in pumping schedules, storage facility operations, or treatment methods affect the quality of water received by the consumer. For these reasons, mathematical modeling of water quality behaviour in distribution systems has become an attractive supplement to monitoring. These models offer a cost-effective way to study the spatial and temporal variation of a number of water quality constituents including (Hickey, 2008):

1) The fraction of water originating from a particular source;
2) The age or time of residence, of water in the system;
3) The concentration of a non-reactive tracer compound either added or removed from the water system (e.g., fluoride or sodium);
4) The concentration and loss rate of secondary disinfectant (e.g., chlorine); and
5) The concentration and growth rate of disinfection by-products such as THMs[a], and the number and mass of attached and free-flowing bacteria in the system.

a ***- Trihalomethanes (THMs)*** *are products formed when surface waters containing naturally occurring organic compounds, such as humic and fulvic acids, are chlorinated. They are also formed by the reaction of chlorine with some algal derivatives. It is best controlled by removing as much of the organic components as possible before the water is chlorinated. It has been reported that THMs has impact on public healthy. Some epidemiological studies have suggested weak correlation between incidences of certain cancers with consumption of water containing THMs. Likewise recent studies in the US claim a correlation between THM intake and early pregnancy terminations and low birth weight (Ratnayaka, et al., 2009).*

g) Description of Sampling Station

Description of monitoring area should include the following minimum records:

1) Station description in terms of location, accessibility, required special equipment and distance from laboratory;
2) Tests that are to be made on-site;
3) Geographical location (latitude, longitude and altitude);
4) A map of the general area showing the location of the sampling station;
5) A summary of the environmental conditions, land use practices and processes (including human activities) that may affect water quality;
6) Agricultural practices (e.g. livestock density, cropping patterns, timing and application rates of fertilizers or pesticides);

h) Resources for Monitoring Program

Implementing a monitoring programme requires access to resources, including an equipped laboratory, office space, equipment for field work, transport and trained personnel.

In the initial stages of a new monitoring programme, it is generally advisable to proceed as follows (Bartram and Ballance, 1996):

1) Start slowly with analyses for a few variables;
2) Train staff to ensure that proper procedures are followed;
3) Impose quality assurance on all procedures from the beginning;
4) Take samples at stations where the water quality is of major relevance to the monitoring programme;
5) Prepare reports that are factual and are written so that they can be understood by persons other than scientists;
6) Increase the number of variables, the number of sampling stations and the frequency.

2.4.3.6. FIELD WORKS AND SAMPLING

Field works and sampling consists of three basic activities:

Representative sampling- when sampling, it is always necessary to follow recommended procedures to avoid collection of unrepresentative samples.
Field testing – is filed measurement of parameters as soon as possible after collecting on filed such as colour, odour, temperature, electrical conductivity, pH and dissolved oxygen.

Sample preservation and transporting - Sample bottles should be placed in a box for transport to the laboratory. Appropriate preservative treatment should also be made based on duration of travailing to laboratory and actual analysis of samples.

Before commencing field works, it is required to prepare checklist of samplers, sampling containers, special and/or field equipment, analyses to be conducted on site, and procedures to be followed for sampling based on required water quality variables and any preservation methods. The sample collection process should be co-ordinated with the laboratory. Analysts need to know how many samples will be arriving, the approximate time of arrival and the analyses that are to be carried out, so that appropriate quantities of reagent chemicals can be prepared.

Sampling officers should have a field notebook in which all details of relevance are recorded at the time. The field book should be hard-bound and not loose-leaf. Full books should not be discarded but stored for future reference because they represent data in original form and are sometimes invaluable for reference purposes. Details recorded should include: those noted on the sample bottle (see below), what samples were collected, and what measurements were made, how they were made, and the results obtained (including blanks, standards, etc., and the units employed).

Each sample bottle must be provided with an identification label on which the following information is legibly and indelibly written (Bartram and Ballance, 1996):

1) Name of the study.
2) Sample station identification and/or number.
3) Type of sampling (Grab sample, Composite or Integrated samples)
4) Sampling depth.
5) Flow for river or stream at sampling stations during water quality sampling.
6) Date and duration of sampling (starting and ending time).
7) Name of data collector.
8) Brief details of weather and any unusual conditions prevailing at the time of sampling.
9) Record of any stabilising preservative treatment.
10) Results of any measurements completed in the field (performed in-situ/on site analyses (water/air temperature, dissolved oxygen, pH (field or lab), conductivity (field or lab), turbidity,
11) Comments on smell, colour, etc.

2.4.3.7. LABORATORY ACTIVITIES

Laboratory instruments depend on the requirements of water quality monitoring programs. The equipment should not have to be expensive and sophisticated. Attention should be paid mainly to the choice of analytical methods. The range of concentrations measured by the chosen methods must correspond to the concentrations of the variable in a water body and to the concentrations set by any applicable water quality standards (Chapman, 1996). For example, water quality standards often require the total absence of certain toxic pollutants. In such cases the detection limit of the analytical method must be very low to determine whether the water quality meets the standard. The less sensitive the method, the greater the permitted deviation of the pollutant concentration from the predetermined standard. The analytical methods shall be prescribed for each parameter along with measurement unit and required significant figures.

Selection of an analytical method should also be dictated by the following criteria (UN/ECE TFLQMA, 2002):

1) The method should measure the desired constituent with precision and accuracy sufficient to meet the data needs even in the presence of interferences, which might be encountered in the samples;
2) The procedure should utilise the equipment and skills available in the laboratory;
3) The selected method should be in use that the methods are properly validated;
4) The method should be sufficient to produce the measurement results within the required time-frame.

A water quality laboratory should have qualified personnel to carry out required analyses. A minimum of three types of laboratory staff may be needed for a water quality analytical laboratory (Li and Migliacco, 2011):

1) Laboratory technical director acts as the day-to-day supervisor of laboratory operations, including the monitoring of quality control and quality assurance (QC/QA) and data validation in the laboratory.
2) The QA officer is accountable for data quality and conducts internal audits. In a small laboratory with limited personnel, the QA officer can have dual responsibilities as deputy technical director or laboratory technician.
3) Laboratory technicians who prepare and analyze samples and use instruments should have education, training, and experience related to laboratory analysis. In addition, laboratory assistant(s) may be used to clean glassware, prepare samples, enter data, or other duties working under the supervision of a laboratory technician.

Detailed and comprehensive standard manuals and guidebooks describing laboratory methods is available on, such as the GEMS/WATER Operational Guide (WHO, 1992) and a practical guide to the design and implementation of freshwater quality studies and monitoring programmes (Bartram and Ballance, 1996).

2.4.3.8. DATA MANAGEMENT, ANALYSES AND REPORTING

a) <u>Data Entering, Storage and Retrieval System Design</u>

A significant problem facing monitoring groups and other data collectors is the issue of efficient and accurate data storage, retrieval and analysis (Carleton, et al., 2005). When designing computerised water quality data storage and retrieval systems, it is important to ensure that all information needed for interpretation is also available and can be retrieved in a variety of ways. This implies that substantial amounts of secondary, often repetitive, information also need to be stored. It is usual therefore to compress input data by coding. This not only reduces the amount of data entry activities, but allows the system to attach the more detailed information by reference to another (Chapman, 1996).

A relational database software which is designed to manage the input, editing and retrieval of numerical data and text offers the best means of handling large quantities of data and it should be capable of exporting data in formats that are accepted by GIS software for data presentation, analyses and interpretation. The data in the database can also be exported in a format that will be accepted by statistical packages and spread sheets. The power of the programming language of database allows the skilled user enormous scope for data manipulation, sorting and display.

b) <u>Database</u>

A database is a collection of interrelated data items that are managed as a single unit. There is so much variety across the various software vendors that provide database systems. For example, Microsoft Access places the entire database in a single data file, so an access database can be defined as the file that contains the data items (Oppel, 2004).

For water quality data, designing and implementing a relational database is preferred due to its simplicity for use, good security, good performance and support to new hardware technologies as also flexibility and capacity to meet all types of data needs. A relational database is a collection of formally described tables that can be edited or expanded in many different ways without having to reorganize the database tables. A new table can be added to the database without modifying all existing tables. Data are entered into tables based on subject and related by a key that makes the records within any given table unique. The columns of a table are called fields; the rows are called records (Illinois State Water Survey Watershed Science Section, 2004). Software used in a relational database is called Relational Database Management System (RDBMS).

c) Relational database Design and Implementation basics

Designing and implementing of the proposed Data Base Management System (DBMS) consist of the following steps:

1. ***Defining the purpose of database***

   The purpose of database was explained in sub-section 2.3.3 above. Briefly, the primarily purpose of a database is to make data rapidly and conveniently available to users.

2. ***Gathering and Organising the required data***

   Data required to be recorded in the database shall be listed based on the objectives of water quality assessment and data/information collected. As presented above under monitoring design, there are various data/information required to be recorded in the database.

   The following presented in Table 2.7 are some of the required data/information to be included in the database:

Table 2.7: List of data/information to be captured in the database

a) Locations of project site, b) Objectives and type of water quality assessment program, c) Organisation responsible for water quality management system, d) Water quality sampling station names, regions, geographical locations (latitudes and longitudes) and description of sampling station, e) Station type (River/Stream, Lake, reservoir, Ocean, pond, Well/Borehole, Spring, Pipeline/tap, Tanks, Pumping Stations, Treatment Plant, etc), f) Basins and sub-basins, g) Tributary to sampling station, approximate catchment areas, h) Accessibility problems, i) Required special equipment, j) Description of land use activities and potential pollution sources, k) Sampling date and time, l) Flow if applicable, m) Sample type, water column layer, n) Weather conditions, o) Water quality analysis results or parameters, p) Any additional information and remarks required to be included in the database.

3. ***Divide data/information into tables***

The data/information listed above can be organised into the following five basic data/information entities that form tables[b]:

i. Project information,
ii. Station information,
iii. Sample Information,
iv. Parameters, and
v. Symbols and Parameters Descriptions for Results

b **-** *A table is a set of columns and rows. Each column is called a field and each row in a table is called a record. Within a table, each field must be given a name and no two fields can have the same name. Each value in a field represents a single category of data.*

4. Turn Data/information into columns

Data/information required to be included under each tables mentioned above has been categorised as shown below. Each item becomes a field, and is displayed as a column in the table.

a) Project information-Table[b]: The fields will include location, objectives and type of water quality assessment program and organisation responsible for water quality management system;

b) Station information-Table[b]: The fields will include: Sampling station name, region, component, geographical locations (latitudes and longitudes), description of station, station type, basins and sub-basins, tributary to station, approximate catchment areas, accessibility problems, required special equipment, land use activities, potential sources of pollution, etc;

c) Sample Information-Table[b]: The fields will include: sampling station, sample type, sampling date and time, discharge, water column layer and weather conditions;

d) Parameters-Table[b]: The fields will include sampling stations and parameters;

e) Symbols and Parameters Descriptions-Tables[b]: The fields will provide remarks with respect to results and parameters.

Due to the requirement of repetitive information to be stored in the database, data coding[c] for the repetitive data/information is recommended. The most common repetitive data/information is component of water supply system, sampling stations, station types, water columns layer and weather conditions. For this data/information, coding has been made in order to reduce the volume of data. This not only reduces the amount of data entry activities, but allows the system to attach more detailed information by reference to another.

c-Coding is a verbal description of data, both in full and abbreviated, and reporting units.

5. Specify primary keys

In each table primary key should be identified. A relationship works by matching data in key columns, usually columns with the same name in both tables. In most cases, the relationship matches the primary key from one table, which provides a unique identifier for each row, with an entry in the foreign key in the other table. A Foreign Key is a field that is the Primary Field in its own table, but that shows up in another table. Field names of coded data can be used as primary key.

6. Set up table relationships

Looking at each table, it is possible to decide how the data in one table is related to the data in other tables. In most cases, relationships are established between the primary key field (which is displayed in bold text) from one table to a similar field (often with the same name) called the foreign key in the other table.

A relationships diagram for the designed relational database is shown in Figure 2.7 below:

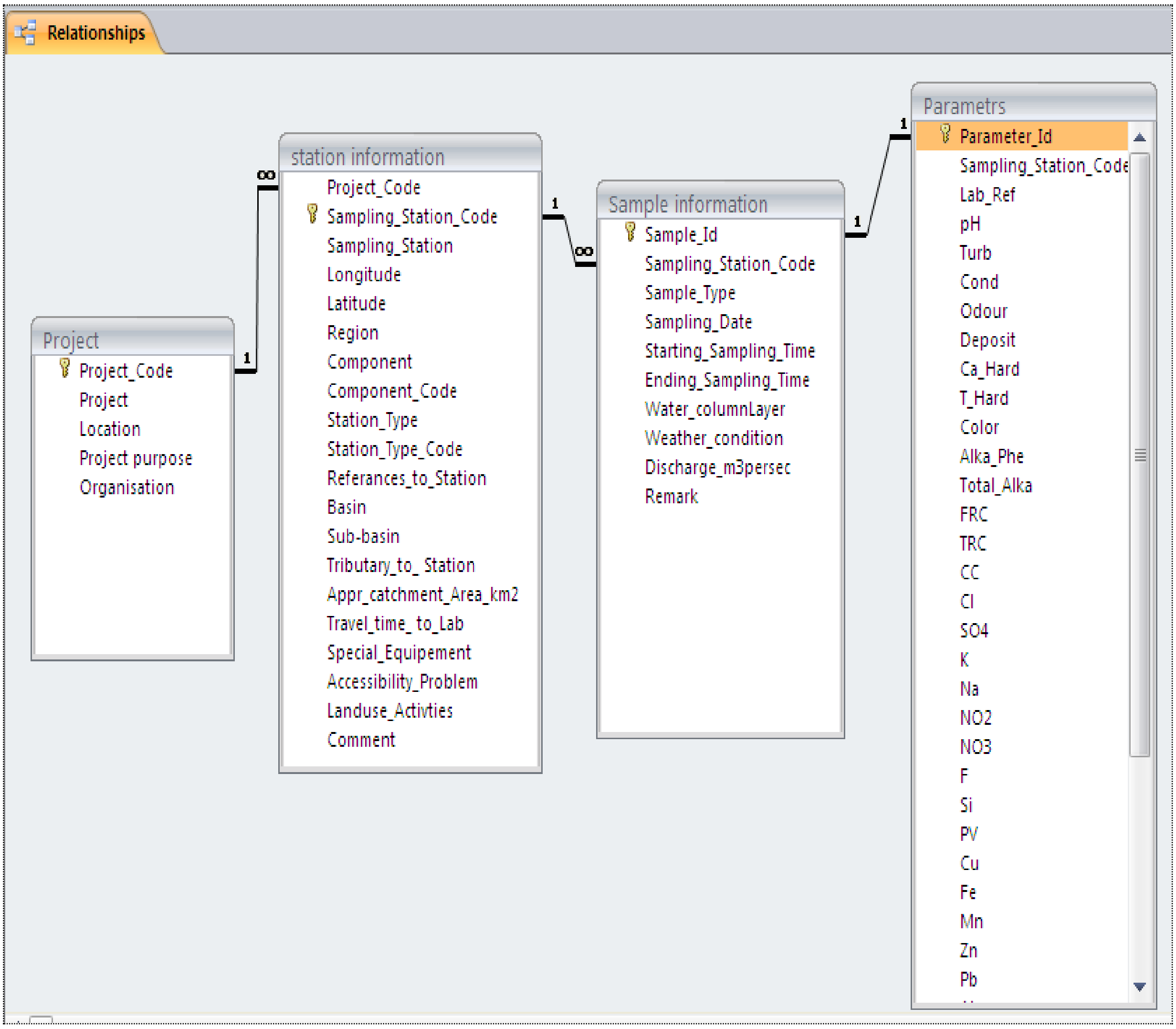


Figure 2.7- Relationships Diagram

7. Refine the designed database

Once the tables, fields, and relationships are created and tables are populated with data, the database shall be tested with functions such as creating queries, adding new records, and so on. Doing this helps highlight potential problems for example, to add new columns or split the table into two to avoid duplication.

8. Apply normalisation rule

The process of removing redundant data from a relational database by separating information into smaller tables is called normalization. A normalized database generally improves performance, lowers storage requirements, and makes it easier to change the application to add new features (Illinois State Water Survey Watershed Science Section, 2004).

9. ***Creating and Using Forms***

Importing an excel data into Access can be made by using the excel Spreadsheet Wizard. The excel data need to be organised into columns and rows. However, if the database of hundreds of records and many fields to populate for any given record by typing, a table can be overwhelming to the person entering data. An Access form lets user enter or edit data one record at a time, without having to see the entire table.

d) Data Processing

Analytical data collected by laboratories, together with the information on samples, sampling stations, hydrological parameters and other observations are usually sent (mostly in coded form) to a data storage centre. Data processing also includes data validation. Data validation includes (Central Pollution Control Board, 2007):

1) Absolute checking/Data entry;
2) Checking inconsistencies of DD/MM/YY and MM/DD/YY sampling dates;
3) Checking if data is within the detection limits of a particular method;
4) Checking if the data is within the expected ranges for a parameter (data outliers). For example pH shall be within a range of 1 to 14;
5) Checking if there are too many (or too few) significant digits reported;
6) Checking if data are physically or scientifically possible (general checks);
7) Checking correlation of parameters (Some conditional checks like BOD/COD relation, Total coliform/Faecal Coliform relations, pH and carbonate species relations);
8) Checking the correlation between Electrical conductivity and Total dissolved solids;
9) Checking cation/anion balance;
10) Total coliforms must be greater than faecal coliforms;

11) Total iron must be greater than dissolved iron;
12) Total phosphorus must be greater than dissolved (ortho-) phosphorus;

e) <u>Data Analyses and Presentations</u>

As set out in the objectives of water quality monitoring and assessment, the end result of water quality data should be information. Required information will be generated once data analyses are conducted. There are various application methods including simple to advanced statistical analyses used in analysing water quality data. The application options are based on required information and available data. GIS is also one of the recent development and most advanced water quality data analyses and management system (Chapman, 1996). The application of GIS for data analyses and presentation has the following advantages:

1) Analysing and displaying of multiple layers of geographically referenced data. It can also relate these data to other information such as anthropogenic activities;
2) Capable of combining large volumes of data from a variety of sources that can be used for many aspects of water quality investigations;
3) Identifying and determining spatial extent and causes of water quality problems, such as the effects of land-use practices on adjacent water bodies;
4) Spatial statistical analysis tools were built as GIS core functionality to be used specifically for spatial data analyses (Esri ArcWatch, 2010).

The result of data analyses can be presented either graphically including map based or in tabular forms. Graphics are used to illustrate the spatial and temporal distribution of variables or different indices of quality by the use of different colours. Graphical presentations are more powerful than tabular as readers or audiences are more receptive to visual presentations.

Information may also be summarised and presented to the non-expert in the form of water quality indices (Bartram and Ballance, 1996). A water quality index is an indicator of the quality of water obtained by aggregating several water quality measurements into one number or it may score or weight water quality data according to their relative importance.

f) Assessment and Reporting

Water quality data must often be combined with other data and interpreted in a way that specifically addresses the objectives of the end-user of the information. Although expected information is in line with the set objective of monitoring, the following are some of examples of information that water quality assessment will generate:

1) The quality of water in a water body related to the requirements of users.
2) The quality of water in a water body and distribution system related to established water quality standards.
3) Effect of anthropogenic activities in the catchment area on quality of water in a water body.
4) Appropriateness and effectiveness of control strategies and management actions for pollution control if any already in place.
5) Trends of spatial and temporal water quality variables.
6) Possible causes of deterioration or improvement of the water quality in relation with major pollution indicator variables.
7) Control measures that could be implemented to improve or prevent further deterioration of water quality.
8) Chemical or biological variables in the water that render it unsuitable for beneficial uses.
9) Hazards to human health that result, or may result, from poor water quality in the water body.
10) Identifying areas where special studies will be required.

2.4.3.9. QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance and quality control should be applied at all stages of data gathering and subsequent handling. According to online sources of USEPA (2012), Quality Assurance (QA) generally refers to a broad plan for maintaining quality in all aspects of a program. This plan should describe how to undertake monitoring effort: proper documentation of all procedures, training of volunteers, study design, data management and analyses, and specific quality control measures. Quality Control (QC) consists of steps to be followed to determine the validity of specific sampling and analytical procedures, and Quality Assessment is the assessment of the overall precision and accuracy of data, after running the analyses.

When water quality monitoring design is set, appropriate QA/QC procedures to be applied at each step of monitoring activities should also be planned. The use of different methodologies, lack of data comparability, unknown data quality, and poor coordination of sampling and analyses efforts can delay the progress of a project or render the data and information collected from it insufficient for decision making (U.S.EPA, 1997). QA/QC practices should be used as an integral part of monitoring design and implementation.

The following table summarises common QA/QC activities (U.S.EPA, 1997):

Table 2.8: Common QA/QC Activities

Quality Assurance Activities

a) Organization of project into component parts

b) Assignment of roles and responsibilities to project staff

c) Use of appropriate methods to determine the number of samples and sampling sites needed to obtain data of required confidence level

d) Tracking of sample custody from field collection through final analysis

e) Development and use of data quality objectives to guide data collection efforts

f) Audit of field and laboratory operations

g) Maintenance of accurate and complete records of all project activities

h) Personnel training to insure consistence of sample collection techniques and equipment uses

Quality Control Activities

a) Collection of duplicate samples for analysis

b) Analysis of blank and spike samples

c) Replicate sample analysis

d) Regular inspection and calibration of analytical equipment

e) Regular inspection of reagents and water for contamination

f) Regular inspection of refrigerators, oven, etc for proper operation

g) Data comparability with historical records

h) Re-checking of the analysis, related computations and transcription of abnormal detected values.

Source - U.S.EPA (1997)

3. METHDOLOGY

3.1. INTRODUCTION

As presented in the sections of problem statement and objectives, the study has dealt with exploratory analyses of existing water quality data of Nairobi City Water and Sewerage Company (NCWSC) with the aid of GIS to generate information. Thus, to meet the stated objectives, the methodologies described below have been applied.

3.2. EXPLORATORY ANALYSES OF EXISTING WATER QUALITY DATA

3.2.1. DATA COLLECTION AND VALIDATING

3.2.1.1. PHYSICAL AND CHEMICAL WATER QUALITY DATA

Physical and chemical water quality data from 2008 to 2011 were collected from water quality assurance department of Nairobi Water and Sewerage Company Ltd. As the water quality data was had many inconsistencies, data validation was necessary. The most common inconsistencies are:

a) The same sampling station was recorded under different names. At the same time, different sampling stations were also labeled with the same name. This inconsistency is due to lack of standard sampling procedures and recordings,
b) Inconsistent format of reporting date of sampling dates. This inconsistency is also due to lack of standard sampling procedures and recordings.
c) Geographical co-ordinates for some of sampling stations in the distribution system were not available; the co-ordinates were collected from site during filed investigations.

With assistance of water quality samplers, an attempt was made to validate these inconsistencies.

3.2.1.2. FILED INVESTIGATIONS

Data and information were collected at sampling stations of Thika, Ruiru, Sasumua and Kikuyu water sources. Data and information collected from field assessment include locations of water sources, geographical co-ordinates of sampling stations, station description and accessibility problems if any. Land use and activities in the water catchments was evaluated. The main activities in the water catchments are tea farming. Others were small scale individual horticulture, coffee and small scale husbandry. Assessments of waste effluents and other activities that affect the water sources adversely were also carried out. At some sites, it was observed that manure is used for horticultures. However, it was reported that fertilisers are used for tea farming.

(a) Horticulture

(b) Tea farming

Figure 3.1: Some of activities in the water sources catchment

3.2.1.3. MAPS, RELEVANT STUDIES AND RECORDS

Maps, relevant study reports and records include satellite images of the water sources and distribution system and recent studies conducted at water sources and distribution systems. Maps, relevant study reports and records were collected, analyzed and used during data presentation, analyses, interpretations and assessments.

3.2.2. DATA ANALYSES METHODS

3.2.2.1. SPATIAL STATISTICAL METHOD OF ANALSYSES

As set out in the objectives of the study, the selected method of water quality data exploratory analyses is with application of GIS software. The analyses are primarily based on existing water quality data and were designed to meet the specific objectives of the study. The specific objectives are reiterated as follows:

(1) Analyzing and evaluating of spatial and temporal trend of existing water quality data;
(2) Relating water quality data to the environment with respect to major pollution indicator variables.
(3) Evaluating water quality conditions of the water resources and distributions in relation to recommended water quality standards.

To address the above specific objectives, the following two statistical tools integrated in GIS software were applied for manipulating, analysing, interpreting and presenting existing water quality data:

a. High/low clustering (Getis-Ord general G), for probability testing of statistically significance of spatial clustering or dispersion, and
b. Hot spot analysis (getis-Ord G^*_I), for identifying where spatial clustering occurs. Locating spatial clustering sites will assists for subsequent assessment and reporting.

(a) <u>High/low clustering (Getis-Ord general G) statistical tool</u>

High/low clustering (Getis-Ord general G) statistical tool is located in the Spatial Statistics Tools/Analyzing Pattern tool set of ArcGIS as shown in Figure 3.2 below:

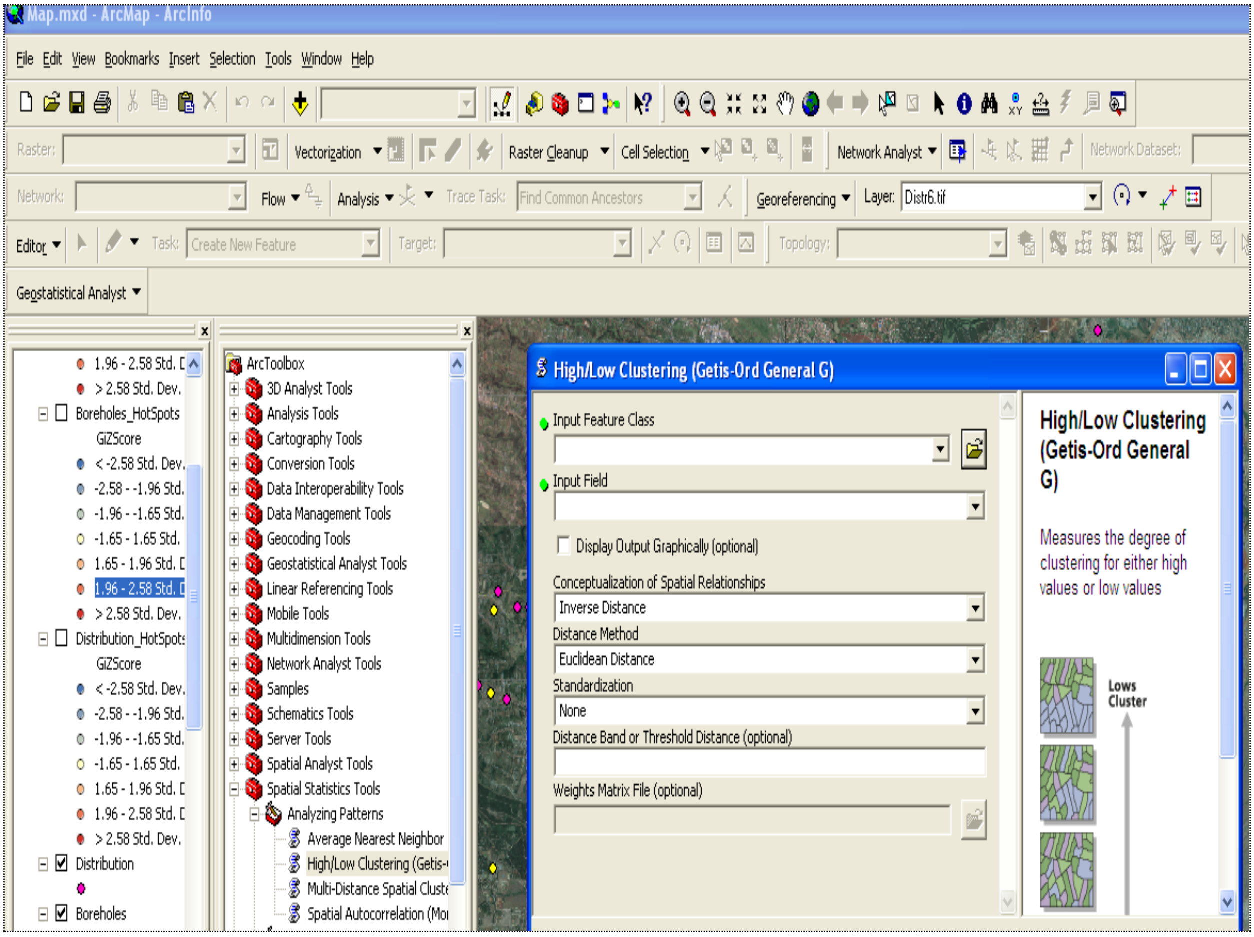


Figure 3.2: High/low clustering (Getis-Ord general G) statistical tool location in ArcGIS

The analyses for validated water quality data was started by selecting conceptualisation of spatial relationship. The choice of conceptualisation of spatial relationship was used to test the statistical significance of spatial clustering or dispersion. Many of the tools in the spatial statistics toolbox require the user to select a conceptualisation of spatial relationships prior to analysis (http://webhelp.esri.com/). Common conceptualisations include inverse distance, travel time, fixed distance, K nearest neighbors and contiguity.

The choice for conceptualisation of spatial relationships depends on the inherent relationships among the features. For some tools, like hot spot analysis, a fixed distance band ***(sphere of influence)*** was the default conceptualisation of spatial relationships. With the fixed distance option, a "sphere of influence" was imposed onto the data. Each feature was analyzed within the context of those neighboring features within some specified critical distance. Features outside the critical distance of a target feature do not influence calculations for that feature. Fixed distance method was used to evaluate the statistical properties of data at a particular spatial scale. Details on conceptualisation of spatial relationships can be obtained on http://webhelp.esri.com/. Fixed distance band that exhibits a maximum clustering was selected from a number of trials.

A Z score, which is a measure of a standard deviation was calculated for the selected fixed distance band that exhibits maximum clustering. A p-value, which is the probability of the null hypothesis was also calculated for the corresponding Z score. Based on the results of Z and p-values, the field is evaluated whether it is clustered, dispersed or random.

The High/low clustering (Getis-Ord general G) statistical tool analysis procedures are presented in Appendix 8.1.

(b) Hot spot analysis (getis-Ord G^*_I) statistical tool

Hot spot is statistically significant cluster of high values and cold spot is statistically significant clusters of low values (http://blogs.esri.com/). Hot spot analysis (getis-Ord G^*_I) statistical tool is located in the Spatial Statistics Tools/Mapping Clusters tool set of ArcGIS as shown in Figure 3.3 below:

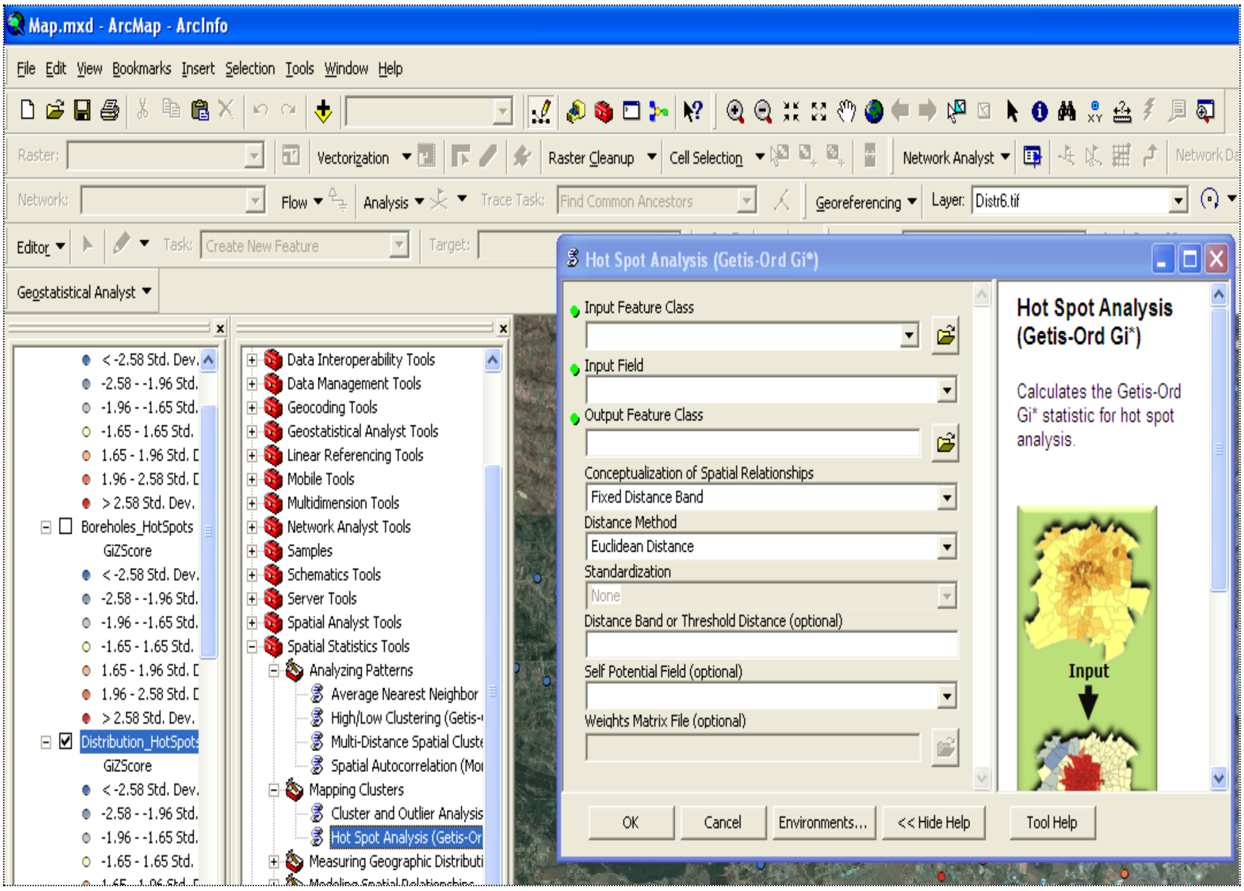


Figure 3.3: Hot spot analysis (getis-Ord G^*_i) statistical tool location in ArcGIS

Hot spot analysis (getis-Ord G^*_i) statistical tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting, but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is much different than the expected local sum, and that difference is too large to be the result of random chance, a statistically significant Z score results. The calculated Z score, which is a measure of a standard deviation for the selected fixed distance band has identified where features with either high or low values cluster spatially (http://webhelp.esri.com/).

The Hot spot analysis (getis-Ord G^*_i) procedures are presented in Appendix 8.1.

3.2.2.2. TEMPORAL VARIABILITY

With applications of ArcGIS graph tools, time series plots of water quality parameters were made. Based on observed trend, only visual assessment was made.

3.2.2.3. WATER QUALITY INDICATOR

Water quality indicators used for analyses are selected physical and chemical water quality data collected from water quality assurance department of Nairobi Water and Sewerage Company Ltd.

Table 3.1: Physical and Chemical Water Quality Data used for Analysis

Parameters	**Category**
pH	Chemical
Total Alkalinity	Chemical
Total Hardness	Chemical
Conductivity	Chemical
Total Dissolved Solids (TDS)	Physical
Chlorides	Chemical
Iron	Chemical
Manganese	Chemical
Zinc	Chemical
Fluoride	Chemical
Free Residual Chlorine (FRC)	Chemical
Lead	Chemical
Copper	Chemical
Nitrates	Chemical
Nitrites	Chemical

Selection of these indicators for each source and distribution was based on number of data and their significant implications on water quality.

4. RESULTS

4.1. EXPLORATORY ANALYSES OF EXISTING WATER QUALITY DATA

4.1.1. INTRODUCTION

Spatial and temporal pattern analyses of water quality will assist for evaluating impacts of natural as well as human activities on water sources; efficiencies of water distribution infrastructures, and management action to be predicted. Accordingly, spatial and temporal variability for selected parameters of existing water quality data have been analysed as shown in the following sections:

For analysis of spatial variability, hot spot analysis (getis-Ord G^*_I) statistical tools of ArcGIS has been used to identifying where spatial clustering occurs. Locating spatial clustering sites will assist for subsequent interpreting and assessment.

Temporal variability analysis was made from time series plots of water quality data for specific sampling station. This analysis was made with aid of ArcGIS graph tool. However, temporal analysis for distribution and borehole was not made due to the following reasons:

It has been stated that temporal variation of the chemical quality of water is determined by studying concentrations of water quality parameters in relation to time. For distribution, concentrations of water quality parameters are highly variable due to:

a. Treatment performance variability from day to day or season to season, corresponding to availability of sufficient water treating chemicals, performance of treatment plant, accuracy and reliability of treatment monitoring equipment, experience and quality control activities by the treatment plant crew,
b. The flow paths and the travel paths of water through distribution systems are highly variable because of the single-point feed or the looped layout of the pipe network and the continuous changes in water usage over time

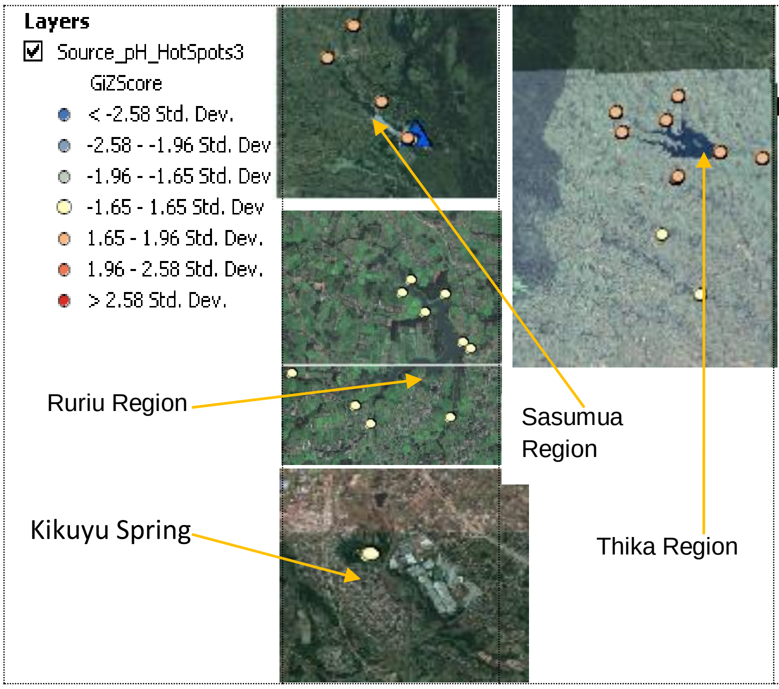
and season because of relatively new water from the treatment works when storage tanks are being refilled, or old water when storage tanks are being emptied (Hickey, 2008).

Because of the above reasons, the water quality in the distribution system is highly oscillating with time and detecting trend is not rational with current smaller data. However, with long-time record of data, temporal analyses of water quality for distribution may be perceived.

Boreholes or ground water sources are characterised by low, to very low time variability (Chapman, 1996). For example, seasonal variations of river water hardness often occur, reaching the highest values during low flow conditions and the lowest values during floods. Groundwater hardness is, however, less variable. This also suggests that detecting trend for boreholes water quality is not be rational with current smaller data. However, with long-time record of data, temporal analysis of water quality for boreholes may be perceived.

4.1.2. SPATIAL VARIABILITY

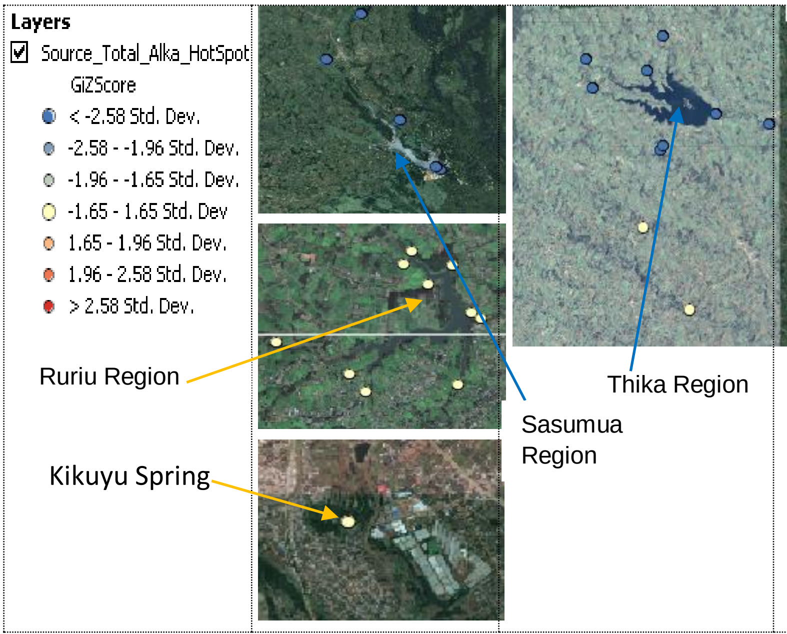
4.1.2.1. SURFACE WATER SOURCES



pH

Hot spot analysis (getis-Ord G^*_i) shows that there are no hot spot or cold spot areas of pH values. However, there is an indication that pH is relatively low at Ruriu region and Kikuyu Spring compared with Sasumua and wide areas of Thika regions. pH at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also low.

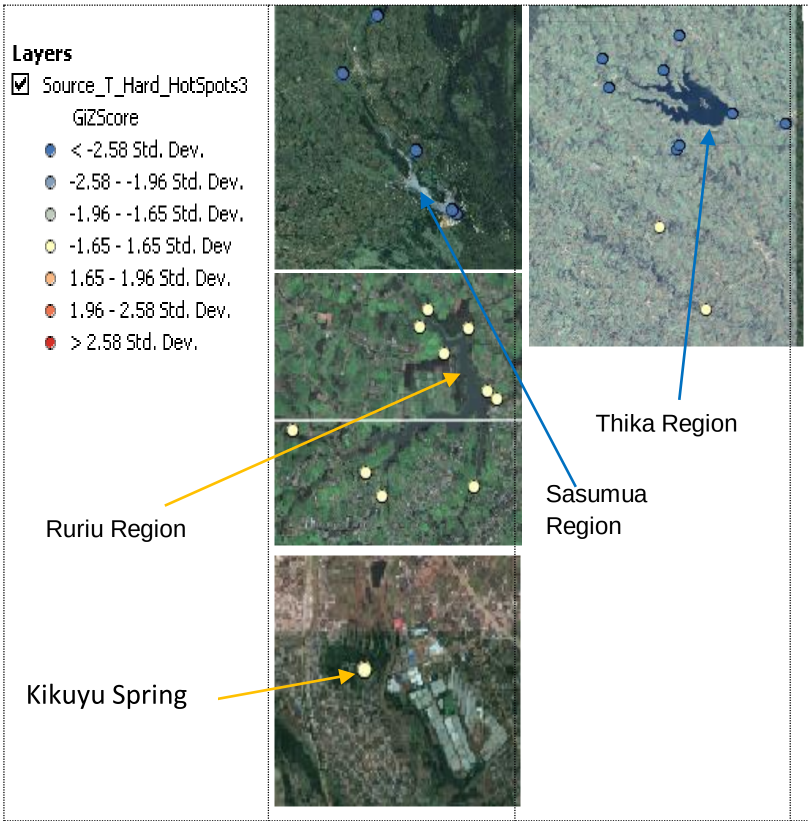
Figure 4.1: Spatial analysis results of pH concentrations (surface water sources)



Total Alkalinity

Hot spot analysis (getis-Ord G^*_I) shows that there are no hot spot or high values of alkalinity. However, it shows that alkalinity is slightly higher at Ruriu region and Kikuyu Spring compared with Sasumua and Thika regions. Alkalinity at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also higher.

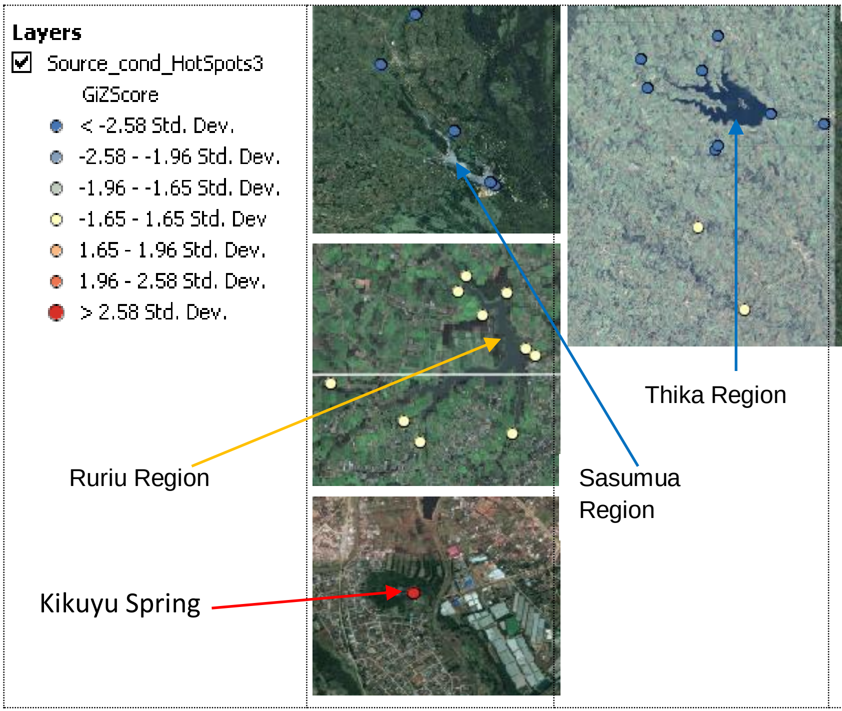
Figure 4.2: Spatial analysis results of total alkalinity concentrations (surface water sources)



Total Hardness

Hot spot analysis (getis-Ord G^*_I) shows that there are no hot spot or high values of total hardness. However, it shows that total hardness is slightly higher at Ruriu region and Kikuyu Spring compared with Sasumua and Thika regions. Total Hardness at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also higher. The spatial variability of total hardness at all regions is similar with that of alkalinity.

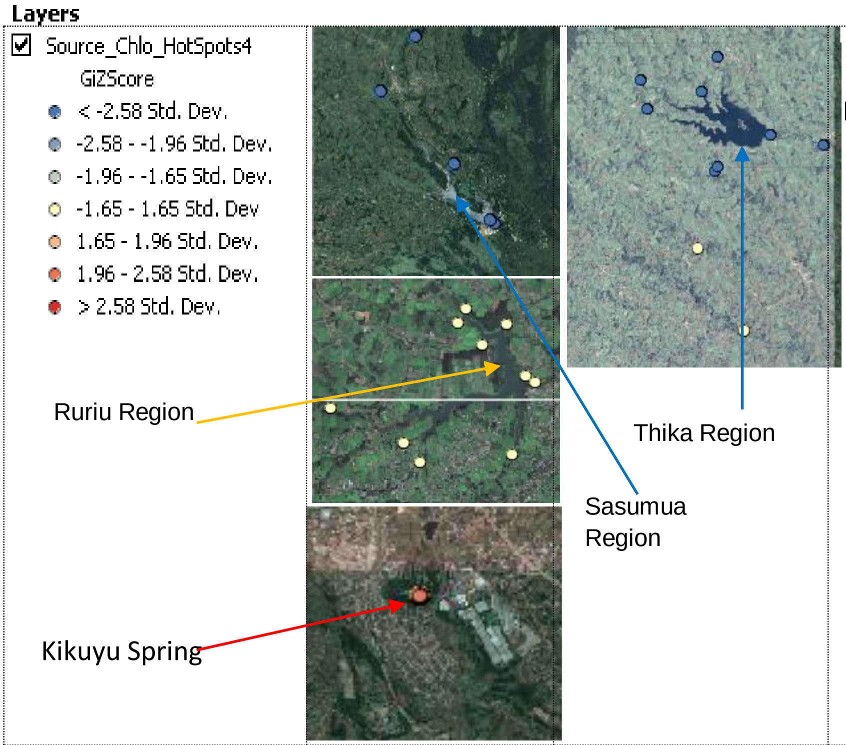
Figure 4.3: Spatial analysis results of total hardness concentrations (surface water sources)



Conductivity

Hot spot analysis (getis-Ord G^*_I) shows that hot spot or high values of conductivity are observed at Kikuyu Spring and low values at Sasumua and Thika regions with slightly higher at Ruriu region. Conductivity at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also higher. The spatial variability of conductivity at Ruriu, Sasumua and Thika regions is also similar with that of alkalinity and hardness.

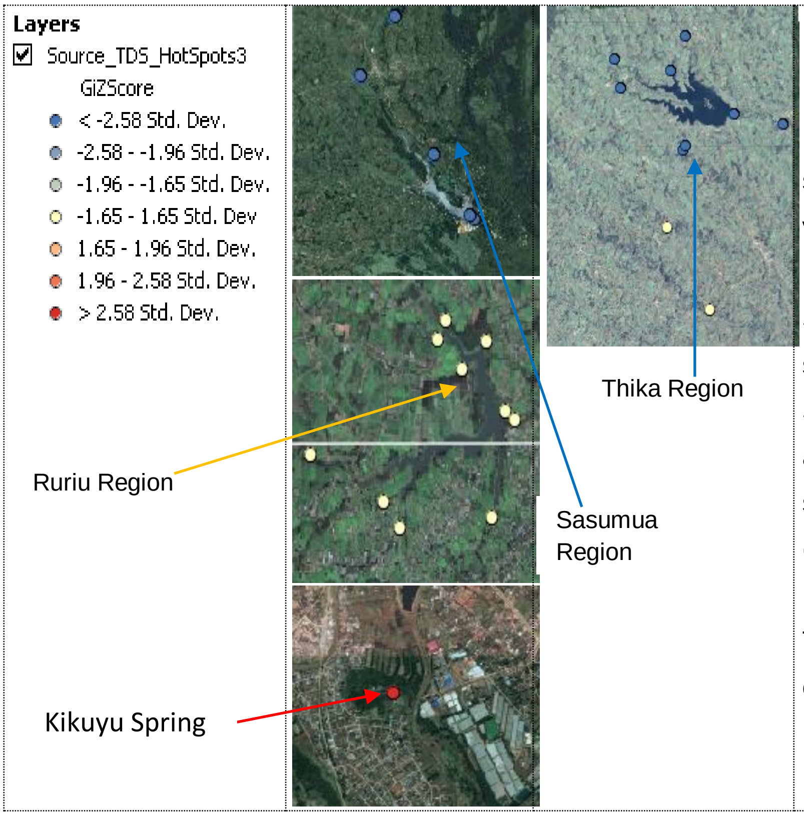
Figure 4.4: Spatial analysis results of conductivity values (surface water sources)



Chlorides

Hot spot analysis (getis-Ord G^*_I) shows that relatively hot spot or high values of chlorides are observed at Kikuyu Spring and low values at Sasumua and Thika regions with slightly higher at Ruriu region. Chlorides at two sampling stations within Thika region (Kimakia River and Mwangu Intake) are also slightly higher. The spatial variability of chlorides is similar with that of conductivity.

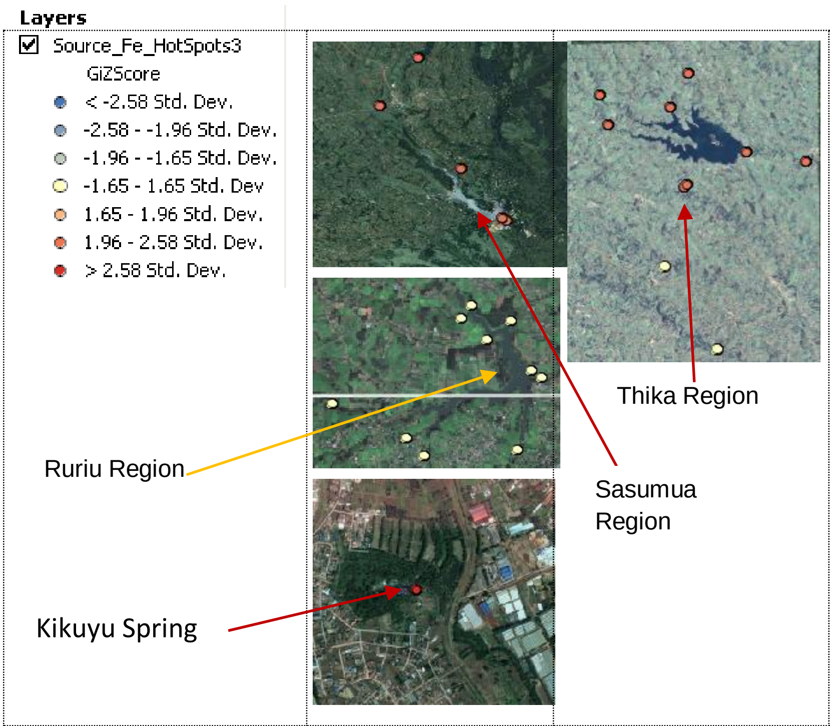
Figure 4.5: Spatial analysis results of chlorides (surface water sources)



__Total Dissolved Solids (TDS)__

Hot spot analysis (getis-Ord G^{*}_{I}) shows that hot spot or high values of TDS are observed at Kikuyu Spring and low values at Sasumua and Thika regions with slightly higher at Ruriu region. Slightly higher TDS values are also observed at two sampling stations within Thika region (Kimakia River and Mwangu Intake). The spatial variability of TDS is also similar with that of conductivity.

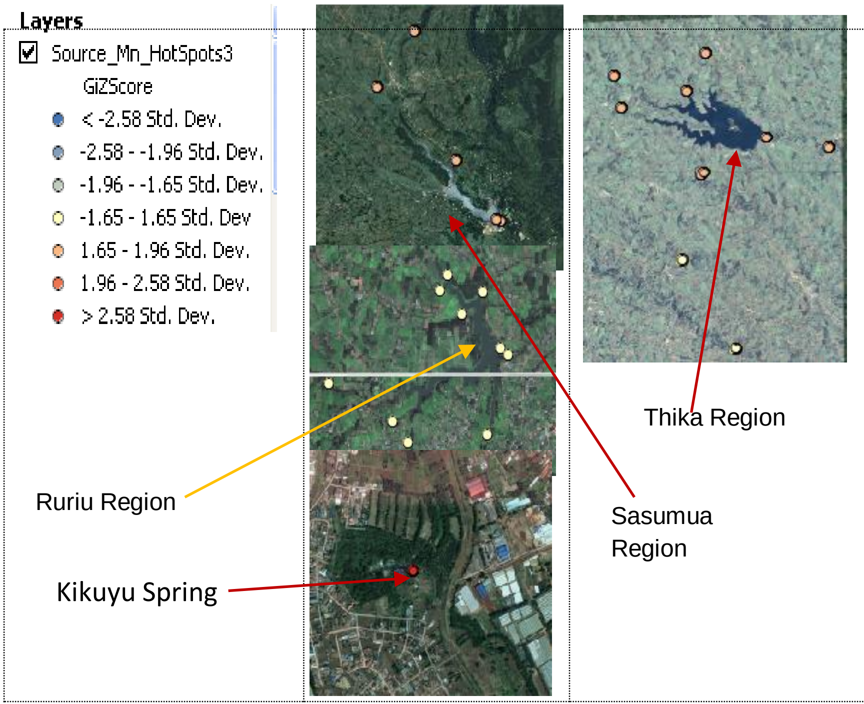
Figure 4.6: Spatial analysis results of Total Dissolved Solids (surface water sources)



__Iron (Fe)__

Hot spot analysis (getis-Ord G^{*}_{I}) shows that higher values of Iron are observed at Kikuyu Spring, Sasumua and Thika regions. However, relatively low values of Iron are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

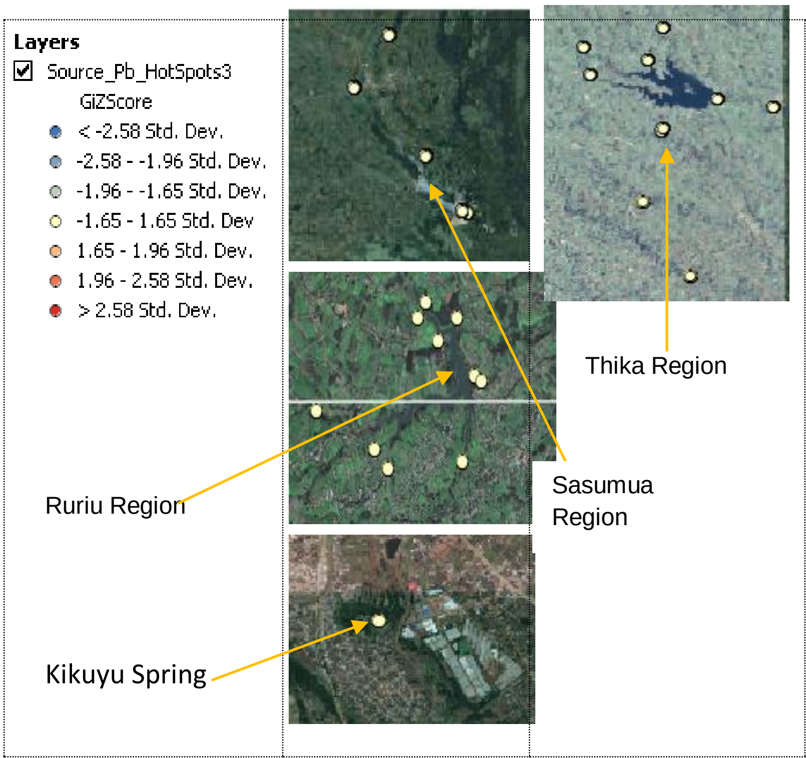
Figure 4.7: Spatial analysis results of Iron (surface water sources)



Manganese (Mn)

Hot spot analysis (getis-Ord G^{*}_{I}) shows that higher values of manganese are observed at Kikuyu Spring followed by a lesser values at Sasumua and Thika regions. However, relatively low values of manganese are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

Figure 4.8: Spatial analysis results of manganese (surface water sources)



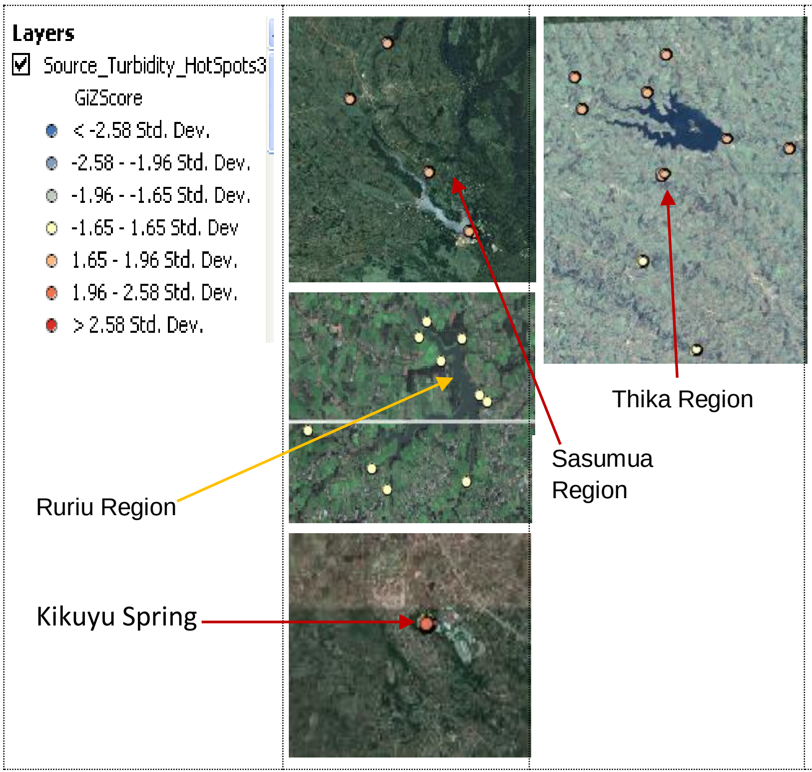
Lead (Pb), Copper (Cu), Zinc (Zn), Fluoride (F), Nitrate (NO_3) and Nitrite (NO_2)

Hot spot analysis (getis-Ord G^{*}_{I}) shows that lead, copper, zinc, fluoride, nitrate and nitrite are randomly distributed all over water sources' regions and there are no high or low values in specific areas.

Figure 4.9: Spatial analysis results of lead, copper, zinc, fluoride, nitrate and Nitrite (surface water sources)

Turbidity

The result from hot spot analysis (getis-Ord G^*_i) is presented in Figure 4.10 below: The result shows that slightly higher values of turbidity are observed at Kikuyu Spring, Sasumua and Thika regions. However, relatively low values of turbidity are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).



Turbidity

Hot spot analysis (getis-Ord G^*_i) shows that slightly higher values of Turbidity are observed at Kikuyu Spring Sasumua and Thika regions. However, relatively low values of Turbidity are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

Figure 4.10: Spatial analysis results of turbidity (surface water sources)

4.1.2.2. BOREHOLES

pH

Hot spot analysis (getis-Ord G^{*}_{I}) presented in Figure 4.11 below shows that hot spot areas or statistically significant high values of pH are observed at central, southern, south eastern, eastern and northeastern part of Nairobi City.

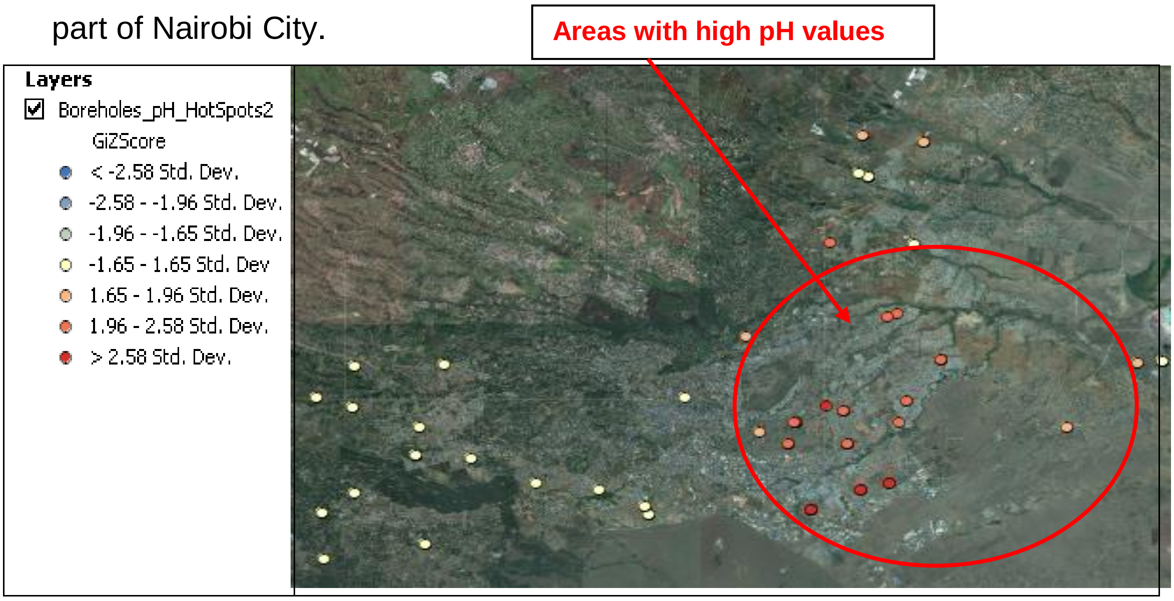


Figure 4.11: Spatial analysis results of pH values (Boreholes)

Total Alkalinity

Hot spot analysis (getis-Ord G^{*}_{I}) presented in Figure 4.12 below shows that hot spot areas or statistically significant high values of alkalinity are observed at northern, northeastern and eastern part of Nairobi City.

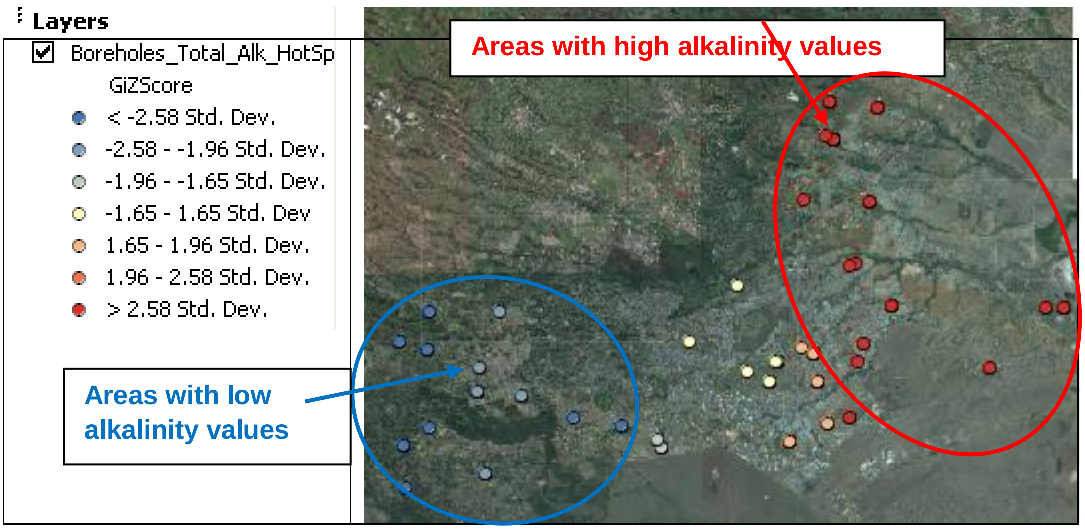


Figure 4.12: Spatial analysis results of total alkalinity values (Boreholes)

Total Hardness, Iron (Fe), Manganese (Mn), Zinc (Zn), Nitrates (NO_3), Nitrites (NO_2)

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.13 below shows that total hardness, iron, manganese, zinc, nitrates and nitrites are randomly distributed and there are no high or low values in specific areas.

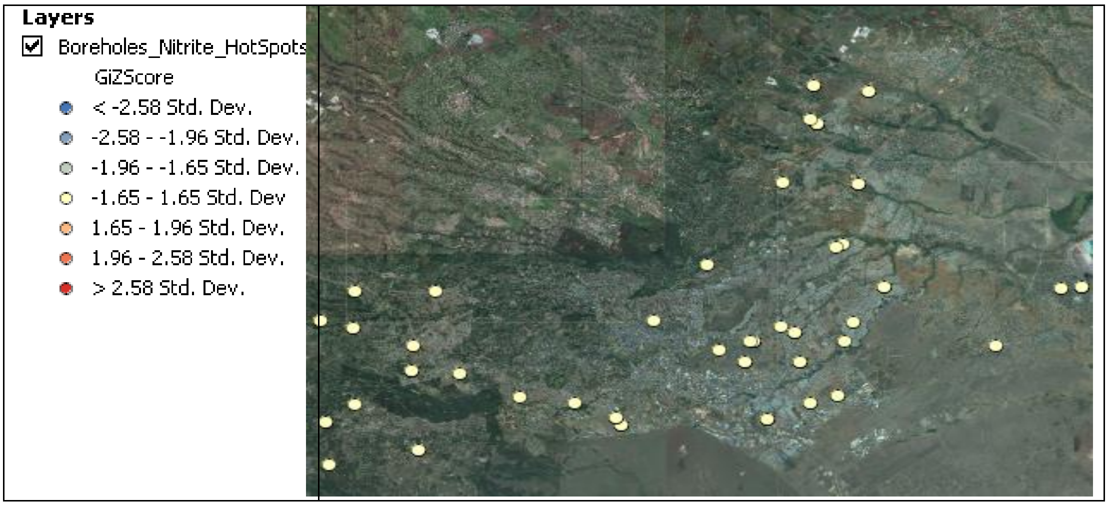


Figure 4.13: Spatial analysis results of total hardness, iron, manganese, zinc, nitrates and nitrites concentrations (Boreholes)

4.1.2.3. DISTRIBUTION

pH

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.14 below shows that hot spot areas or statistically significant high values of pH are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City.

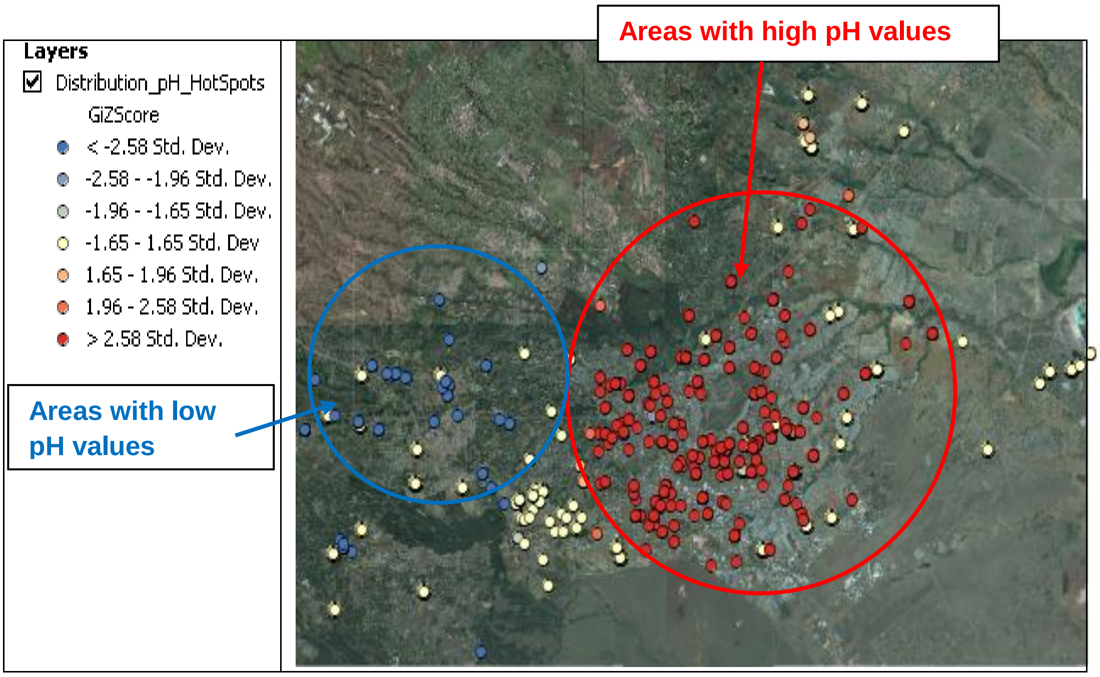


Figure 4.14: Spatial analysis result of pH (Distribution)

Total Alkalinity, Total Hardness, Iron, Lead

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.15 below shows that total alkalinity, total hardness, iron and lead are randomly distributed and there are no high or low values in specific areas.

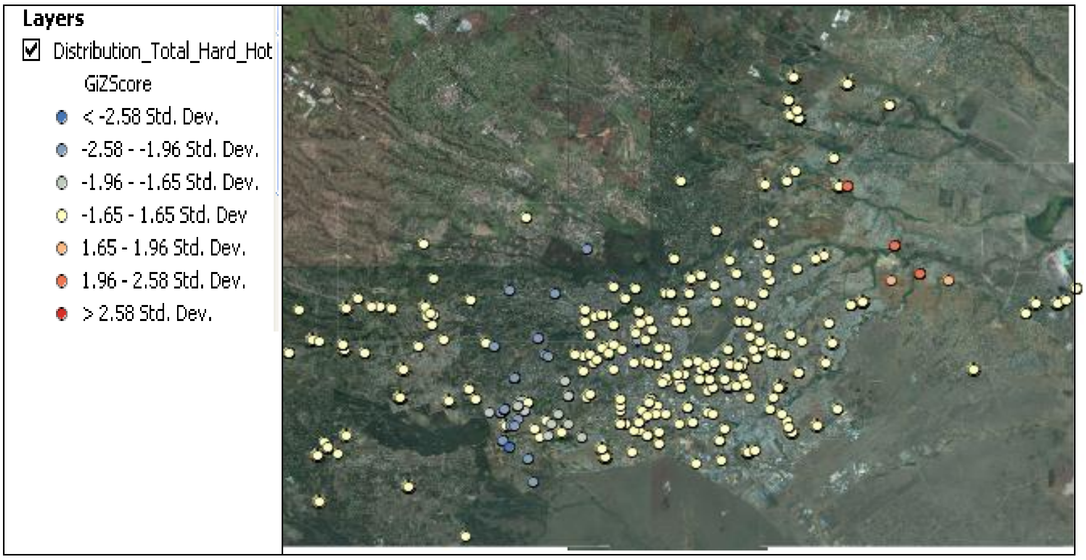


Figure 4.15: Spatial analysis results of total alkalinity, total hardness, iron and lead (Distribution)

Conductivity

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.16 below shows that cold spot areas or statistically significant low values of conductivity are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City. However, in the western part of Nairobi City where the results look slightly hot spot or higher values of conductivity may be as a result of random chance and it cannot be justified as hot spot.

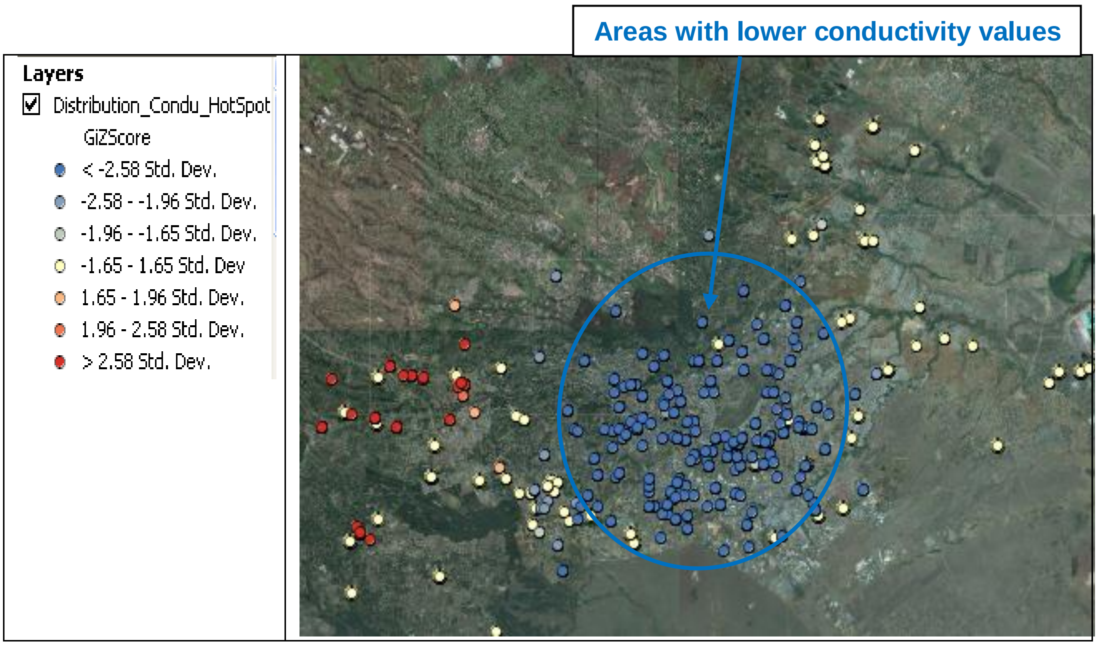


Figure 4.16: Spatial analysis results of conductivity (Distribution)

Total Dissolved Solids (TDS)

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.17 below shows that TDS is randomly distributed and there are no high or low values in specific areas. However, in the western part of Nairobi City where the results look slightly hot spot or higher values of TDS may be as a result of random chance and it cannot be justified as hot spot.

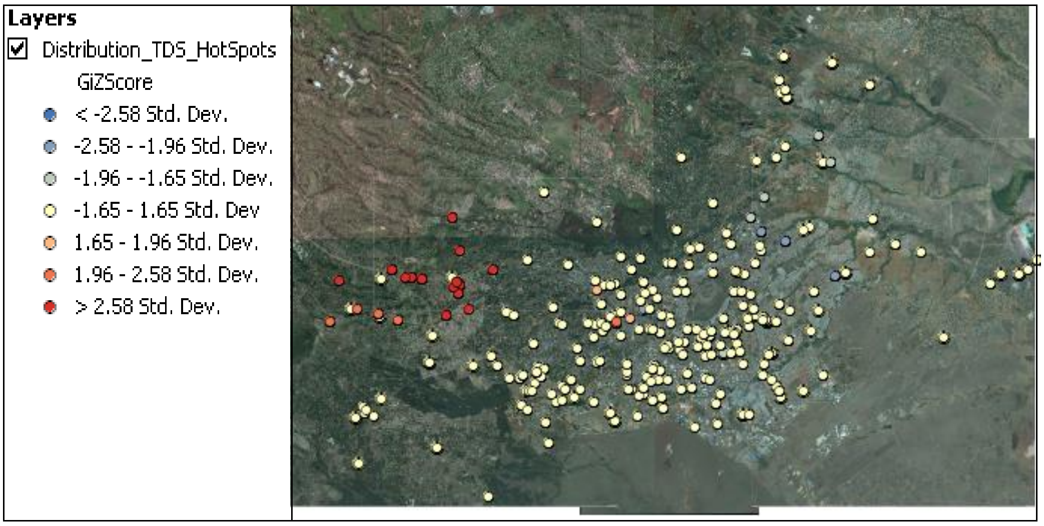


Figure 4.17: Spatial analysis results of total dissolved solids (Distribution)

Manganese (Mn)

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.18 below shows that cold spot areas or statistically significant low values of manganese are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City.

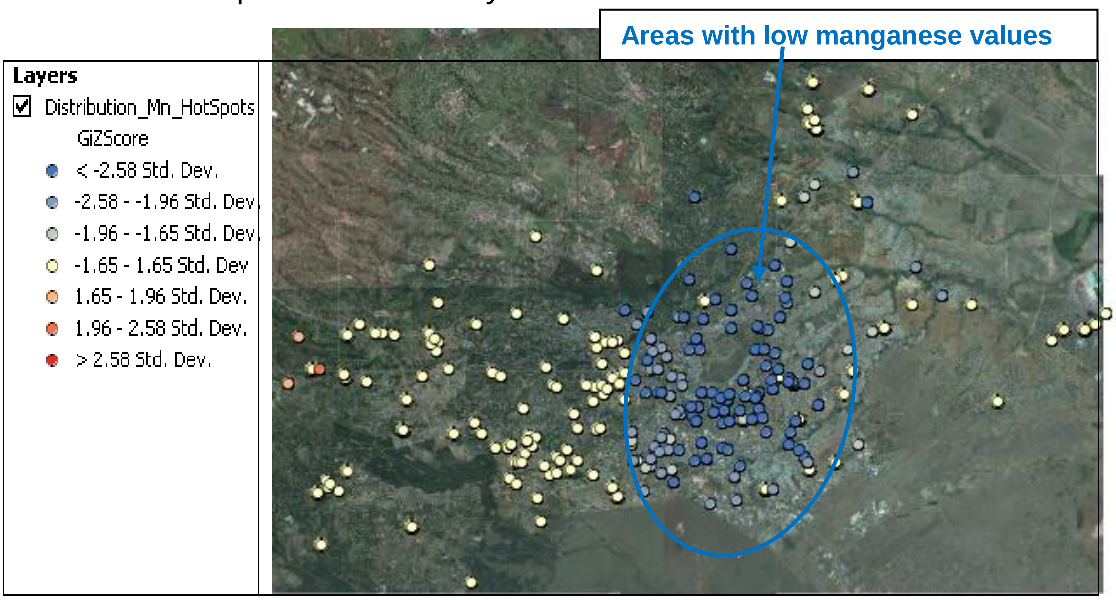


Figure 4.18: Spatial analysis results of manganese (Distribution)

Zinc (Zn)

Hot spot analysis (getis-Ord G^*_i) presented in Figure 4.19 below shows that cold spot areas or statistically significant low values of zinc are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City, more or less similar with manganese.

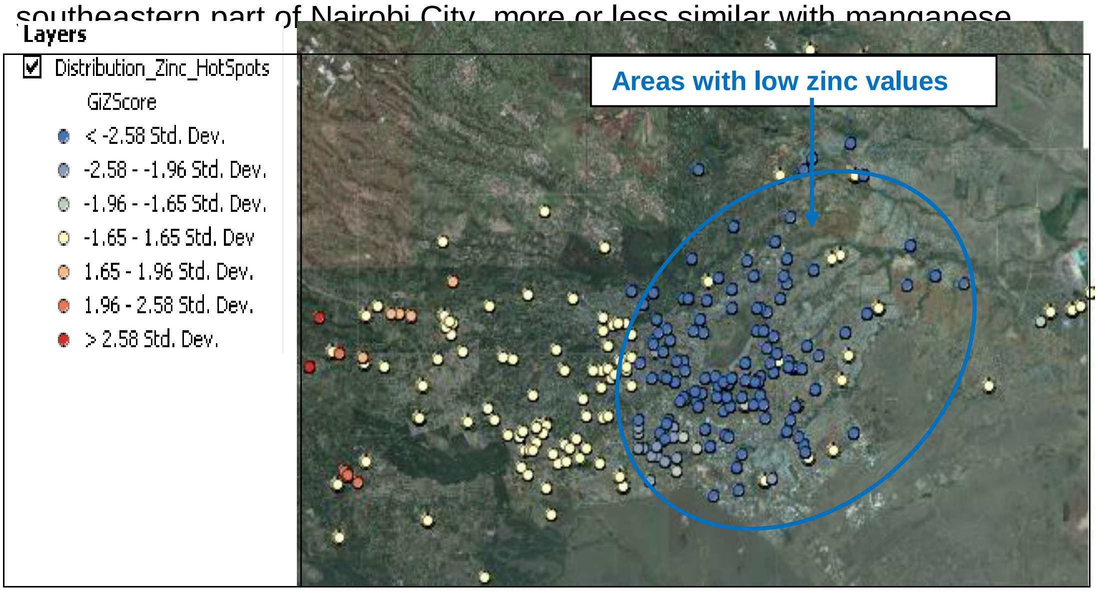


Figure 4.19: Spatial analysis results of zinc (Distribution)

Copper (Cu)

Hot spot analysis (getis-Ord G^*_i) presented in Figure 4.20 below shows that there are no high or low values in specific areas. However, slightly higher values of copper observed at few areas of central and southern part of Nairobi City may be as a result of random chance and it cannot be justified as hot spot.

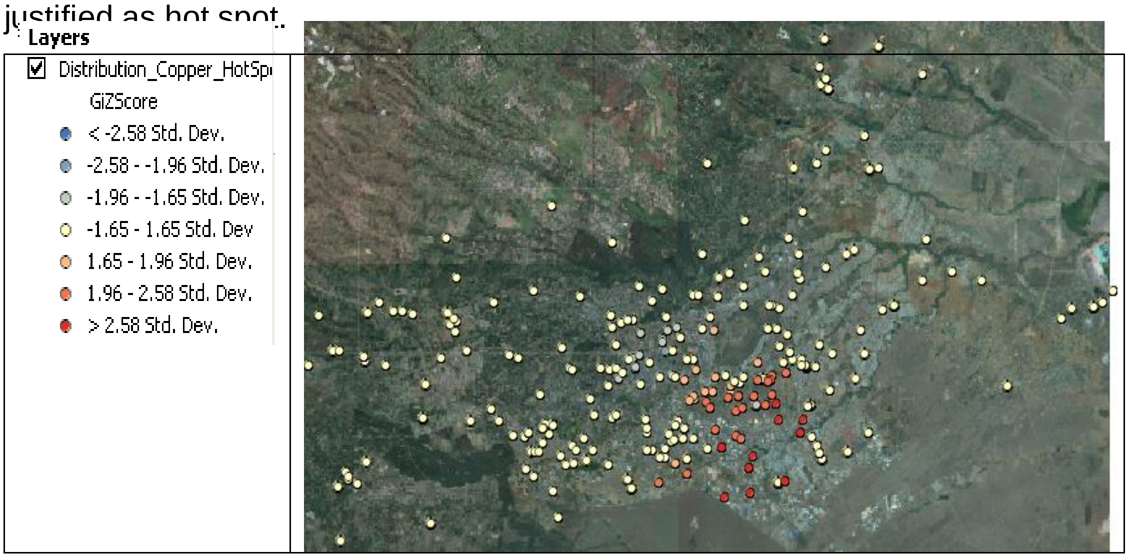


Figure 4.20: Spatial analysis results of copper (Distribution)

Fluoride (F)

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.21 below shows that fluoride is randomly distributed and there are no high or low values in specific areas. However, slightly lower values of fluorides observed at few areas of south western part of Nairobi City may be as a result of random chance and it cannot be justified as hot spot.

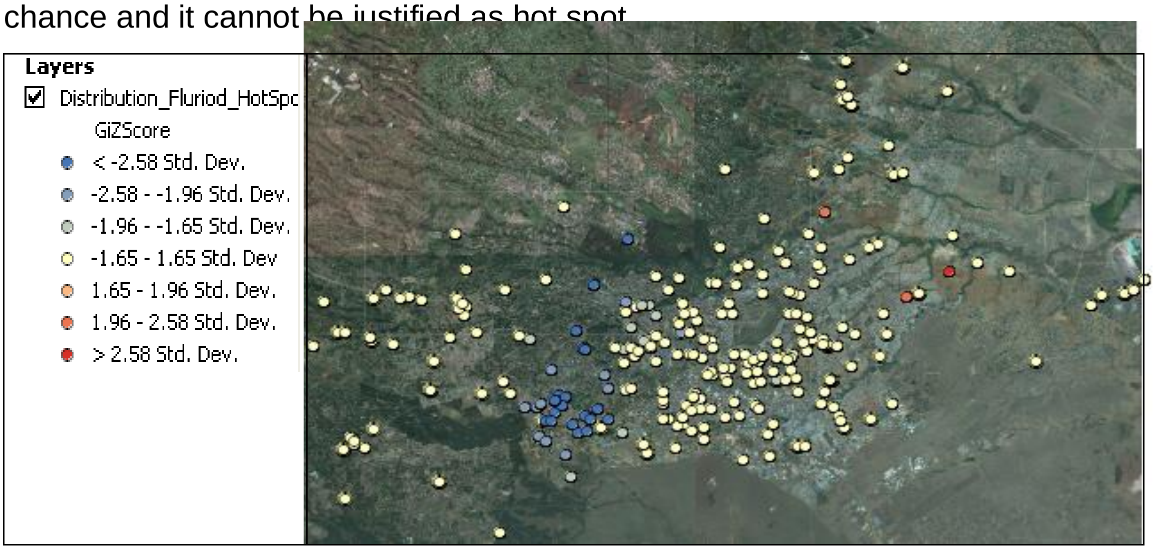


Figure 4.21: Spatial analysis result of fluoride (Distribution)

4.1.3. TEMPORAL VARIABILITY

Temporal trend pattern was analysed for very specific indicator water quality parameters. The trend pattern was analysed from time series plots of the selected indicators. The selected indicators for this analysis are pH, alkalinity, hardness, conductivity and turbidity. These indicators were selected because of their relatively higher number of data and better regularity in frequency of sampling. For example, pH trend pattern at Ruiru Dam Intake sampling station (Figure 4.22).

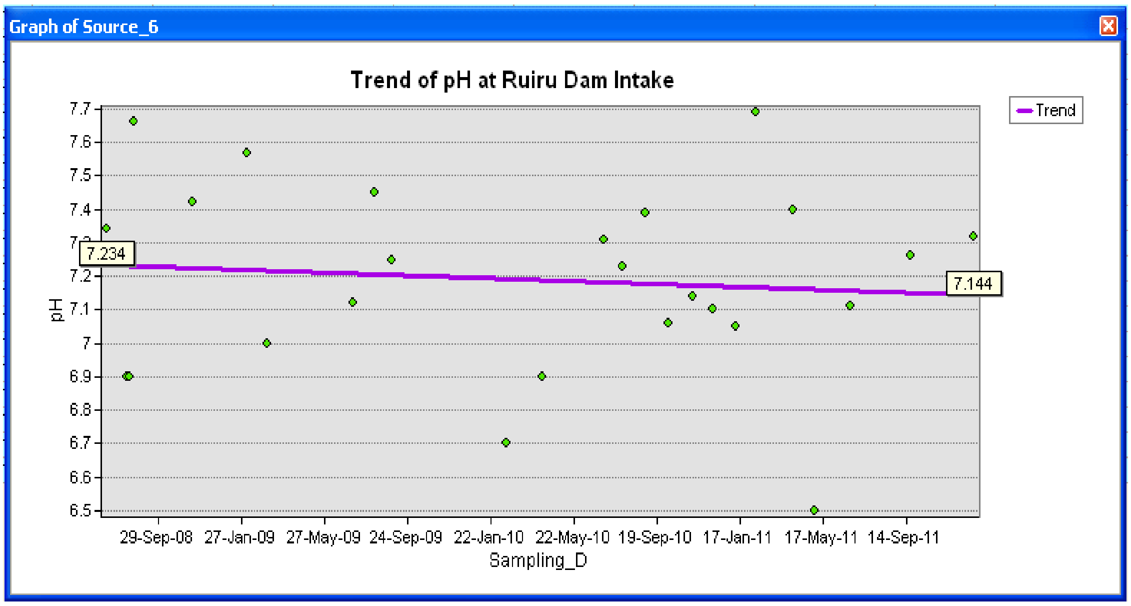


Figure 4.22: Trend of pH Values at Ruiru Dam Intake

The pH trend value at the beginning (2008) is 7.23 while the trend value after some period (2011) is 7.14. The pattern of pH at this station shows that there is a decline of pH with time. This result could be related to the fact that the pH value of water entering at this sampling station is decreasing over the last four years. It is more frequent that pH change is attributed to human activities within water sources catchment than geology and biotic activities (Dallas and Day, 2004; Weiner and Matthews, 2007).

Figures 4.23 to 4.26 below are also time series plots (temporal variation) of pH and Nitrates at Ngeteti and Kiminditi sampling stations of Ruiru Dam. Catchments of both stations are characterised by tea farming; small scale individual horticulture, and coffee, and small scale husbandry.

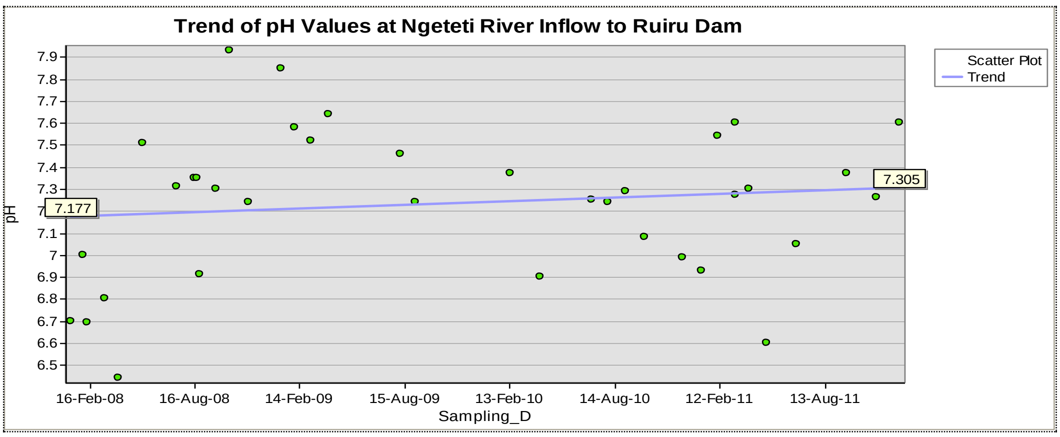


Figure 4.23: Trend of pH Values at Ngeteti sampling station of Ruiru Dam

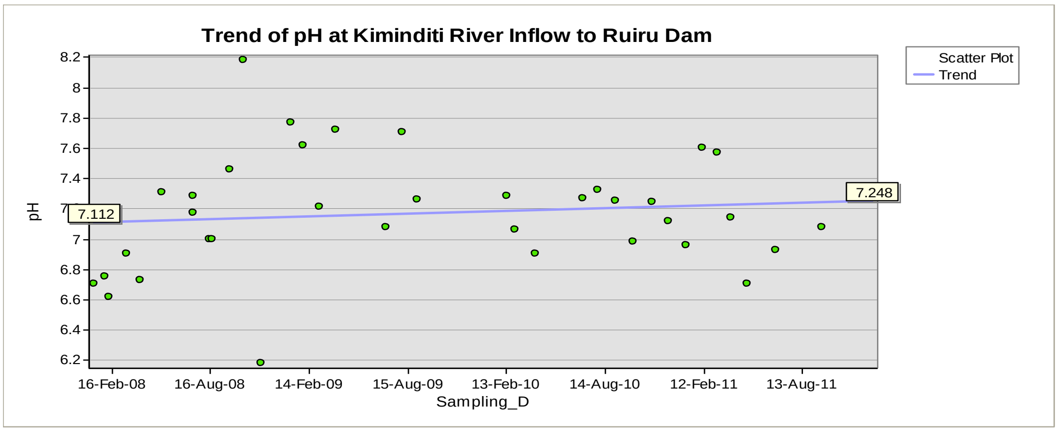


Figure 4.24: Trend of pH values at Kiminditi sampling station of Ruiru Dam

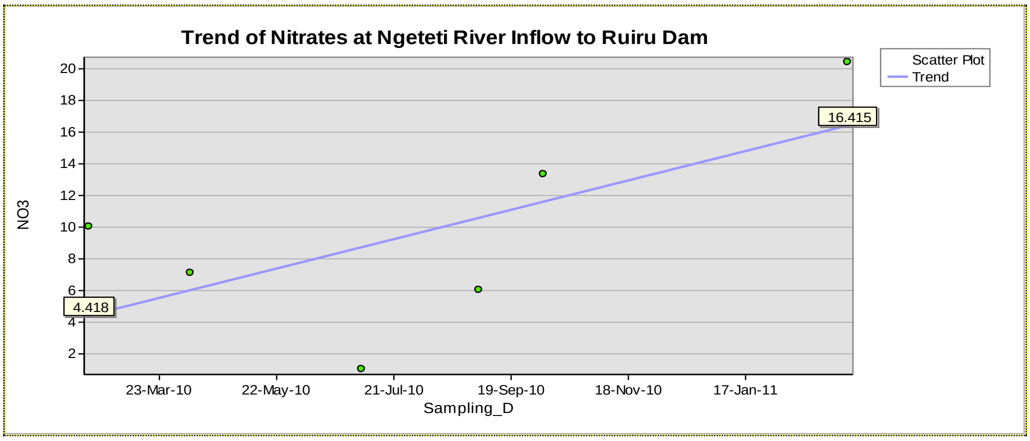


Figure 4.25: Trend of Nitrates at Ngeteti sampling station of Ruiru Dam

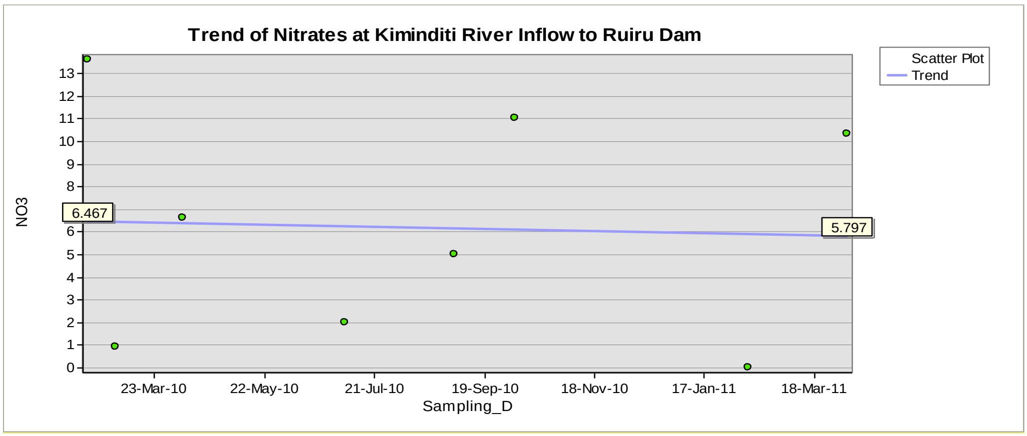


Figure 4.26: Trend of Nitrates at Kiminditi sampling station of Ruiru Dam

As can be seen from the above figures, pH values at both stations have similar values and trend pattern which could be inline with similar activities in the catchment. However, nitrates at both stations have significant different values and trend patterns which could be as a result of very small sample size and high data outliers. The result could also be distorted by low and irregular sampling frequencies. Studies conducted on temporal variability in water quality of agricultural tailwaters show that even the mandated monthly sampling frequency was grossly inadequate in addressing the short-term water quality variability (Brauer, et al., 2009). A student t-statistic that can be used to estimate the relationships between a sampling frequency and confidence interval of the mean of the random component in the design of water quality monitoring networks was presented in chapter 2.

The pH, alkalinity, hardness, conductivity and turbidity of other sampling stations of the water sources are also summarised in Tables 4.1, 4.2, 4.3, 4.4 and 4.5 below:

Table 4.1: Trend of pH at different sampling stations

Water Source Region	*Sampling Station*	*Station Type*	*pH trend*		*Difference*	*Remark*
			2008	*2011*		
RUIRU	DAM INTAKE	Reservoir	7.189	7.193	0.004	Increasing
RUIRU	KIMINDITI RIVER	River/stream	7.112	7.248	0.136	Increasing
RUIRU	KANYIRIRI RIVER	River/stream	7.274	7.218	-0.056	Declining
RUIRU	KIBATHITHI 1 RIVER	River/stream	7.417	7.128	-0.289	Declining
RUIRU	KIBATHITHI 2 RIVER	River/stream	7.185	7.24	0.055	Increasing
RUIRU	KIMAITI RIVER	River/stream	7.22	7.266	0.046	Increasing
RUIRU	NGETETI RIVER	River/stream	7.177	7.305	0.128	Increasing
RUIRU	RUIRU RIVER	River/stream	7.388	6.633	-0.755	Declining
RUIRU	WAIGERE RIVER	River/stream	7.023	7.209	0.186	Increasing
SASUMUA	SASUMUA DAM WATER	Reservoir	7.544	7.4	-0.144	Declining
SASUMUA	CHANIA INTAKE	River/stream	7.546	7.303	-0.243	Declining
SASUMUA	KIBURU RIVER	River/stream	7.578	7.428	-0.150	Declining
SASUMUA	SASUMUA RIVER	River/stream	7.427	7.562	0.135	Increasing
THIKA	DAM SURFACE WATER	Reservoir	7.085	6.615	-0.470	Declining
THIKA	GITHIKA RIVER	River/stream	6.759	7.316	0.557	Increasing
THIKA	KAYUYU RIVER	River/stream	7.296	7.224	-0.072	Declining
THIKA	KIAMA RIVER	River/stream	6.67	7.382	0.712	Increasing
THIKA	THIKA RIVER	River/stream	6.684	7.417	0.733	Increasing
WESTERN	KIKUYU SPRING-RAW WATER	Spring	6.729	7.101	0.372	Increasing

The positive values could be related to the fact that in the past four years the pH content of water flowing to this station was increasing where as the negative value is an indicator of decreasing of pH content of water entering to this station. But the values don’t really represent the strength of increasing of the pH parameter at that sampling station due to small size and missing data, below detection limits and irregularities of sampling frequencies as pH is variable with season.

Table 4.2: Trend of total alkalinity at different sampling stations

Water Source Region	Sampling Station	Station Type	Total Alkalinity Trend		Difference	Remark
			2008	**2011**		
RUIRU	DAM INTAKE	Reservoir	21.404	22.636	1.23	Increasing
RUIRU	KIMINDITI RIVER	River/stream	20.679	23.2	2.52	Increasing
RUIRU	KANYIRIRI RIVER	River/stream	15.991	26.429	10.44	Increasing
RUIRU	KIBATHITHI 1 RIVER	River/stream	13.452	26.731	13.28	Increasing
RUIRU	KIBATHITHI 2 RIVER	River/stream	20.501	25.076	4.58	Increasing
RUIRU	KIMAITI RIVER	River/stream	16.514	26.808	10.29	Increasing
RUIRU	NGETETI RIVER	River/stream	17.423	27.787	10.36	Increasing
RUIRU	RUIRU RIVER	River/stream	21.229	25.096	3.87	Increasing
RUIRU	WAIGERE RIVER	River/stream	15.944	25.952	10.01	Increasing
SASUMUA	SASUMUA DAM WATER	Reservoir	14.572	33.953	19.38	Increasing
SASUMUA	CHANIA INTAKE	River/stream	29.815	28.441	-1.37	Declining
SASUMUA	KIBURU RIVER	River/stream	33.23	32.53	-0.70	Declining
SASUMUA	SASUMUA RIVER	River/stream	32.206	20.669	-11.54	Declining
THIKA	DAM SURFACE WATER	Reservoir	12.035	16.687	4.65	Increasing
THIKA	GITHIKA RIVER	River/stream	12.189	14.793	2.60	Increasing
THIKA	KAYUYU RIVER	River/stream	15.296	19.493	4.20	Increasing
THIKA	KIAMA RIVER	River/stream	33.425	40.093	6.67	Increasing
THIKA	THIKA RIVER	River/stream	15.533	23.006	7.47	Increasing
WESTERN	KIKUYU SPRING-RAW WATER	Spring	24.466	66.496	42.03	Increasing

The positive values could be related to the fact that in the past four years, acid neutralized capacity of water (alkalinity) flowing to this station was increasing where as the negative value is an indicator of decreasing of acid neutralized capacity of water (alkalinity) flowing to this station. But the values don't really represent the strength of increasing of the alkalinity parameter at that sampling station due to small size and missing data, below detection limits and irregularities of sampling frequencies as alkalinity is variable with season.

Table 4.3: Trend of total hardness at different sampling stations

Water Source Region	***Sampling Station***	***Station Type***	***Conductivity Trend***		***Difference***	***Remark***
			2008	***2011***		
RUIRU	DAM INTAKE	Reservoir	41.806	46.861	5.06	Increasing
RUIRU	KIMINDITI RIVER	River/stream	45.201	44.341	-0.86	Declining
RUIRU	KANYIRIRI RIVER	River/stream	34.419	44.948	10.53	Increasing
RUIRU	KIBATHITHI 1 RIVER	River/stream	29.373	42.641	13.27	Increasing
RUIRU	KIBATHITHI 2 RIVER	River/stream	41.058	42.371	1.31	Increasing
RUIRU	KIMAITI RIVER	River/stream	69.934	50.169	-19.77	Declining
RUIRU	NGETETI RIVER	River/stream	51.482	50.471	-1.01	Declining
RUIRU	RUIRU RIVER	River/stream	42.362	48.741	6.38	Increasing
RUIRU	WAIGERE RIVER	River/stream	45.062	44.391	-0.67	Declining
SASUMUA	SASUMUA DAM WATER	Reservoir	38.811	51.383	12.57	Increasing
SASUMUA	CHANIA INTAKE	River/stream	37.709	45.695	7.99	Increasing
SASUMUA	KIBURU RIVER	River/stream	42.244	38.518	-3.73	Declining
SASUMUA	SASUMUA RIVER	River/stream	54.544	44.556	-9.99	Declining
THIKA	DAM SURFACE WATER	Reservoir	19.871	18.755	-1.12	Declining
THIKA	GITHIKA RIVER	River/stream	19.013	18.612	-0.40	Declining
THIKA	KAYUYU RIVER	River/stream	48.451	25.338	-23.11	Declining
THIKA	KIAMA RIVER	River/stream	22.406	24.819	2.41	Increasing
THIKA	THIKA RIVER	River/stream	23.405	25.485	2.08	Increasing
WESTERN	KIKUYU SPRING-RAW WATER	Spring	219.314	289.159	69.85	Increasing

The positive values could be related to the fact that in the past four years, the hardness of water flowing to this station was increasing where as the negative value is an indicator of decreasing of hardness of water flowing to this station. But the values don’t really represent the strength of increasing of the hardness parameter at that sampling station due to small size and missing data, below detection limits and irregularities of sampling frequencies as hardness is variable with season.

Table 4.4: Trend of turbidity at different sampling stations

Water Source Region	Sampling Station	Station Type	Turbidity Trend		Difference	Remark
			2008	2011		
RUIRU	DAM INTAKE	Reservoir	1.733	3.801	2.07	Increasing
RUIRU	KIMINDITI RIVER	River/stream	5.033	6.973	1.94	Increasing
RUIRU	KANYIRIRI RIVER	River/stream	9.638	2.032	-7.61	Declining
RUIRU	KIBATHITHI 1 RIVER	River/stream	9.374	23.151	13.78	Increasing
RUIRU	KIBATHITHI 2 RIVER	River/stream	9.647	4.533	-5.11	Declining
RUIRU	KIMAITI RIVER	River/stream	18.071	0.12	-17.95	Declining
RUIRU	NGETETI RIVER	River/stream	5.993	6.235	0.24	Increasing
RUIRU	RUIRU RIVER	River/stream	7.246	13.35	6.10	Increasing
RUIRU	WAIGERE RIVER	River/stream	5.659	5.976	0.32	Increasing
SASUMUA	SASUMUA DAM WATER	Reservoir	4.19	2.77	-1.42	Declining
SASUMUA	CHANIA INTAKE	River/stream	0.14	7.484	7.34	Increasing
SASUMUA	KIBURU RIVER	River/stream	4.84	4.179	-0.66	Declining
SASUMUA	SASUMUA RIVER	River/stream	9.291	5.484	-3.81	Declining
THIKA	DAM SURFACE WATER	Reservoir	2.175	1.289	-0.89	Declining
THIKA	GITHIKA RIVER	River/stream	3.893	2.416	-1.48	Declining
THIKA	KAYUYU RIVER	River/stream	8.909	4.652	-4.26	Declining
THIKA	KIAMA RIVER	River/stream	1.689	3.914	2.23	Increasing
THIKA	THIKA RIVER	River/stream	1.512	4.229	2.72	Increasing
WESTERN	KIKUYU SPRING-RAW WATER	Spring	1.494	2.428	0.93	Increasing

The positive values could be related to the fact that in the past four years, the turbidity of water flowing to this station was increasing. However, for the negative values, it is important to be cautious that the turbidity is decreasing with time. The fact is that population increase will increase land utilization and deforestation thereby to some extent will increase turbidity. However, the declining trend of turbidity with time at some sampling stations will be due to irregularities of sampling frequency as turbidity is variable with season. Moreover, small data size, missing data and below detection limits will have contribution for biased results.

Table 4.5: Trend of conductivity at different sampling stations

Water Source Region	*Sampling Station*	*Station Type*	*Conductivity Trend*		*Difference*	Remark
			2008	*2011*		
RUIRU	DAM INTAKE	Reservoir	41.806	46.861	5.06	Increasing
RUIRU	KIMINDITI RIVER	River/stream	45.201	44.341	-0.86	Declining
RUIRU	KANYIRIRI RIVER	River/stream	34.419	44.948	10.53	Increasing
RUIRU	KIBATHITHI 1 RIVER	River/stream	29.373	42.641	13.27	Increasing
RUIRU	KIBATHITHI 2 RIVER	River/stream	41.058	42.371	1.31	Increasing
RUIRU	KIMAITI RIVER	River/stream	69.934	50.169	-19.77	Declining
RUIRU	NGETETI RIVER	River/stream	51.482	50.471	-1.01	Declining
RUIRU	RUIRU RIVER	River/stream	42.362	48.741	6.38	Increasing
RUIRU	WAIGERE RIVER	River/stream	45.062	44.391	-0.67	Declining
SASUMUA	SASUMUA DAM WATER	Reservoir	38.811	51.383	12.57	Increasing
SASUMUA	CHANIA INTAKE	River/stream	37.709	45.695	7.99	Increasing
SASUMUA	KIBURU RIVER	River/stream	42.244	38.518	-3.73	Declining
SASUMUA	SASUMUA RIVER	River/stream	54.544	44.556	-9.99	Declining
THIKA	DAM SURFACE WATER	Reservoir	19.871	18.755	-1.12	Declining
THIKA	GITHIKA RIVER	River/stream	19.013	18.612	-0.40	Declining
THIKA	KAYUYU RIVER	River/stream	48.451	25.338	-23.11	Declining
THIKA	KIAMA RIVER	River/stream	22.406	24.819	2.41	Increasing
THIKA	THIKA RIVER	River/stream	23.405	25.485	2.08	Increasing
WESTERN	KIKUYU SPRING-RAW WATER	Spring	219.314	289.159	69.85	Increasing

The positive values could be related to the fact that in the past four years, the conductivity of water flowing to this station was increasing where as the negative value is an indicator of decreasing of conductivity of water flowing to this station. But the values don't really represent the strength of increasing of the conductivity parameter at that sampling station due to small size and missing data, below detection limits and irregularities of sampling frequencies as conductivity is variable with season.

5. DISCUSSIONS

5.1. INTRODUCTION

To evaluate and understand the conditions of the water sources combined evaluations of spatial and temporal variability of the available water quality data was carried out in Section 4.0. Evaluations for borehole sources and distributions were made based on spatial variability of the data.

Due to small sample size, large number of missing and below detection limit values of the water quality data, as well as general inconsistence of sampling frequency, the results are interpreted with caution. Assessment of results was made in relation to established water quality guideline; conditions of site which is a drive for the observed result, and related literatures, studies and publications.

5.2. SPATIAL VARIABILITY

5.2.1. SURFACE WATER SOURCES

<u>*pH*</u>

To understand the conditions of surface water sources, pH was selected as one of indicators. The pH values of existing water quality data are in the range of 6 to 8.6. This range is marginally the same with recommended optimum pH (6.5–8) by WHO (2004). Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.1 above shows that there are no hot spot or cold spot areas of pH values. Even though all catchments have similar characteristics, there is an indication that pH is relatively low at Ruriu and Kikuyu Spring compared with Sasumua and wide areas of Thika regions. pH at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also low.

It is more frequent that pH change is attributed to human activities within water sources catchment than geology and biotic activities (Dallas and Day, 2004; Weiner and Matthews, 2007). Although the pH values of water sources in most regions are in the acceptable range without extreme values, the lower values of pH at Ruriu and Kikuyu Spring could be related to the relatively more human activities within these catchments.

Total Alkalinity and Total Hardness

Results of concentrations of alkalinity and total hardness for existing water quality data of surface water sources (Figure 5.1) show that total hardness is slightly more than total alkalinity with respective average values of 25 mg/L and 23.5 mg/L as $CaCO_3$.

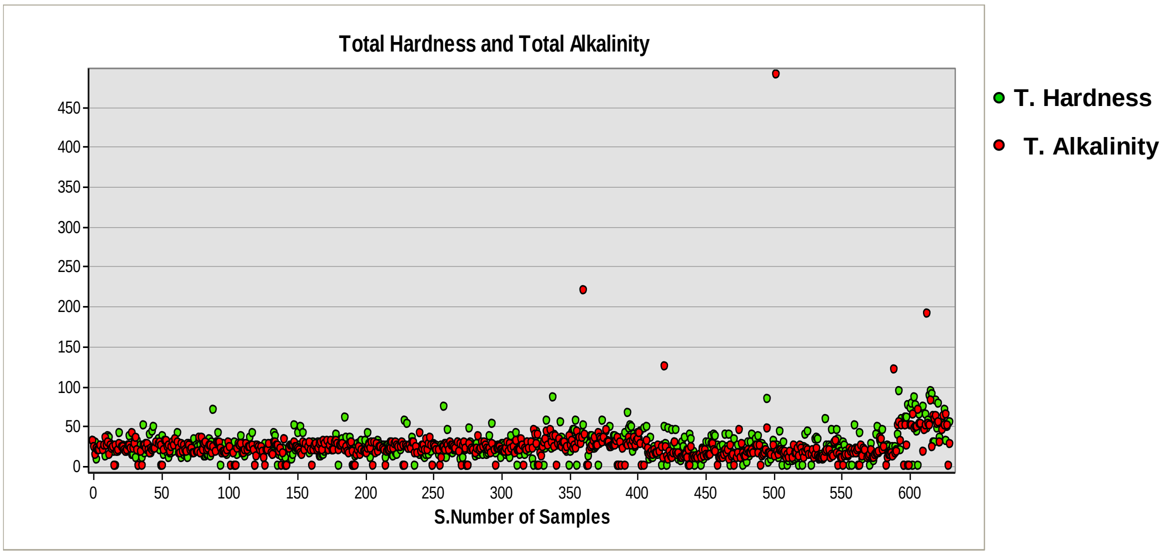


Figure 5.1: Total hardness and total alkalinity concentrations (Surface water sources)

The low concentrations of total hardness show that the water is soft (Table 3.5). According to WHO (2004), soft waters with a hardness of less than about 100 mg/L as $CaCO_3$ have a low buffering capacity and may be corrosive to water pipes. Water with a low alkalinity (< 24 mg/L as $CaCO_3$) have also a low buffering capacity and can, therefore, be susceptible to alterations in pH, for example from atmospheric acidic deposition (Chapman, 1996).

From hot spot analysis (getis-Ord G^*_I) presented in section 4.1.2, the regional distribution of hardness and alkalinity is also assessed as follows: The analysis result presented (Figure 4.3) shows that total hardness is slightly higher at Ruriu region and Kikuyu Spring compared with Sasumua and Thika regions. Total Hardness at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also high. Similarly, the analysis result presented (Figure 4.2) shows that alkalinity is slightly higher at Ruriu region and Kikuyu Spring compared with Sasumua and Thika regions almost in contrary to pH. Alkalinity at two sampling stations within Thika region (Kimakia River and Mwangu Intake) is also higher. The spatial variability of total hardness at all regions is similar with that of alkalinity.

Conductivity

Hot spot analysis (getis-Ord G^*_I) (Figure 4.4) shows that hot spot or high values of conductivity are observed at Kikuyu Spring and low values at Sasumua and Thika regions except for Kimakia River and Mwangu Intake. The higher values of conductivity at Kikuyu Spring are indication of high values of total dissolved solids, or salts, present in water. The spatial variability of conductivity at Ruriu, Sasumua and Thika regions is also similar with that of alkalinity and hardness.

Chlorides

The result from hot spot analysis (getis-Ord G^*_I) presented in Figure 4.5 above shows that relatively hot spot or high values of chlorides are observed at Kikuyu Spring and low values at Sasumua and Thika regions with slightly higher at Ruriu region. Chlorides at two sampling stations within Thika region (Kimakia River and Mwangu Intake) are also slightly higher. The spatial variability of chlorides is similar with that of conductivity.

The high values of chlorides at Kikuyu Spring will substantiate the presence of high salt as observed from conductivity result. Although weathering of some sedimentary rocks (mostly rock salt deposits) can contribute for high chloride in water sources, industrial and sewage effluents, and agricultural and road run-off can also contribute for high chlorides concentration in water. The salting of roads during winter periods can contribute significantly to chloride increases in waters (Chapman, 1996). If the geology of area is not a contributor of chlorides, the higher chloride concentration observed in Kikuyu Spring can be related to the effect of urbanisation, but further study will be required to justify.

No health-based guideline value is proposed for chloride in drinking-water (WHO, 2004). Nevertheless, chloride concentrations in excess of about 250 mg/L can give rise to detectable taste in water. Furthermore, high concentrations of chlorides tend to enhance the corrosion rates of iron, steel, and metals, especially when coupled with low alkalinity (Ratnayaka, et al., 2009). For existing water quality data, the average higher values of chloride concentrations are observed at Kikuyu Spring which is about 75 mg/L.

Total Dissolved Solids (TDS)

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.6 shows that hot spot or high values of TDS are observed at Kikuyu Spring and low values at Sasumua and Thika regions with slightly higher at Ruriu region. Slightly higher TDS values are also observed at two sampling stations within Thika region (Kimakia River and Mwangu Intake). The spatial variability of TDS is also similar with that of conductivity. This is in line with the concept that conductivity is another measure of dissolved material and is often used as a surrogate for TDS (Dallas and Day, 2004). TDS in water originates from natural sources, sewage, urban runoff and industrial wastewater (WHO, 2004). Thus, the higher values of TDS in Kikuyu Spring could also be related to the idea of effect of urbanisation stated above under chlorides. However, further investigations will be required particularly in relation to the effect of geology on water quality.

The presence of high levels of TDS in drinking-water (greater than 1200 mg/L) may be objectionable to consumers (WHO, 2004). But, for existing water quality data, the maximum observed TDS is 183.7 mg/L at Kikuyu Spring.

Iron and manganese

Iron and manganese are found in most natural waters and can be present in solution, or in suspension as a colloid, or as a complex with other mineral or organic substances (Ratnayaka, et al., 2009). However, human activity such as wastes from batteries, steel alloy production, and agricultural products are also sources of manganese (AWWA, 1999). Corrosion of iron or steel can also increase the dissolved iron concentration in water (AWWA, 1999).

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.7 shows that high values of iron are observed at Kikuyu Spring, Sasumua and Thika regions. Relatively low values of iron are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake). Similarly, higher values of manganese are observed at Kikuyu Spring followed by a lesser values at Sasumua and Thika regions as shown in Figure 4.8. Relatively low values of manganese are also observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

Iron and manganese are found in water either naturally or as a result of excessive corrosion of iron products (AWWA, 1999). In surface water sources, extent of aeration determines amount of iron and manganese in the water. For example, more soluble forms of iron (Fe^{+2}) and manganese (Mn^{+2}) will occur in deoxygenated conditions such as deep boreholes or in the bottom of reservoirs and lakes (Chapman, 1996). The occurrence of iron and manganese in the existing water sources could be related to natural.

With respect to limits of iron and manganese in drinking water, WHO (2004) has recommended concentration amount of less than 0.3 mg/L and 0.1 mg/L respectively. But, for existing water quality data, the maximum, minimum and average iron and manganese concentrations are presented respectively, in Figure 5.2 and 5.3 below. It was stated that maximum concentrations are occurred at Kikuyu Spring where as minimum concentrations were occurred at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

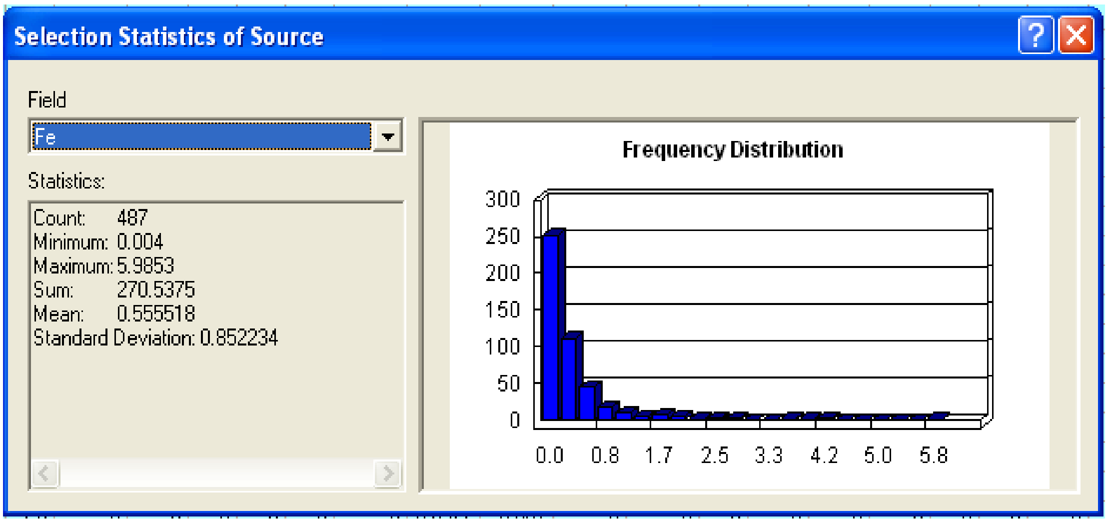


Figure 5.2: Statistical result of iron concentrations (surface water sources)

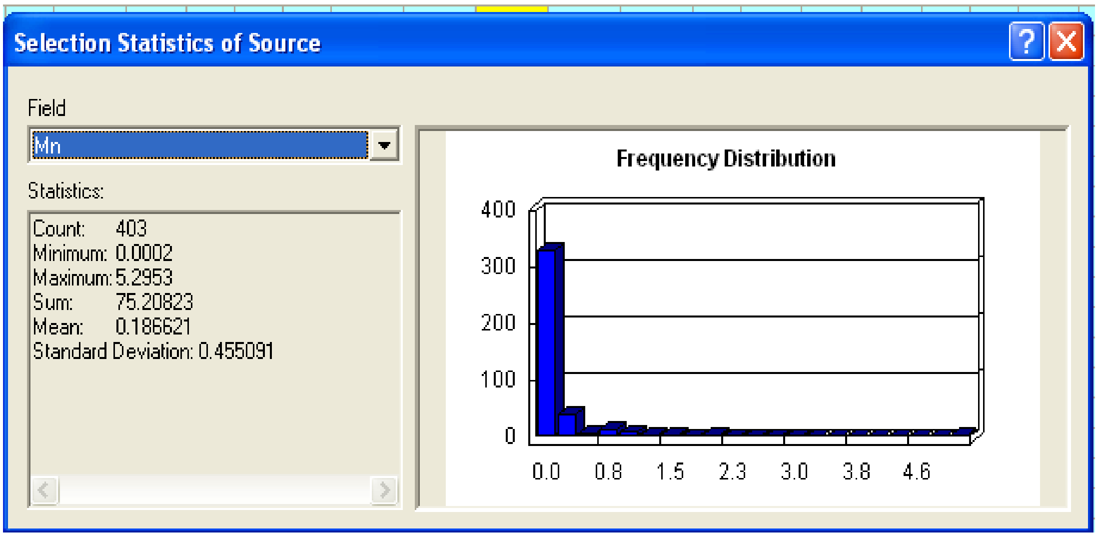


Figure 5.3: Statistical result of manganese concentrations (surface water sources)

The above analyses result of iron and manganese will help in identifying appropriate treatment system for each source.

Lead (Pb), Copper (Cu), Zinc (Zn), Fluoride (F), Nitrate (NO_3) and Nitrite (NO_2)

Hot spot analysis (getis-Ord G^*_i) presented in Figure 4.9 above shows that lead, copper, zinc, fluoride, nitrate and nitrite are randomly distributed all over regions' water sources and there are no high or low values in specific areas. However with respect to concentrations, WHO (2004) has recommended their limit in drinking water. Lead 0.01 mg/L, copper 0.1 mg/L, zinc 3 mg/L, fluoride 1.5 mg/L, nitrate 50 mg/L as nitrate or 10 mg/L as nitrogen according to WSRB guideline, nitrite 3 mg/L. However, for existing water quality data, the maximum, minimum and average lead, copper, zinc, fluoride, nitrate and nitrite concentrations are presented below.

The lead concentrations that are randomly distributed within the water sources were also analysed with respect to its concentration and limit by guideline. Accordingly, about 5% of the values are below the guideline limit where as about 95% are above the guideline limit. This result indicates that lead is the most parameter that is usually occurring with higher values in the water sources. The current conventional treatment system for surface water sources with the aid of coagulation, clarification and filtration is satisfactory for the removal or limiting of these parameters provided treatment effectiveness determinant parameters such as pH, alkalinity and the coagulant itself are monitored well during treatment processes.

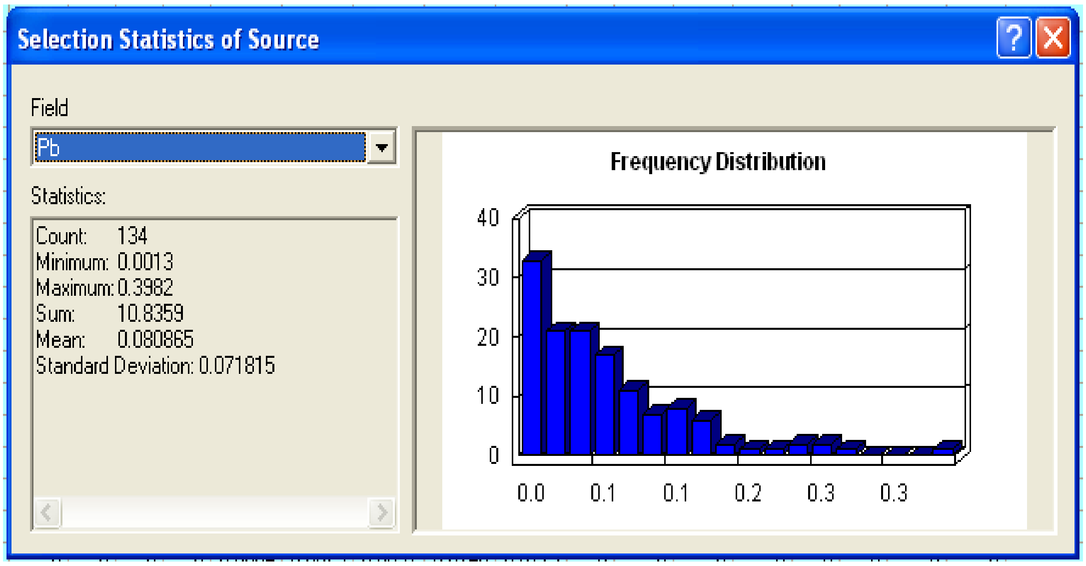


Figure 5.4: Statistical result of lead concentrations (surface water sources)

The copper concentrations that are randomly distributed within the water sources were also analysed with respect to its concentration and limit by guideline. Accordingly, about 91% of the values are below guideline limit where as about 9% are above guideline limit.

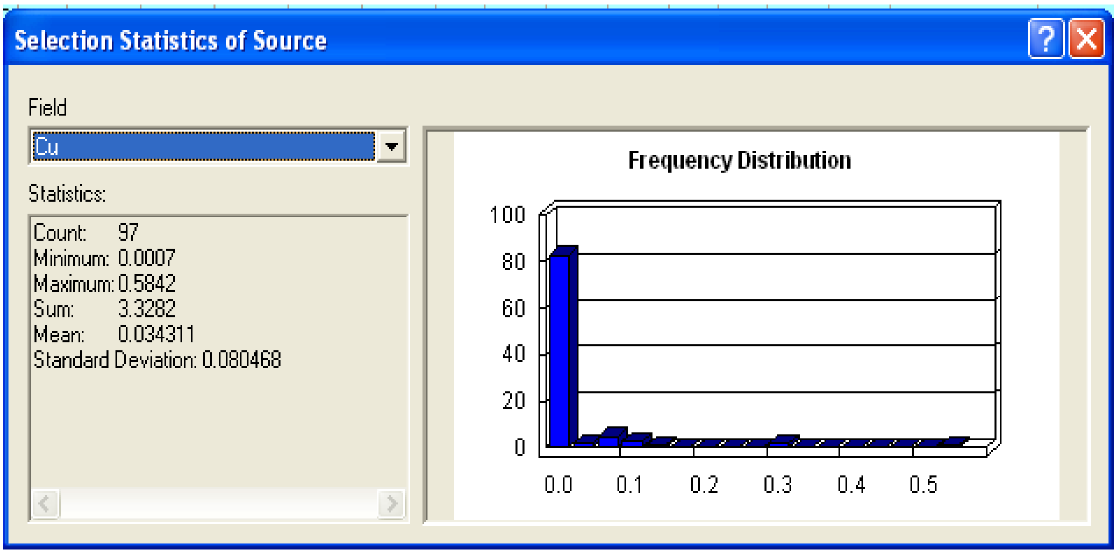


Figure 5.5: Statistical result of copper concentrations (surface water sources)

The zinc concentrations that are randomly distributed within the water sources were also analysed with respect to its concentration and limit by guideline. Accordingly, all concentrations are below the guideline limit.

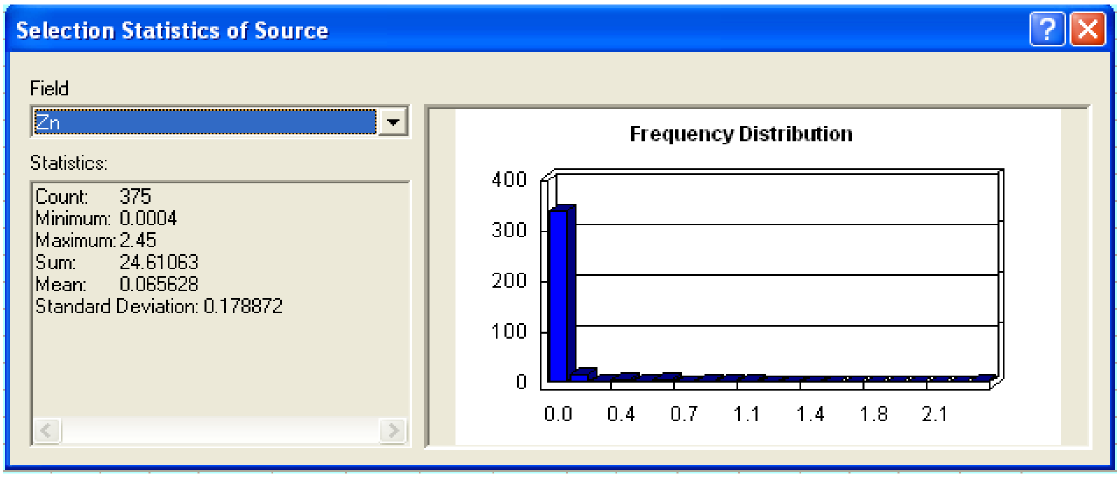


Figure 5.6: Statistical result of zinc concentrations (surface water sources)

The fluoride concentrations that are randomly distributed within the water sources were also analysed with respect to its concentration and guideline limit. All values were below the guideline limit.

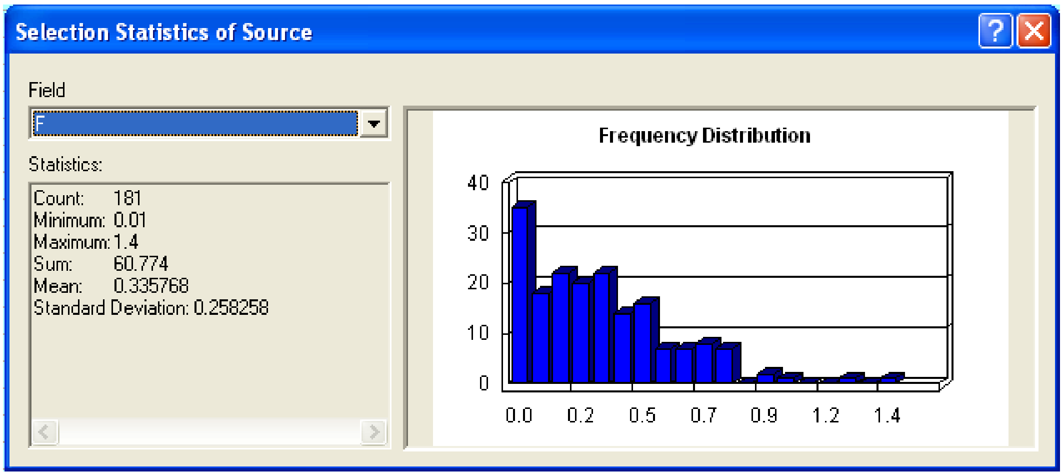


Figure 5.7: Statistical result of fluoride concentrations (surface water sources)

The nitrate concentrations that are also randomly distributed within the water sources were also analysed with respect to its concentration and limit by guideline. Hence, about 75% of the values are below the guideline limit where as about 25% are above the guideline limit.

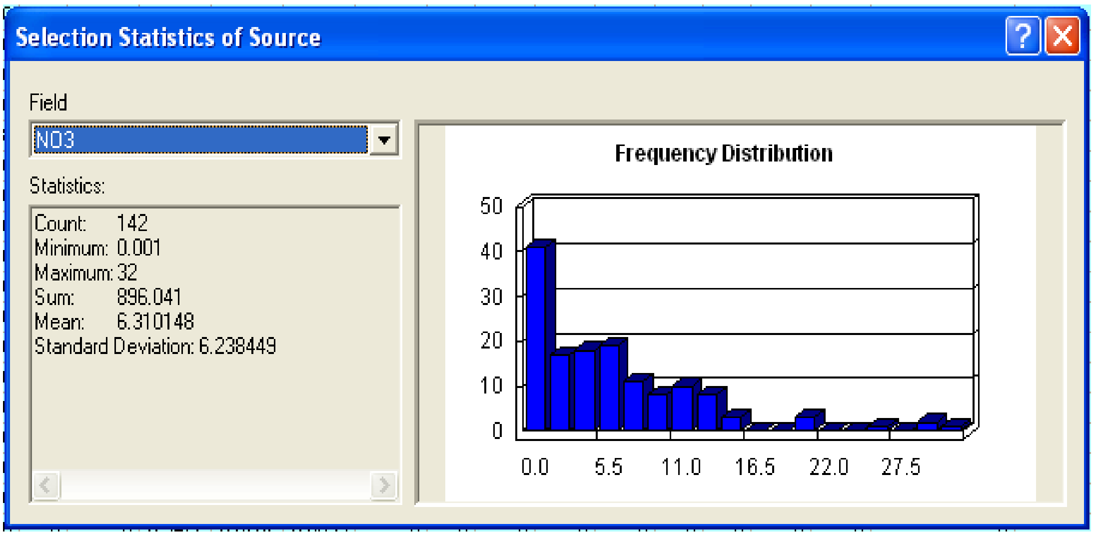


Figure 5.8: Statistical result of nitrate concentrations (surface water sources)

The nitrite concentrations that are randomly distributed within the water sources have also been analysed with respect to its concentration and limit by guideline. Thus, about 95% of the values are below the guideline limit where as about 5% are above the guideline limit.

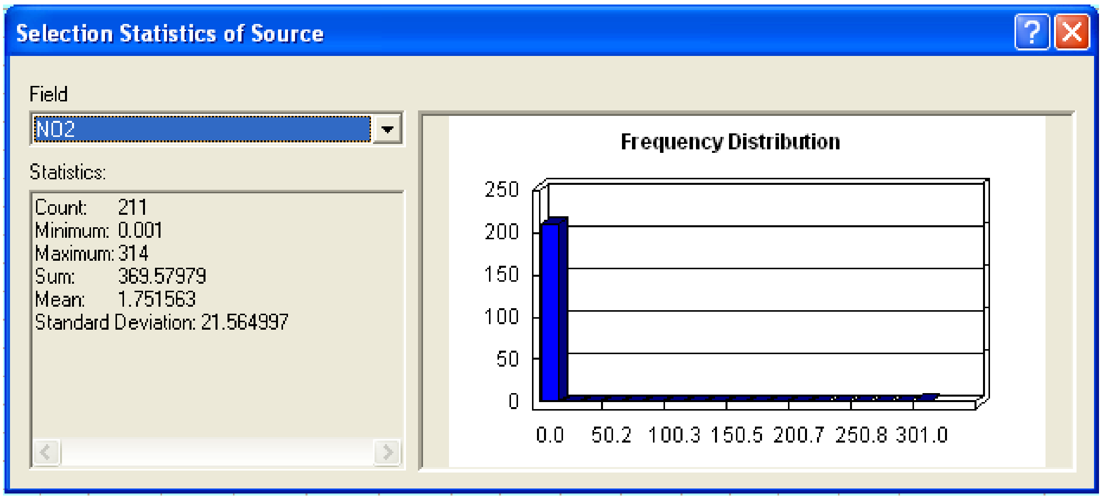


Figure 5.9: Statistical result of nitrite concentrations (surface water sources)

Turbidity

Turbidity in water may be due to clay and silt particles, algae, organic matter, discharges of sewage or industrial wastes or the presence of large numbers of micro-organisms (Weiner and Matthews, 2007). Hot spot analysis presented in Figure 4.10 shows that slightly high values of turbidity are observed at Kikuyu Spring, Sasumua and Thika regions. However, relatively low values of turbidity are observed at Ruriu region and two stations within Thika region (Kimakia River and Mwangu Intake).

The high turbidity value in Kikuyu Spring will be related to the high population of algae as observed during field assessment. During site assessment it has also been observed that aquatic plants/weeds were being removed manually from the spring reservoir. The population of algae and others in the spring is a sign of eutrophication[c]**.** However, further study will be required to substantiate it.

c- Eutrophication is a complex process which occurs both in fresh and marine waters, where excessive development of certain types of algae disturbs the aquatic ecosystems and becomes a threat for animal and human health. The primary cause of eutrophication is an excessive concentration of plant nutrients originating from agriculture or sewage treatment (WHO-Regional Office For Europe, 2002).

Figure 5.10: View of algae and aquatic plants population in Kikuyu Spring

The current treatment method at Kikuyu Spring is only disinfection. However, disinfecting of water having organic materials will lead to formation of disinfection by- products that could have an impact on public health. The disinfection by-products may be reduced by reducing organic components in water before disinfection (Ratnayaka, et al., 2009). In case of Kikuyu Spring a strategy to reduce algae population in water need to be further investigated. Reviewing the current method of treatment to reduce the effect of disinfection by-products could be the immediate option. Disinfection following slow sand filter will be one of options for reducing the algae in raw water hence minimises disinfection by-product.

The turbidity in other sources may be related to agricultural activities in water catchments. However, due to variable frequency of sampling and large number of missing values, it was difficult to predict seasonal pattern of turbidity.

5.2.2. BOREHOLES

pH

Existing water quality data of boreholes show that the pH values are in the range of 6.65 to 9.68 with average value of 8.26. Hot spot analysis presented in Figure 4.11 above shows that hot spot areas or statistically significant high values of pH are observed at central, southern, south eastern, eastern and northeastern part of Nairobi City. As boreholes are directly pumped to distribution system, boreholes that have high pH value will also increase the pH of water within distribution system. The spatial trend of high pH values of boreholes is consistent with high pH values of the distribution system (Figure 4.14).

The recommended pH values (WHO, 2004) is 6.5 to 8. The pH result of the boreholes has showed that about 38% of the values are within the guideline limit where as about 62% is outside the guideline limit.

Fluoride

Hot spot analysis presented in Figure 8.3 shows that fluoride concentrations within the boreholes are spatially or regionally variable. Accordingly, the boreholes located in the central, eastern, southern and south eastern part of Nairobi City have high fluoride concentrations as high as 15 mg/L compared with statistically low values observed at western and northeastern part of Nairobi City (Figure 8.3). Although most boreholes including those located at statistically low values have fluoride concentrations above 1.5 mg/L, the low level of fluoride concentration in the distribution shows that it is moderated due to a mix with surface water as the boreholes are directly pumped to the distribution system. However, high fluoride concentration above the limit of the standard is observed in the distribution system mainly on the eastern part of Nairobi City where the fluoride concentration of the borehole is very high (Figure 4.21). This could be related to the fact that the water in the distribution network could not be moderated even though ground water is mixed with surface water due to the very high fluoride concentrations, *Total Alkalinity and Total Hardness*

Total alkalinity was much more than total hardness with respective average values of 209 mg/L and 50 mg/L as $CaCO_3$. The low values of total hardness shows that the water is soft (Table 2.5).

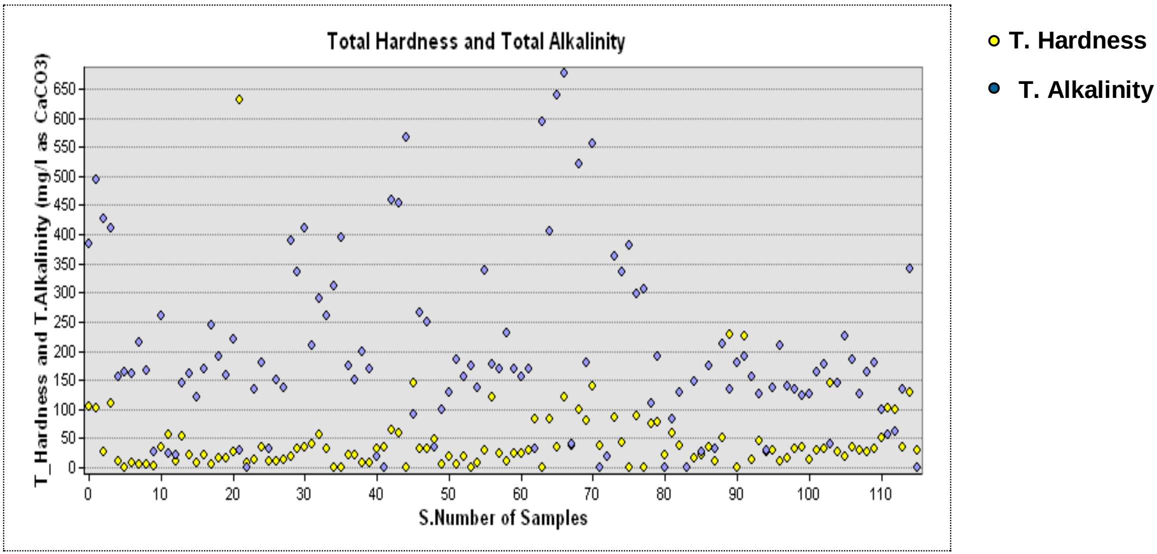


Figure 5.11: Total hardness versus total alkalinity concentrations (Boreholes)

Hot spot areas or statistically significant high values of alkalinity are observed at northern, northeastern and eastern part of Nairobi City (Figure 4.12). The spatial trend of alkalinity is similar with spatial trend of pH. Nevertheless, the hot spot analysis result for hardness (Figure 4.13) shows randomly distributed and no high or low values in specific areas.

Iron (Fe), Manganese (Mn), Zinc (Zn), Nitrates (NO_3), Nitrites (NO_2)

The parameters were not analysed as it could not be representative due to small number of data. But, the result from hot spot analysis presented in Figure 4.13 shows that iron, manganese, zinc, nitrates and nitrites are randomly distributed and no high or low values in specific areas. This result could also be due to small size of data and cannot be conclusive.

5.2.3. DISTRIBUTION

pH

Hot spot analysis result (Figure 4.14) shows that hot spot areas or statistically significant high values of pH are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City. The statistical analysis of pH for existing water quality data of distribution also shows that the pH values range from 5.30 to 9.45 with average value of 7.50. As presented in Figure 5.12 below, the pH values are distributed around the average. The recommended range of the pH (WHO, 2004) is 6.5 to 8.0. The result of analyzed data shows that about 3% of the values are below the guideline limit where as about 5% is above the guideline limit. About 92% are within the guideline limit.

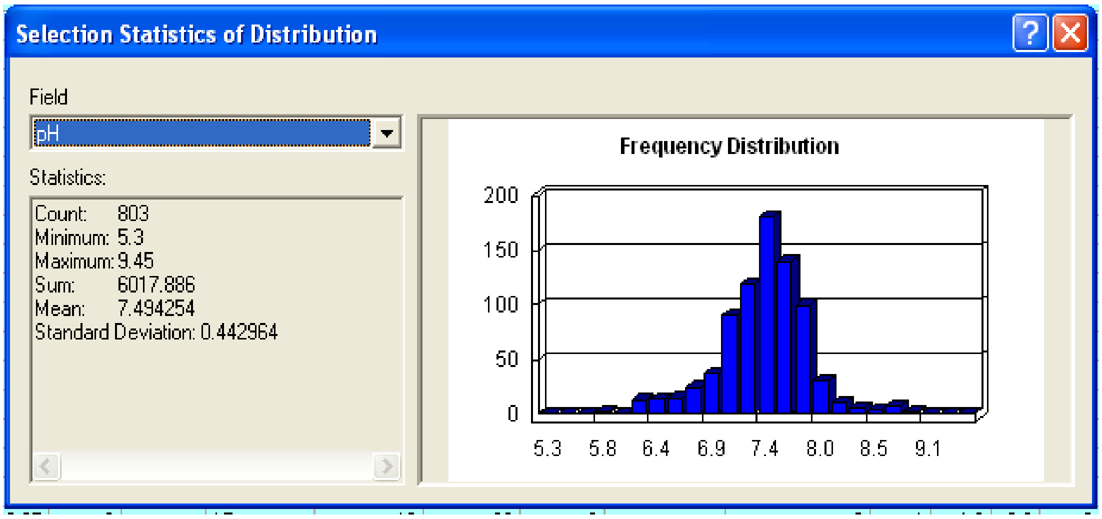


Figure 5.12: Statistical result of pH values (Distribution)

The following are also observations at areas with lower pH values:

a) Lower free residual chlorine concentrations (Figure 8.2). Low pH will accelerate disinfection and thus will result in reduction of chlorine concentration. In contrary, disinfection may be ineffective at pH above 9 (WHO, 2004: Ratnayaka, et al., 2009),
b) Relatively higher zinc values (Figure 4.19).
c) Relatively higher manganese values (Figure 4.18).
d) Relatively higher conductivity (Figure 4.16).

Lower pH values of water will accelerate corrosion of metallic pipes, fittings, valves and water retaining structures that eventually increase the solubility of metal in water. Generally, lower pH values below 6.5 and hardness less than 60 mg/L as $CaCO_3$ will expose iron, steel, lead, zinc and copper pipes to corrosion (WHO, 2004). Hence, adjusting pH or increasing the alkalinity and/or hardness or adding corrosion inhibitors, such as polyphosphates, silicates and orthophosphates are available options (WHO, 2004).

Free Residual Chlorine (FRC)

The analysis result presented in Figure 8.2 shows that the distribution network in the western part of Nairobi City has low Free Residual Chlorine (FRC) where as the distribution network work in the central, south-eastern and eastern part of Nairobi City has high FRC concentrations. The quantitative analysis of FRC for existing water quality data of distribution also shows that the FRC values range from non-detection in low value areas to a maximum of 1.8 mg/L in high value areas. WHO (2004) suggests that if bulk supplies in tankers are used, sufficient chlorine should be added to ensure that a FRC concentration of at least 0.5 mg/L after a contact time of at least 30 min is present at the delivery point. Minimum target concentrations for free chlorine at point of delivery are 0.2 mg/L in normal circumstances and 0.5 mg/L in high-risk circumstances.

Total Alkalinity and Total Hardness

The results in Figures 5.13, 5.14 and 5.15 below show that total alkalinity is slightly more than total hardness with respective average values of 35 mg/L and 30 mg/L as $CaCO_3$. The low values of total hardness show that the water is soft (Table 2.5). Soft water will be a cause of corrosion if combined with low pH and alkalinity.

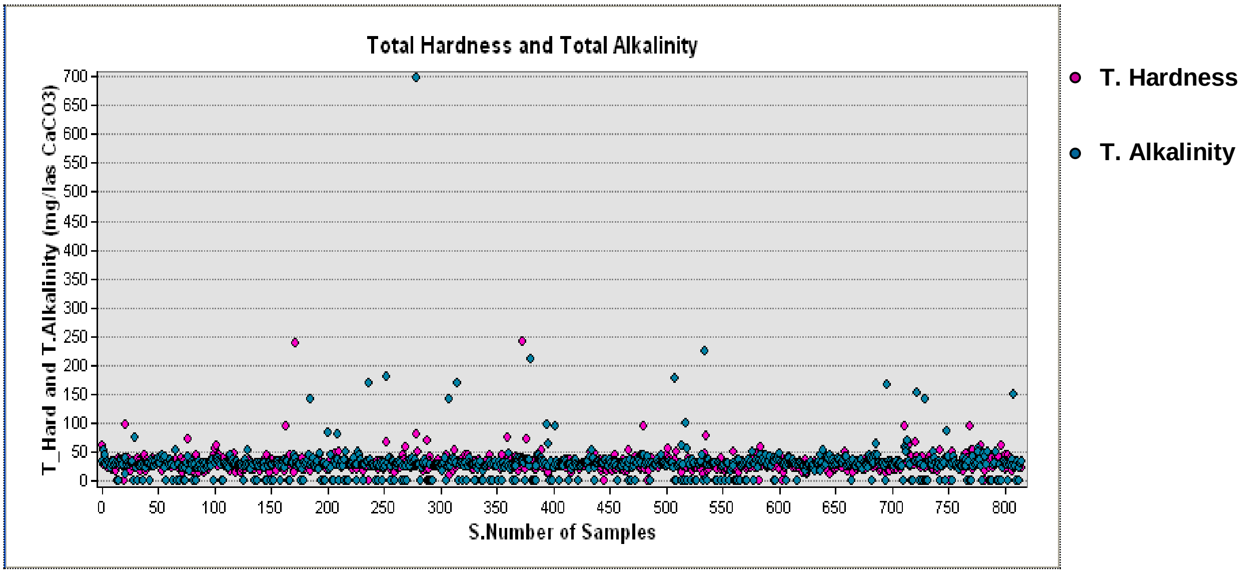


Figure 5.13: Total hardness versus total alkalinity concentrations (Distribution)

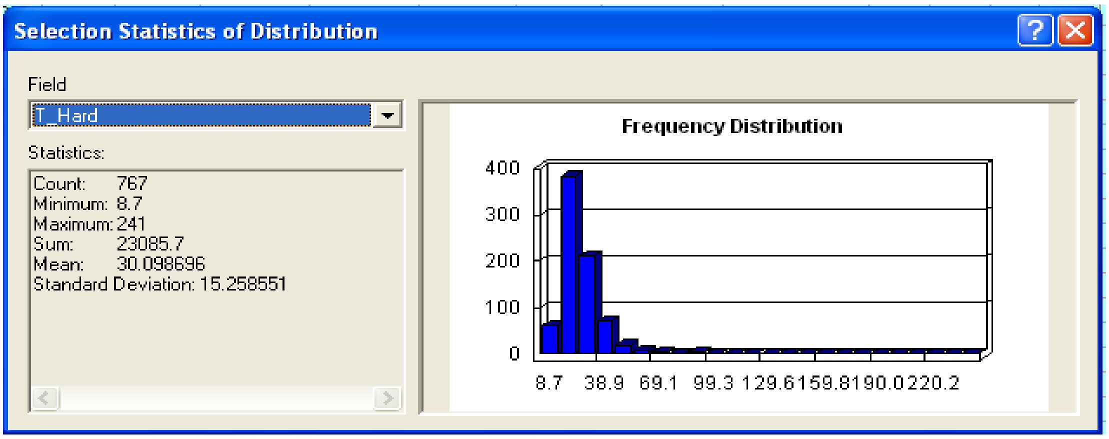


Figure 5.14: Statistical result of total hardness (Distribution)

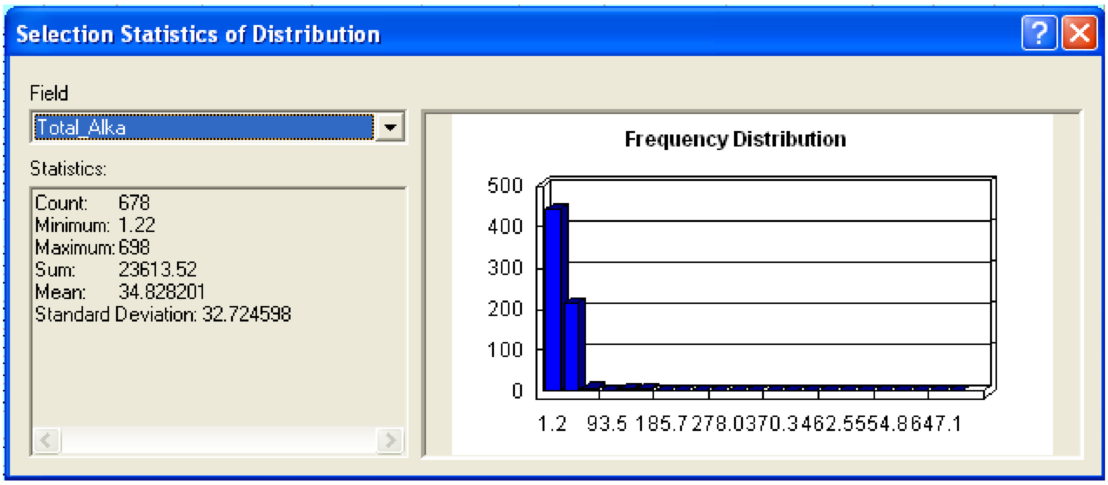


Figure 5.15: Statistical result of total alkalinity (Distribution)

Lead (Pb), Copper (Cu), Iron (Fe) and Fluoride (F)

Hot spot analysis (getis-Ord G^*_i) presented in Figures 4.15, 4.17, 4.20 and 4.21 show that lead, copper, iron and fluoride are randomly distributed throughout the distribution network and there are no high or low values in specific areas. However, the maximum, minimum and average lead, copper, iron and fluoride concentrations are presented below: Recommended limits in drinking water (WHO, 2004) are used for assessment (Lead 0.01mg/L, copper 0.1 mg/L, iron 0.3 mg/L and fluoride 1.5 mg/L).

The lead concentrations that are randomly distributed within the distribution system were also analysed with respect to its concentration and limit by guideline. Thus, about 90% of the values are below the guideline limit where as about 10% are above the guideline limit. Even though lead occurrence above the guideline limit in the distribution is not as high as surface water sources, it is the most parameter that is usually occurring with higher values above the guideline in the distribution. The higher values of lead are either from inefficient treatment or corrosion of distribution pipes. This can be defined from continuous record of parameters at the outlet of the treatment plants and the distribution system. The current data is not satisfactory to verify this ambiguity.

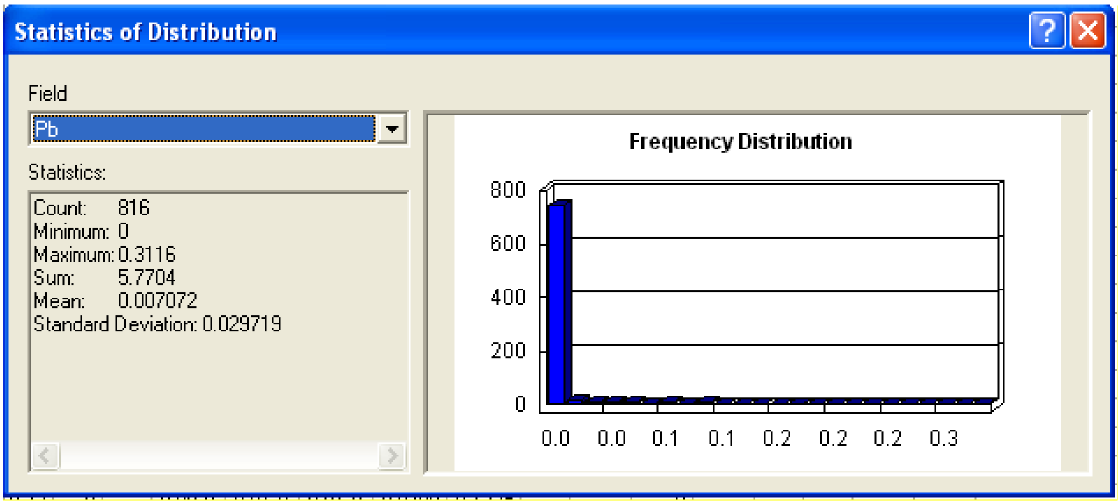


Figure 5.16: Statistical result of lead concentrations (Distribution)

The copper concentrations that are randomly distributed within the distribution system were also analysed with respect to its concentration and limit by guideline. The result shows that almost all values are below the guideline limit.

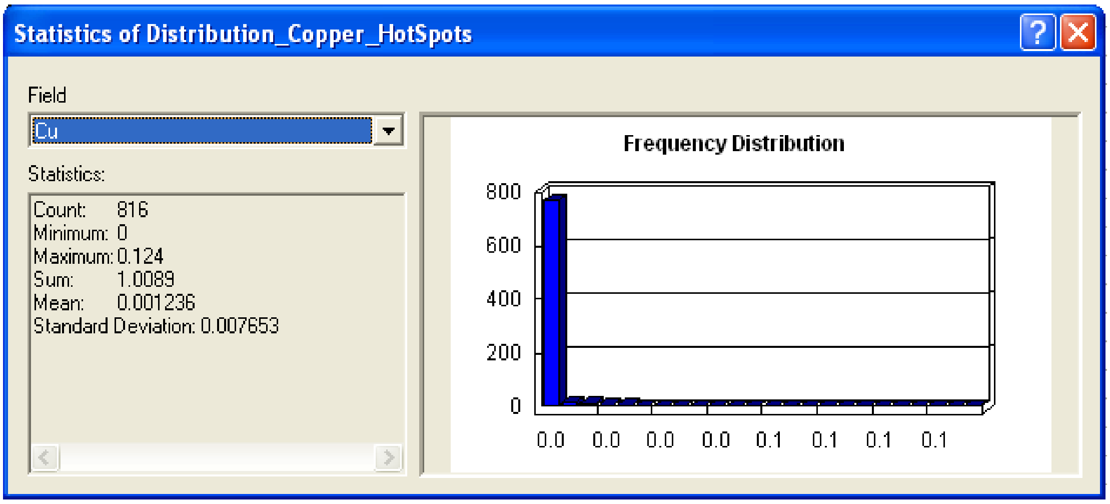


Figure 5.17: Statistical result of copper concentrations (Distribution)

The iron concentrations that are randomly distributed within the distribution system were also analysed with respect to its concentration and limit by guideline. Accordingly, about 93% of the values are below the guideline limit where as about 7% are above the guideline limit. The higher values of iron are either from inefficient treatment or corrosion of distribution pipes. This can be defined from continuous record of parameters at the outlet of the treatment plants and the distribution system. The current data is not satisfactory to verify this ambiguity.

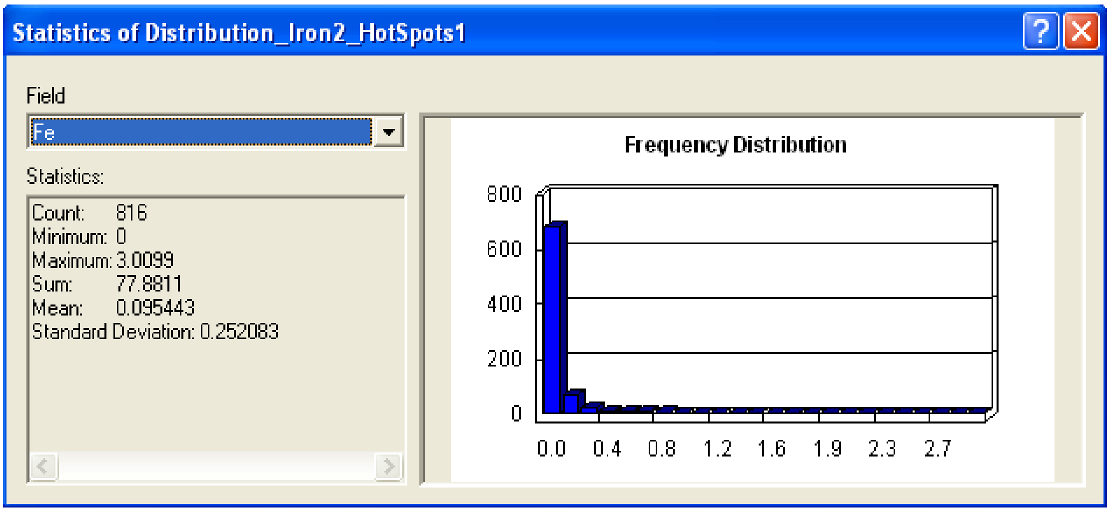


Figure 5.18: Statistical result of iron concentrations (Distribution)

The fluoride concentrations that are randomly distributed within the distribution system were also analysed with respect to its concentration and limit by guideline. The result shows that about 98.5% of the values are below the guideline limit where as about 1.5% are above the guideline limit. Even though there are no high or low value areas of fluoride in the distribution system (Figure 4.21), high fluoride concentration above the limit of the standard is observed mainly in the eastern part of Nairobi City where the fluoride concentration of the boreholes is very high. This could be related to the fact that water in the distribution network could not be moderated even though ground water is mixed with surface water due to the very high fluoride concentrations (Figure 8.3).

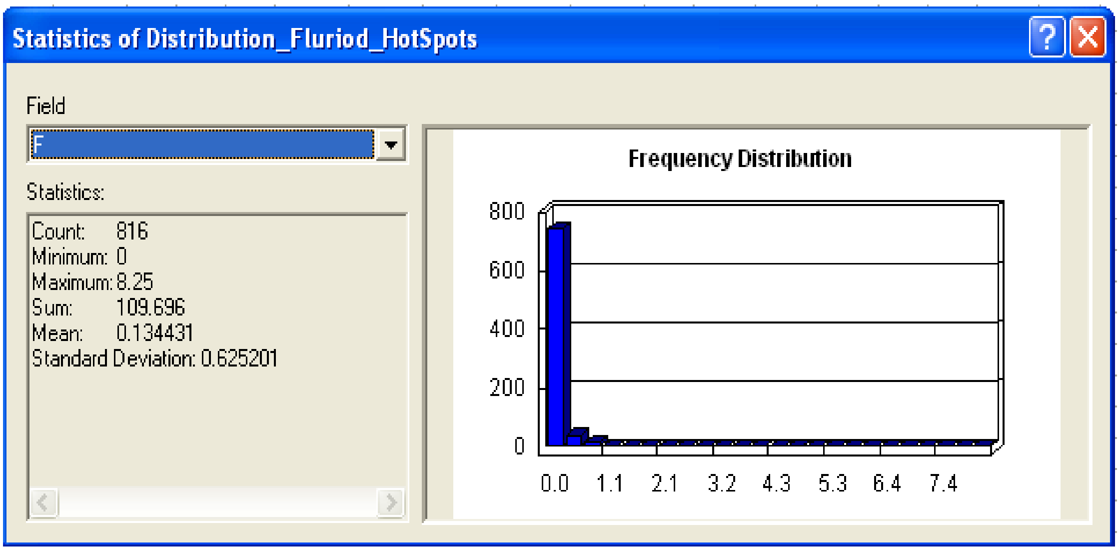


Figure 5.19: Statistical result of fluoride concentrations (Distribution)

<u>Manganese (Mn) and Zinc (Zn)</u>

Both manganese and zinc in drinking water are recommended to be limited to a maximum of 0.1 mg/L and 3 mg/L respectively (WHO, 2004). Hot spot analysis (getis-Ord G^{*}_{i}) presented in Figure 4.18 above show that cold spot areas or statistically significant low values of manganese are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City. With respect to concentrations, it ranges from non-detection to a maximum of 1.1604 mg/L and about 5% of these values are above the guideline limit. The higher values of manganese are either from inefficient treatment or corrosion of distribution pipes. This can be defined from continuous record of parameters at the outlet of the treatment plants and the distribution system. The current data is not satisfactory to verify this ambiguity.

Hot spot analysis (getis-Ord G^*_I) presented in Figure 4.19 shows that cold spot areas or statistically significant low values of zinc are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City more or less similar with manganese. With respect to concentrations it ranges from non-detection to a maximum of 1.955 mg/L and the values are quite below recommendations of guidelines limit. The zinc concentrations at distribution system are also higher than for surface water sources. The high values of zinc at distribution system could be related to corrosion of pipes.

5.3. TEMPORAL VARIABILITY

As stated, the most common objectives of evaluating temporal variability of water quality data is to understand whether there is an increase or decrease of pollutants over time. Temporal variability can be examined visually from time series plots of water quality parameters (U.S.EPA, 1997). Credibility or result will mainly depend on number of data and regularity of sampling frequencies.

Temporal variability indicates:

a) Effect of anthropogenic activities in the catchment area on quality of water in a water body with time.
b) Possible causes of deterioration or improvement of the water quality with time in relation with major pollution indicator parameter, and
c) Control measures that could be implemented to improve or prevent further deterioration of water quality.

However, in this study further interpretation and assessment of temporal variability for the selected water quality parameters was not made due to serious distortion of outputs as shown in Tables 4.1 to 4.5 above. Distortion of outputs is due to constraints associated with existing water quality data. Small size and missing data, below detection limits and irregularities of sampling frequencies will highly distort the results of seasonal variable water quality. The effect of irregularities of sampling, for instance, is observed mainly on turbidity in which the trend results showed turbidity declining with time than increasing in line with expanding of activities in the water catchments.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. SUMMARY AND CONCLUSIONS

Water Quality management is a complex activity that requires the accomplishment of compliance to water quality objectives or standards (Chapman, 1996). The objectives can be achieved if clear and appropriate strategy for water quality assessment is in place. The strategy will include from planning to implementations of water quality monitoring systems, analysing, interpreting, assessment and reporting for managerial decisions.

Use of Geographical Information System (GIS) in the water quality assessment strategy and ultimately its application in the monitoring and analyzing processes is a recent technology driven development. GIS presents geographically water quality data and relating these data to other information, such as demography and land use, contributing to water quality interpretation and highlighting facts previously not available (Chapman, 1996).

GIS was applied to analyze selected indicator parameters of existing water quality data. The analyses results show that some of indicator parameters of the water sources and distribution are spatially or regionally variable while others are randomly distributed. Evaluations of indicator parameters' values in relation to established water quality standards were also made. Interpretations and assessments of these results have assisted in getting information with respect to water quality conditions and status of sources and distributions. This information may be used for implementing control measures and improvement to be in place. Therefore, the conclusions of the study are:

1. Surface water sources

a) The study had revealed that conductivity, total dissolved solids, chlorides, iron and manganese are spatially or regionally variable across the surface water sources while pH, total alkalinity, total hardness, zinc, fluoride, lead, copper, nitrates and nitrites are randomly distributed. Higher values of conductivity, chlorides and total dissolved solids are observed at Kikuyu Spring and Ruiru Dam compared with Sasumua and Thika region water sources. The high values of chlorides, conductivity and total dissolved solids observed at Kikuyu Spring and Ruiru Dam could be related to the impact of urbanization. High values of iron and manganese are observed at Kikuyu Spring, Sasuma and Thika regions.

b) Except occasional or seasonal higher values occurrences of turbidity, iron, manganese, nitrates and lead, the other parameters are almost within or below the guideline limit. Lead is the most pollutant that is usually occurring with high values in the water sources. According to the analysis result, about 95% of lead values are above the guideline limit. The current conventional treatment system for surface water sources with the aid of coagulation, clarification and filtration is appropriate for the removal or limiting of these parameters provided treatment effectiveness determinant parameters such as pH, alkalinity and the coagulant itself are monitored well during treatment processes;

c) Observed turbidity at Kikuyu Spring could be related the high population of algae. The population of algae and others in the spring could be a sign of eutrophication**.** Further study will be required to substantiate the facts behind high turbidity at Kikuyu Spring.

d) The low value of hardness, average 25 mg/L as $CaCO_3$, shows that surface water sources are soft waters.

2. <u>Boreholes</u>

a) Fluorides concentrations of the boreholes are spatially or regionally variable. Accordingly, the boreholes located in the central, eastern, southern and south eastern part of Nairobi City have high fluoride concentrations as high as 15 mg/L compared with relatively low values observed at western and north eastern part of Nairobi City.

b) Relatively higher pH values are observed at boreholes located in central, eastern, southern and south eastern part of Nairobi City.

c) Relatively higher alkalinity values are also observed at boreholes located in northern, north eastern and eastern part of Nairobi City.

3. <u>Treated water in the distribution</u>

a) Except free residual chlorine, pH, manganese, lead and to some extent iron and fluoride concentrations, the selected indicator parameters are almost within or below the guideline limit.
b) Distribution network in the western part of Nairobi City has low free residual chlorine (as low as 0.1 mg/L) while the distribution system in the central, southeastern and eastern part of Nairobi City has high free residual chlorine concentrations (as high as 1.8 mg/L).
c) Relatively higher values of pH in the distribution system are observed at central, northern, northeastern, eastern, southern and southeastern part of Nairobi City while low pH are observed at western part of Nairobi City. At areas of low pH values, the following are observed:
    i. Lower free residual chlorine concentrations,
    ii. Relatively higher zinc values,
    iii. Relatively higher manganese values,
    iv. Relatively higher conductivity.
d) Like surface water sources lead in the distribution system is the most sensitive parameter that is usually occurring with higher values. According to the analysis result, about 10% of lead values are above the guideline limit. It was also observed that 5% and 7% manganese and iron respectively are occurring above the guideline. The higher values of lead, manganese and iron are either due to inefficiency of the treatment system or corrosion of distribution pipes. This can be defined from continuous record of parameters at the inlet and outlet of the treatment plants and the distribution system. The current data is not satisfactory to verify this ambiguity;
e) The low value of hardness, average 30 mg/L as $CaCO_3$, shows that the treated water is soft water.

The above generated information on water quality conditions of water sources, treatment and distribution system could be utilized for the following managerial decisions:

a) Required improvements for degraded water quality of sources and distribution systems as evaluated in relation to established water quality standards;

b) Resource allocations;

c) Provision of appropriate treatment system;

d) Evaluations and rectifications of treatment plants effectiveness;

e) Evaluations and rectifications of storage and distribution pipes corrosions and depositions;

f) Provision of appropriate and effective control strategies and management actions for water catchment protections and distributions systems.

6.2. RECOMMENDATIONS

This study has explored a water quality management system based on Geographical Information System (GIS) and its applications for subsequent manipulations and analyses. The study has generated information on water quality conditions and status of sources and distribution for the City of Nairobi. This information could be used for managerial decision as stated (sub-section 6.1). Furthermore, the study has revealed some constraints on the current water quality management system for the City of Nairobi water supply that need addressing. The recommendations of the study are as follows:

1. Although the existing water quality management has clear objectives, there is no clear strategy to achieve the objective. It is important to set clear methodologies or design of each monitoring activities for the achievement of the objectives to avoid inconsistent method of data collection and analyses. An introductory guiding tool to water quality assessment method was highlighted in sub-section 2.4.

2. Data handling from site to laboratory and then to data storage should be improved and in place. Methodology of data management (water quality data storage and retrieval systems) and quality assurance should also be established.
3. The reliability of the information produced from analyses is as reliable as the data from which it is generated. Hence, high commitment to consistency, frequency and accuracy is important when sample is collected, analysed and stored.
4. During water quality sampling, flow and the duration of sampling should be measured or at least estimated to quantify the mass of load of pollutants being delivered from a watershed or non-point sources.
5. The analyses result of existing water quality data was also signalled that urbanisation has an impact on water quality of Kikuyu and Ruiru Water Sources. Specifically the population of algae and weeds in Kikuyu Spring could be a sign of eutrophication**.** However, further data collection and analyses of these sources is necessary for future protections.
6. As observed during investigation, the current treatment method at Kikuyu Spring is only disinfection. However, disinfecting of turbid raw water having organic materials such as algae will lead to the formation of disinfection by- products that will have an impact on public health. Hence, reviewing the current treatment method to reduce the effect of disinfection by-products could be the immediate option. Disinfection following slow sand filter could be one of options that will reduce the algae in raw water.
7. The overall analyses show that due to their high fluoride concentrations, supplying from boreholes alone cannot be made unless mixed with surface water. Even mixing of ground water with surface water could not be moderated for distribution system in the eastern part of Nairobi City due to very high fluoride concentrations of the boreholes. Moreover, the water could be objectionable to tasting due to its high alkalinity content. Hence, decommissioning of existing boreholes at eastern part of Nairobi City as well as avoiding drilling of new boreholes at this area is recommended.

8. Low pH values of water in the distribution system will accelerate corrosion of metallic pipes, fittings, valves and water retaining structures which eventually increases the solubility of metals in the water. Hence, adjusting pH or increasing the alkalinity and/or hardness or adding corrosion inhibitors, such as polyphosphates, silicates and orthophosphates are recommended.
9. It is recommended to increase the free residual chlorine for the distribution network in the western and southwestern part of Nairobi City either at treatment plant or storage tanks supplying this zone of Nairobi City. Similarly, chlorine dosing at Ngethu Treatment Plant will be required to be reduced as this treatment plant supplies high free residual chlorine areas. However, pH adjustment at all areas of the distribution system should be made first before free residual chlorine adjustment exercise.
10. Lead, manganese and iron are the most parameters that usually occurring with higher values above the guideline limit in the distribution system. The high values of lead, manganese and iron are either from inefficient treatment or corrosion of distribution pipes. This can be defined from continuous record of parameters at the inlet and outlet of the treatment plants and the distribution system. Hence, it is recommended to conduct regular monitoring including at inlet and outlet of treatment plants.

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8. APPENDICES

8.1. DATA ANALYSES PROCEDURES

(a) High/low clustering (Getis-Ord general G) statistical tool

(I) High/low clustering (Getis-Ord general G) statistical tool location

High/low clustering (Getis-Ord general G) statistical tool is located in the Spatial Statistics Tools/Analyzing Pattern tool set of ArcGIS as shown in Figure 3.2.

(II) High/low clustering (Getis-Ord general G) Analysis Procedure

The following are the procedures of the analysis:

1. From the analyzing patterns menu, select High/low Clustering,
2. For the input feature class, select the required feature class containing the field to be analysed,
3. For the input field, select the required input field to be analysed,
4. For Conceptualisation of Spatial Relationships, select the Fixed Distance band,
5. For distance method, select the Euclidean Distance,
6. For Distance Band or Threshold Distance, multiple distances at different spatial scales shall be explored (iterated) for which the result of Z score seems to be peak, consequently promoting observed clustering. Choosing threshold distance at a single step will bias the result of the analysis,
7. Click Ok,
8. Check graphical output of the result.

The High/low clustering (Getis-Ord general G) analysis result will show either of the following patterns based on Z and p-values as shown in Figure 8.1:

i. high cluster
ii. low cluster or
iii. random chances

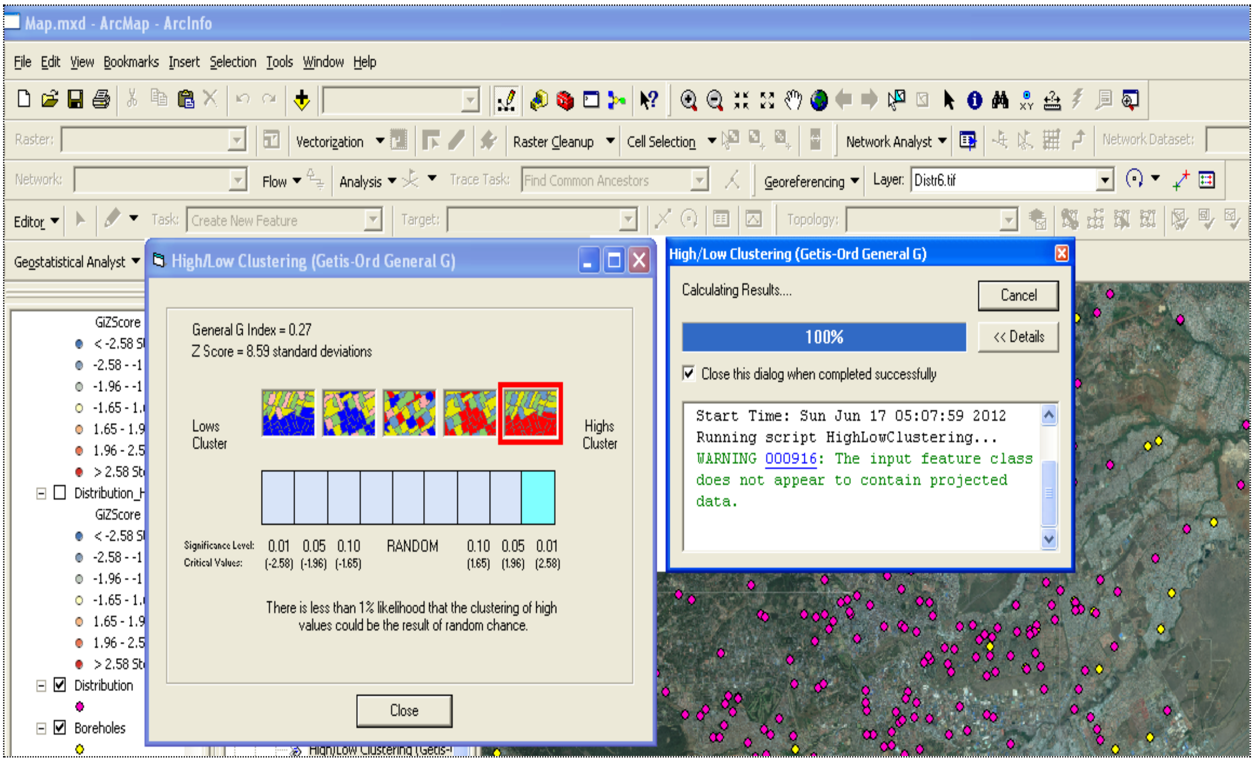

Figure 8.1: High/low clustering (Getis-Ord general G) statistical analysis result

(b) Hot spot analysis (getis-Ord G^*_i) statistical tool

(I) Hot spot analysis (getis-Ord G^*_i) statistical tool statistical tool location

Hot spot analysis (getis-Ord G^*_i) statistical tool is located in the Spatial Statistics Tools/Mapping Clusters tool set of ArcGIS as shown in Figure 3.3.

(II) Hot spot analysis (getis-Ord G^*_i) Procedure

The following are the general procedures of the analysis:

1. From the mapping clusters menu, select Hot spot analysis (Getis-OrdGi*),
2. For the input feature class, select the required feature class containing the field to be analysed (the same as for high/low clustering if analyzed above),
3. For the input field, select the required input field to be analysed (the same as for high/low clustering if analyzed above),
4. For Conceptualisation of Spatial Relationships, select the Fixed Distance band (the same as for high/low clustering if analyzed above),

5. For distance method, select the Euclidean Distance(the same as for high/low clustering if analyzed above),
6. For Distance Band, select the distance at which maximum result of Z has been scored.
7. Click Ok,
8. Check output of the result.

It is important to note that before conducting hot spot analysis, the following subject shall be considered carefully:

i. What is the objective of the analysis?
ii. What is the parameter or variable of water quality to be analysed?
iii. Which Conceptualisation of Spatial Relationships is appropriate? and what distance value is best?

The following analyses are examples on how to apply the High/low clustering (Getis-Ord general G) and Hot spot analysis (getis-Ord G^*_I) statistical tools.

1. The objective of the Nairobi City Water and Sewerage Company (NCWSC) is to ensure that the water supplied to the consumers is clean and safe. Information required here “is the water supplied to consumers safe?” One of indicators for ensuring safety of water is concentration of free residual chlorine (FRC). Free residual concentration in the distribution at the point of consumption is in the range of 0.2-0.5mg/lit (WHO, 2004).
   a) Using high/low clustering (Getis-Ord general G) statistical tool, high Z score was observed at one particular fixed distance bands compared with other distance bands tried during the analysis. High positive Z scores means that the more intense the clustering of high values (hot spot) and low negative Z scores or smaller the Z score is the more intense the clustering of low values (cold spot).
   b) Using the hot spot analysis method and the selected fixed distance band, areas with clustering was identified. Areas with clusters of high values are areas with higher FRC concentrations.

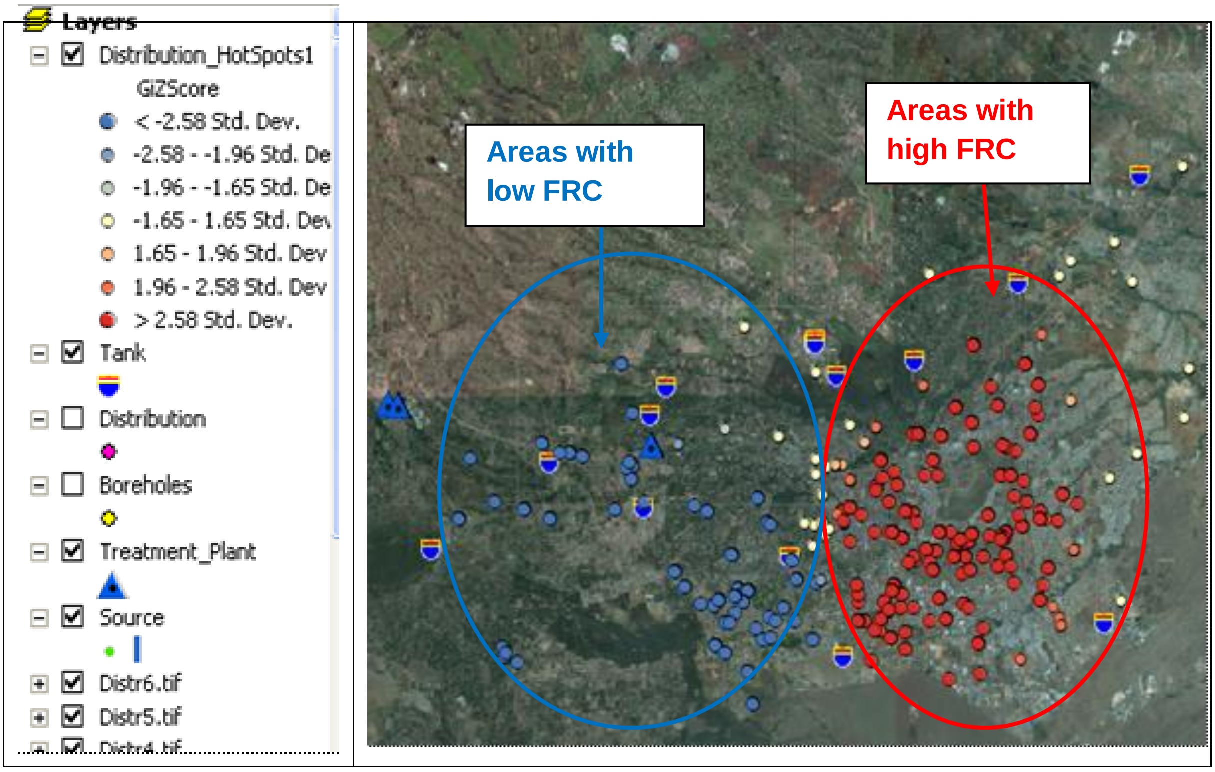

Figure 8.2: Spatial analysis result of free residual chlorine in the distribution system

c) Assessment of Existing Situation, Results and Recommendations:

i. The analysis result revealed that the distribution network in the western part of Nairobi City has low free residual chlorine where as the distribution network work in the central, southeastern and eastern part of Nairobi City has high free residual chlorine concentrations

ii. The quantitative analysis of FRC for existing water quality data of distribution also shows that the FRC values range from non-dtected in cold spot areas to a maximum of 1.8 mg/lit in hot spot areas,

iii. Minimum FRC- 0.2 mg/litre in normal circumstances and 0.5 mg/litre in high-risk circumstances (WHO,2004),

iv. Adjust pH of water in the distribution system to the required range.

v. Increase FRC in the distribution network (western and southwestern part of Nairobi City) by dosing either at treatment plant or storage tanks. Also, reducing amount of chlorine dosing at Ngethu Treatment Plant is recommended.

2. For example fluoride concentrations in the boreholes are a concern for NCWSC and the company need to identify areas with higher fluoride concentrations before drilling additional boreholes.
   a) Here the required information is "which parts of Nairobi City's boreholes are having higher fluoride concentration?"
   b) Using high/low clustering (Getis-Ord general G) statistical tool, high Z score was observed at one particular fixed distance bands compared with other distance bands tried during the analysis. High positive Z scores means that the more intense the clustering of high values (hot spot) and low negative Z scores or smaller the Z score is the more intense the clustering of low values (cold spot).
   c) Using the hot spot analysis method and the selected fixed distance band, areas with clustering was identified. Areas with clusters of high values are areas with higher fluoride concentrations.

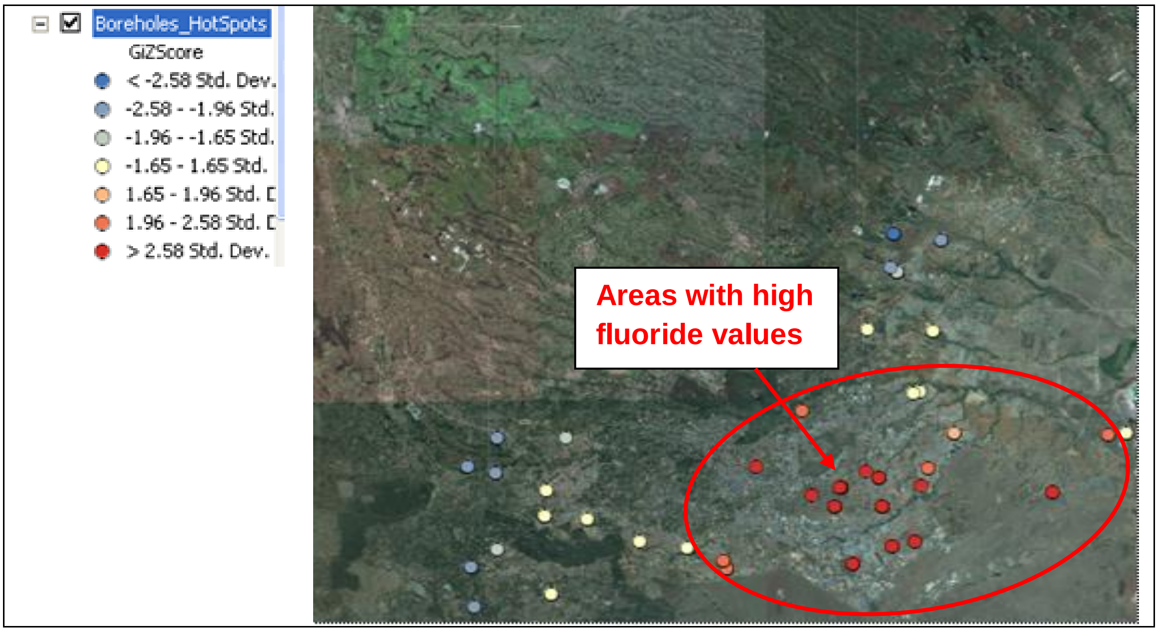

Figure 8.3: Spatial analysis results of fluoride concentrations of boreholes

   d) Assessment of Existing Situation, Results and Recommendations:
      i. Boreholes located in the central, eastern, southern and south eastern part of Nairobi City have high fluoride concentrations.
      ii. Boreholes are directly pumped to the distribution system. It means that ground water is mixed with surface water,

iii. Most boreholes including those located at low value areas have fluoride concentrations above 1.5mg/lit,
iv. Fluoride concentrations in the distribution system are low (less than 1.5mg/lit) except at few areas in the eastern part of Nairobi City where the fluoride concentration of the boreholes' is very high,
v. The low level of fluoride concentration in the distribution shows that it is moderated due to a mix with surface water. However, the water in the distribution network in the eastern part of Nairobi City could not be moderated even though ground water is mixed with surface water due to very high fluoride concentrations. Hence, drilling new boreholes at these areas is not recommended.

8.2. WATER QUALITY DATA

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	NGETHU	MWANGU INTAKE	259944	9902826	River/stream	07-Aug-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	Intake from this station delivers water to Ngethu Treatment Plant. Flow measuring guage is also available at this station.	C/264/11	7.74	4.03	32.6			12.00	30.60	0.00	0.00	32.00	0.00	0.00	0.00	1.42	7.00	0.70	5.22	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	NGETHU	MWANGU INTAKE	259944	9902826	River/stream	01-Dec-11			C/399/11	7.76	26.6	116			20.00	29.40	10.00		24.00				4.00		4.00	8.50					0.50		0.74		0.01	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	NGETHU	MWANGU INTAKE	259944	9902826	River/stream	21-Jul-08			C/563/08	7.60	1.90	45.10			6.00	29.00	7.50		13.00				4.97		2.60	7.50					2.20		0.46	0.00					15.90						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	NGETHU	MWANGU INTAKE	259944	9902826	River/stream	02-Mar-10			C/102/10	7.17		64.2			8.00	7.00			22.00				21.90	8.80	3.00	4.00	0.05	1.40	0.20																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	12-Jan-11		Sampling at this station requires boat	C/14/11	7.05	0.26	36.3				21.60	0.00		20.00				5.68		2.80	5.00	0.00	4.20	0.37	16.00		0.00	0.11	0.00		0.00									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =0.0013; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	10-Feb-11			C/81/11	7.69	2.02	43.1				22.10	0.00		20.00				4.26	5.00	2.80	2.60			0.04				0.11	0.03		0.10									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	05-Apr-11			C/160/11	7.4	0.01	36.3				22.00	0.00		25.00	NT	NT	NT	3.55	4.00	2.40	9.50	NDT	4.20	--	NDT		NDT	0.10	0.03	0.00	0.11									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =4.2; F=; Mn= ; Si=NDT; Cu=NDT; Zn=0.0038; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	05-May-11				6.5	1.96	37				24.00	1.50		20.00	NC	NC	NC	4.28	NDT			NDT	NDT	0.09	NDT		NDT	NDT	NDT	NDT	0.10									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	20-Sep-11			C/315/11	7.26	1.66	53.3			8.00	23.60	0.00		26.00	NC	NC	NC	2.84	NDT	2.40	7.00	NDT	NDT	0.44	4.00	0.20	NDT	0.08	0.17	NDT	0.06									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	08-Apr-10			C/150/10	6.90	0.37	54.1				12.00	0.00		35.00	NC	NC	NC	1.00		6.00	3.35	0.31	8.20	0.70		1.60														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	05-Jul-10			C/331/10	7.31	2.93	37.0				25.90	0.00		25.00	NT	NT	NT			1.00	2.10	0.01	3.00				NDT	0.09	NDT	0.01	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	02-Aug-10			C/389/10	7.23	30.00	64.4				36.00	5.00		30.00	NT	NT	NT	2.84	13.09	1.20	2.90	0.00	TR		NDT		0.01	0.29	0.23	0.07	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =TR; F=; Mn= ; Si=NDT; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	03-Sep-10			C/468/10	7.39	0.34	39.7				35.00	0.00		13.00	NT	NT	NT	7.95	1.30	1.60	5.00	0.02	NDT	0.51			NDT	0.02	0.01	0.01	NDT		6.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	06-Oct-10			C/521/10	7.06	0.21	89.7				27.60	0.00		25.00	NT	NT	NT	5.99	NDT	1.80	5.20	0.01	11.30	0.21	NDT	0.29	NDT	0.14	1.03	0.03	0.02		5.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	11-Nov-10			C/593/10	7.14	2.23	39.1				19.20	0.00		21.00	NC	NC	NC	3.55	4.00	1.32	4.80	NDT	NDT	0.32		NDT	0.03	0.06	0.04	0.01	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	10-Dec-10			C/654/10	7.10	0.02	34.1				20.00	0.00		24.00	NT	NT	NT	2.84	1.00	8.00	5.00	0.00	NDT	0.47		1.30	NDT	0.81	0.13	0.01	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	07-Aug-09			C/316/09	7.45	0.39	41.2				18.00				NC	NC	NC	6.39	NDT	1.70	6.45	NDT	NDT					0.10	0.01	NDT										Odour=UO; Deposite =; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	02-Sep-09			C/357/09	7.25	2.47	50.2			14.00		0.00		25.00	NC	NC	NC	5.68	19.00	1.45	4.90	0.38	NDT					NDT	0.00	0.00										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	21-Dec-11			C/424/11	7.32	4.98	44.2			8.00	23.80	2.50		18.00	NC	NC	NC	6.00		4.00	3.25				2.00	0.10	0.00	0.34	0.03	0.05	0.01									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	05-Feb-09			C/65/09	7.57	1.28	31	AB			18.00	2.00		20.00	NT	NT	NT	5.68	1.70	2.70	7.20	NDT	NDT			1.50		0.04	0.01	0.04			0.10	18.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	05-Mar-09			C/107/09	7	0.65	38	AB			40.00	0.00		28.00	NT	NT	NT	3.55	NDT	2.70	6.80	0.00	TR			0.50		0.01	0.01	0.00			NDT	26.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	15-Aug-08			C/609/08	6.90	0.40	44.7	AB		8.00	26.00	0.00		23.00	NT	NT	NT			2.10		NDT	NDT					0.46	0.23	0.03										Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	20-Aug-08			C/609/08	6.90	0.40	44.70				26.00			23.00								NDT	NDT			AB		0.46	0.23	0.03										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	18-Nov-08			C/899/08	7.42	1.7	31	A		8.00	24.00	2.50		20.00	NT	NT	NT	7.10	4.50	0.50	1.30	NDT	NDT					0.52	0.01	NDT			0.30	23.20						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	17-Jul-08			C/548/08	7.34	2.67	39.90	AB		20.00	24.00	20.00		18.00	NC	NC	NC	6.39		2.00	8.30	NDT	NDT			NDT		0.54	0.41	NDT			NDT	29.90						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	25-Jun-11			CO/244/11	7.11	1.58	32.4	AB		6.00	16.70	2.50		20.00	NT	NT	NT	2.84	4.00	2.20	6.00	0.01	--	0.02	2.00		NDT	NDT	0.04	NDT	0.14									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	15-Feb-10			C/082/10	6.7	7.21	61.9			6.00	26.00			25.00				23.90	1.60	3.50	7.70	0.02					NDT	2.17	0.01	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	08-Jul-09			C/280/09	7.12	1.35	42.3	UO		4.00	36.00	0.00		25.00	NC	NC	NC	6.39	NDT	0.55	1.00	NDT	NDT					0.26	0.32	0.40				29.61						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM INTAKE	250219	9884198	Reservior	25-Aug-08			C/609/08	7.66	1.25	40.7			8.00	22.00	--		21.00	NT	NT	NT		2.00	1.50	7.50		AB		1.50	1.80	0.18	5.17	0.31	0.96	0.07	0.02		30.50		3.20	3.40	2.00	0.10	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	DAM SCOURING	250321	9884126	Reservior	20-Sep-11		Red colour is observed around this area	C/318/11	7.18	2.68	76.6	AB		16.00	14.30	0.00		40.00	NC	NC	NC	3.55	NDT	2.60	7.00	NDT	NDT	0.28	7.00	0.10	0.00	0.05	0.56	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	DAM SCOURING	250321	9884126	Reservior	21-Dec-11			C/421/11	7.4	3.9	48	AB		8.00	13.90	2.50		21.00	NC	NC	NC	6.00		3.80	3.25				2.00	0.20	0.00	0.51	0.04	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	DAM SCOURING	250321	9884126	Reservior	22-Apr-09			C/176/09	7.15	5.74	78.2	A			30.00	7.50		28.00	NC	NC	NC	4.97	2.80	2.77	7.92	0.01	T			0.20		NDT	0.10	0.60			NDT	46.92						Odour=A; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	DAM SCOURING	250321	9884126	Reservior	02-Mar-10			C/104/10	6.87		74.4			8.00	10.00			35.00	NC	NC	NC	17.90	0.10	3.15	5.20	0.01	11.00	0.46																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	09-Apr-08	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer		C/639/08	6.73	5.54	36.7	A		7.00	31.00	2.50		19.00	NT	NT	NT	7.81	NDT	1.70	6.50	ND	ND			NDT		0.16	0.04	0.05			0.10	22.00						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	15-Jan-08			C/41/08	6.70	3.25	44.30					0.00			NC	NC	NC	3.55	NDT			TR	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	10-Feb-11			C/86/11	7.6	2.13	40.7	AB			24.40	0.00		18.00	NT	NT	NT	4.26	0.00	2.20	2.60	NDT	0.01	0.10	NDT		0.03	0.58	0.08	NDT	0.16									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	17-Oct-08			C/754/08	8.18	0.02				6.00	10.00	0.00			NT	NT	NT		1.00	1.40	6.40	,,	,,			1.20		0.08		0.03				24.70						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	12-Jan-11			C/12/11	6.96	0.4	42.8	AB			50.10	0.00		25.00	NT	NT	NT	5.67	NDT	2.60	5.00	0.00	NDT	1.40	20.00		0.00	0.41	0.43	NDT	0.00									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	05-Apr-11			C/152/11	7.14	0.71	34.5	AB			15.40	0.00		25.00	NT	NT	NT	5.68	NDT	1.60	4.00	0.03	10.30	--	NDT		NDT	0.40	0.08	0.01	0.12									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	15-Feb-10			C/079/10	7.28	2.88	47.9			6.00	28.00			22.00				0.99	4.70	1.65	5.20	NDT	13.60				NDT	2.01	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	05-Jul-10			C/329/10	7.27	19.80	39.3	AB			19.40	0.00		28.00	NT	NT	NT			0.97	2.10	0.01	2.00				NDT	0.15	0.01	0.02	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	02-Aug-10			C/388/10	7.32	20.00	39.8	AB			25.00	1.00		20.00	NT	NT	NT	2.13	9.90	0.43	2.40	NDT	TR		NDT		NDT	0.13	NDT	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	03-Sep-10			C/464/10	7.25	3.88	39.5	AB			39.00	2.50		16.00	NT	NT	NT	7.95	5.10	1.20	5.00	0.02	5.00	0.41			NDT	0.63	0.02	0.02	0.03		3.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	06-Oct-10			C/520/10	6.98	0.18	40.9	AB			16.30	0.00		21.00	NT	NT	NT	5.99	NDT	1.82	5.50	NDT	11.00	NDT	NDT	0.20	NDT	0.24	NDT	0.03	NDT		2.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	11-Nov-10			C/597/10	7.24	5.88	38.1	AB			43.00	2.50		20.00	NC	NC	NC	2.84	1.00	1.02	4.40	NDT	NDT	NDT		NDT	0.01	0.19	0.14	0.03	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	10-Dec-10			C/647/10	7.12	1.31	39.7	UO			48.40	0.00		22.00	NT	NT	NT	4.97	6.00	0.80	7.50	4.97	NDT	NDT		NDT	0.01	0.09	NDT	NDT	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	13-Jan-09			C/17/09	7.77	2.98	44.6	AB			22.00	2.50		22.00	NT	NT	NT	9.23	NDT			NDT	NDT			0.60		0.13	0.10	0.04	NDT		0.10	33.50						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	06-Apr-09			C/142/09	7.72	1.77	53.4	A			25.00	0.00		29.00	NC	NC	NC	4.97	NDT	2.83	6.25	0.00	T			0.20		0.35	0.01	0.01			NDT	32.04						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	08-Jul-09			C/277/09	7.08	3.43	33.1	UO		8.00	34.00	2.50		28.00	NC	NC	NC	7.10	NDT	1.70	4.00	NDT	NDT					NDT	0.13	0.08				23.10						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	07-Aug-09			C/311/09	7.7	6.27	42.1	UO			20.00			30.00	NC	NC	NC	6.39	0.80	1.40	6.40	0.16	NDT					0.06	NDT	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	02-Sep-09			C/353/09	7.26	3.68	49.8	UO		12.00		0.00		25.00	NC	NC	NC	6.39	NDT	1.10	5.00	0.02	NDT					NDT	NDT	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	04-Feb-08			C/245/08	6.75	4.15	127.6	AB			36.00	7.50			NT	NT	NT	3.55	1.00	6.70	7.50					1.30		0.69					NDT	76.60						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	19-May-08			C/381/08	7.31	6.78	39.9	AB			14.00	5.00		19.00	NT	NT	NT	4.97	N/A	1.90	5.00	NDT	NDT			NDT		0.45	0.08	NDT			NDT	24.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	15-Aug-08			C/610/08	7.00	1.30	49	AB		8.00	30.00	0.00		32.00	NT	NT	NT			1.20		NDT	NDT					4.38	5.30	0.00										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	20-Aug-08			C/610/08	7.00	1.30	47.00				30.00			32.00								NDT	NDT			AB		4.38	5.30	0.00										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	20-Sep-11			C/311/11	7.08	6.12	58.8	AB		8.00	16.40	0.00		24.00	NC	NC	NC	5.68	1.00	2.00	8.00	NDT	NDT	0.17	8.00	0.20	NDT	0.15	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	12-Feb-08			C/109/08	6.62	3.18	40.90				10.00	5.00		25.00				4.26	0.25	0.45	5.50					AB							NDT	27.20						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	14-Mar-08			C/207/08	6.90	3.92	47.20				16.00	0.00		18.00	NT	NT	NT	4.26																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	17-Jul-08			C/545/08	7.28	4.23	45.70	AB		16.00	16.00	15.00		23.00	NC	NC	NC	5.68		2.20	12.80	NDT	NDT			1.20		0.42	0.11	NDT			NDT	34.20						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	17-Jul-08			C/887/08	7.17	4.07	28	A		12.00	24.00	5.00		29.00	NT	NT	NT	4.26	8.20	2.10	7.10	NDT	NDT					0.01	0.28	0.05			0.20	21.00						Odour=A; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	17-Nov-08			C/610/08	6.18	3.90	51.9			12.00	17.00	--		25.00	NT	NT	NT		NDT	1.50	0.25		TR		1.50	1.20	0.10	5.88	2.06	0.86	NDT	0.22		38.90		4.80	1.20	N/D	0.20	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	22-Sep-08			C/699/08	7.46	43.9	42.6	A		14.00	33.00	10.00		34.00	NT	NT	NT	9.26	NDT	1.40	2.10	ND	ND			2.50		1.45	0.38	0.02			NDT	25.60						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	05-Mar-09			C/102/09	7.21	1.94	38	A			40.00	0.00		29.00	NT	NT	NT	5.68	0.40	2.20	5.80	NDT	NDT			3.50		0.22	0.28	0.00			2.80	26.60						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	25-Jun-11			CO/238/11	6.93	5.17	33.6	AB		6.00	15.50	5.00		21.00	NT	NT	NT	4.26	NDT	2.70	5.00	0.00	--	0.18	9.00		NDT	0.21	0.42	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	05-May-11				6.7	25.6	39.3	AB			16.00	1.50		16.00	NC	NC	NC	4.28	2.00	--	--	0.02	NDT	0.79	NDT		NDT	0.12	NDT	NDT	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	02-Mar-10			C/103/10	7.06		56.7			6.00	10.00			27.00	NC	NC	NC	25.90	25.30	2.15	3.50	0.01	0.90	0.23																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	11-Mar-11			C/140/11	7.57	11.2	41.8	AB			15.70	2.50		18.00	NT	NT	NT	5.68	9.00	4.20	4.50	0.03	NDT	--	24.00		0.00	5.99	0.11	NDT	0.06									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	08-Apr-10			C/148/10	6.90	0.20	52.0	AB			14.00	0.00		26.00	NC	NC	NC	2.00		5.60	3.60	0.34	6.64	0.84		1.80														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	21-Dec-11			C/418/11	7.32	5.1	84.3	AB		8.00	17.00	2.50		20.00	NC	NC	NC	6.00		3.50	3.70				8.00	0.10	NDT	0.49	0.45	0.01	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMINDITI RIVER	248885	9883427	River/stream	05-Feb-09			C/63/09	7.62	1.5	27	AB			14.00	1.50		18.00	NT	NT	NT	5.68	3.70	2.20	5.10	NDT	NDT			0.30		0.24	0.32	NDT			0.20	16.20						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	05-Jul-10	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Sampling at this station requires boat.	C/326/10	7.22	1.87	35.2	AB			10.48	0.00		28.00	NT	NT	NT			0.90	1.70	0.02	2.00				NDT	0.24	NDT	0.08	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	06-Oct-10			C/524/10	7.14	0.16	73.5	AB			26.80	0.00		25.00	NT	NT	NT	7.99	NDT	1.82	5.30	0.04	11.50	0.34	10.00	NDT	NDT	0.18	NDT	0.05	0.06		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	11-Nov-10			C/590/10	6.86	2.05	44.6	AB			22.00	0.00		20.00	NC	NC	NC	2.84	1.00	1.01	7.80	0.02	NDT	0.31		NDT	0.02	0.09	0.08	0.04	0.02									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	13-Jan-09			C/14/09	7.69	1.39	44.5	AB			24.00	2.50		22.00	NT	NT	NT	6.39	NDT			NDT	NDT			0.30		0.20	0.10	0.02	NDT		0.10	33.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	05-Feb-09			C/67/09	7.52	62.2	16	AB			20.00	7.00		16.00	NT	NT	NT	4.26	NDT	1.00	3.80	NDT	NDT			0.70		0.32	0.07	0.17			0.20	9.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	06-Apr-08			C/432/08	6.49	8.99	47.3				33.00	25.00		15.00	NT	NT		21.30	NDT	0.70	6.10	NDT	NDT			9.20		1.01	0.83	0.01	"		0.10	28.38						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	25-Jun-11			CO/242/11	6.86	7.82	29	AB		8.00	26.00	5.00		17.00	NT	NT	NT	2.84	NDT	0.80	2.50	0.04	--	0.16	5.00		NDT	0.18	1.53	NDT	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	17-Nov-08			C/892/08	7.71	2.57	28	AB		10.00	24.00	2.50		18.00	NT	NT	NT	4.26	2.10	1.80	5.20	NDT	NDT					0.33	0.03	0.05			0.20	21.00						Odour=AB; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	22-Sep-08			C/697/08	7.73	3.41	41	AB		13.00	32.00	2.50		35.00	NT	NT	NT	8.52	NDT	1.60	2.40	ND	ND			1.20		0.32	0.06	0.03			0.20	20.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	08-May-08			C/614/08	7.28	5.26	32.30				26.00			15.00								NDT	NDT			AB		1.15	0.93	0.05										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	12-Jan-11			C/11/11	6.96	1.63	39.2	AB			19.30	0.00		35.00	NT	NT	NT	2.13	NDT	3.00	5.00	NDT	NDT	0.98	14.00		NDT	0.12	0.03	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	10-Feb-11			C/84/11	7.61	1.86	42	AB			30.00	0.00		19.00	NT	NT	NT	4.26	0.00	2.60	2.50	NDT	0.00	0.22	NDT		0.03	0.37	0.02	NDT	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	11-Mar-11			C/137/11	7.55	0.99	50	AB			11.40	0.00		28.00	NT	NT	NT	5.68	6.00	4.40	7.00	0.27	NDT	0.41	13.00		NDT	1.75	0.07	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	05-Apr-11			C/154/11	7.2	0.02	37	AB			12.20	0.00		29.00	NT	NT	NT	3.55	NDT	2.60	4.10	0.02	NDT	--	1.00		NDT	0.02	0.09	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	05-May-11				6.6	1.87	34.5	AB			14.00	1.50		20.00	NC	NC	NC	3.55	1.00	--	--	0.02	NDT	0.16	1.00		NDT	0.06	NDT	NDT	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	20-Sep-11			C/320/11	7.21	4.01	41	AB		8.00	13.70	2.50		22.00	NC	NC	NC	2.84	NDT	1.00	4.50	NDT	NDT	0.35	9.00	NDT	NDT	0.09	0.02	NDT	0.06									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	15-Feb-10			C/075/10	7.41	8.12	60.9			4.00	34.00			25.00				0.99	3.20	2.50	7.50	0.01	13.00				NDT	1.90	NDT	0.00	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	08-Apr-10			C/145/10	6.80	0.33	52.2	AB			12.00	0.00		25.00	NC	NC	NC	1.00		5.30	3.10	0.01	14.16	0.53		2.30														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	02-Aug-10			C/391/10	7.31	16.00	43.1	AB			30.00	0.00		16.00	NT	NT	NT	1.42	9.08	0.55	2.10	TR	TR		0.50		0.02	0.34	0.10	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	03-Sep-10			C/461/10	7.45	0.22	42.2	AB			70.60	0.00		24.00	NT	NT	NT	7.95	10.50	1.60	5.00	0.03	3.00	0.08			0.01	0.02	0.03	0.02	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	10-Dec-10			C/650/10	7.23	1.90	33.5	UO			20.10	0.00		18.00	NT	NT	NT	3.55	NDT	0.40	4.50	3.55	NDT	0.40		NDT	NDT	0.32	0.23	0.01	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	06-Apr-09			C/141/09	7.73	0.8	52.6	AB			30.00	0.00		30.00	NC	NC	NC	4.97	NDT	2.80	6.30	0.00	T			0.10		NDT	NDT	0.02			NDT	31.56						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =T; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	08-Jul-09			C/279/09	7.12	0.27	37.1	UO		8.00	40.00	0.00		29.00	NC	NC	NC	6.39	NDT	0.60	4.60	NDT	NDT					NDT	0.15	0.04				25.97						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	02-Sep-09			C/319/09	7.37	0.97	41.9	UO			20.00			29.00	NC	NC	NC	5.68	NDT	2.51	6.65	NDT	32.00					NDT	NDT	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	17-Jul-08			C/359/09	7.44	3.98	41.7	UO				0.00		22.00	NC	NC	NC	5.68	NDT	0.90	3.40	0.01	NDT					0.12	NDT	NDT										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	17-Jul-08			C/546/08	7.38	1.93	36.00	AB		10.00	15.00	15.00		15.00	NC	NC	NC	4.26		1.70	8.30	NDT	NDT			2.50		0.57	NDT	NDT			NDT	27.00						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	15-Aug-08			C/614/08	7.28	5.26	32.3	AB		6.00	28.00	0.00		18.00	NT	NT	NT			1.50		NDT	NDT					0.97	0.44	0.05										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	12-Feb-08			C/106/08	6.91	5.57	32.50				15.00	2.50		18.00				4.97	NDT	0.30	3.95					AB							NDT	21.60						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	14-Mar-08			C/208/08	6.80	1.26	48.30				18.00	0.00		15.00	NT	NT	NT	4.26																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	21-Dec-11			C/422/11	7.33	5.39	45.9	AB		12.00	13.50	2.50		19.00	NC	NC	NC	6.00		3.80	3.25				3.00	NDT	0.01	0.43	0.06	0.06	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	05-Mar-09			C/104/09	7.58	5.18	25	A			20.00	0.00		30.00	NT	NT	NT	5.68	NDT	1.10	5.00	NDT	NDT			1.50		0.08	1.22	NDT			NDT	17.50						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	19-May-08			C/384/08	7.22	9.09	32	AB			26.00	2.50		24.00	NT	NT	NT	7.10	N/A	0.80	8.30	NDT	NDT			NDT		0.82	0.49	0.04			NDT	19.20						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	17-Oct-08			C/748/08	8.3	0.6				9.00	22.00	0.00			NT	NT	NT		9.90	1.40	0.80	,,	,,			0.20		0.04		0.01				24.10						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	25-Aug-08			C/615/08	7.15	44.20	37.6			16.00	20.00	--		15.00	NT	NT	NT		NDT	1.50	6.75		AB		1.50	NDT	0.13	3.50	0.44	0.43	0.10	0.01		28.90		6.40	0.97	N/D	0.20	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	04-Feb-08			C/241/08	7.06	5.63	36.2	AB			30.00	7.50			NT	NT	NT	6.39	1.00	1.40	4.00					0.60		0.67					NDT	21.70						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=1; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KANYIRIRI RIVER	250000	9884780	River/stream	15-Jan-08			C/37/08	6.50	7.34	34.70					0.00			NC	NC	NC	7.10	NDT			NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	14-Mar-08	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Sampling at this station requires boat. Also, the surface of stagnant water at this station looks red and petroleum mixed water.	C/210/08	6.90	5.55	33.70				13.00	0.00		22.00	NT	NT	NT	4.26																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-Mar-09			C/106/09	7.45	4.31	17	A			23.00	0.00		27.00	NT	NT	NT	3.55	NDT	1.10	4.80	TR	NDT			0.70		0.37	0.01	NDT			NDT	11.90						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-Jul-10			C/327/10	7.21	2.16	36.1	AB			22.60	0.00		26.00	NT	NT	NT			0.97	2.00	0.01	1.00				NDT	0.11	NDT	0.02	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	06-Oct-10			C/517/10	7.15	0.19	34.5	AB			37.10	0.00		28.00	NT	NT	NT	7.99	NDT	2.00	5.10	0.03	12.40	0.06	2.00	NDT	0.00	0.18	0.01	0.03	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	15-Aug-08			C/613/08	7.30	3.30	32.2	AB		7.00	27.00	0.00		15.00	NT	NT	NT			0.90		NDT	NDT					0.96	0.93	0.03										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	20-Aug-08			C/613/08	7.30	3.33	32.20				27.00			15.00								NDT	NDT			AB		0.97	0.05	0.03										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	02-Mar-10			C/101/10	7.23		42.2			6.00	12.00			20.00	NC	NC	NC	45.90	19.90	1.28	3.05	0.02	-1.00	0.26																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	12-Jan-11			C/17/11	7.01	0.44	39.7	AB			19.60	0.00		28.00	NT	NT	NT	5.68	5.00	3.00	5.00	NDT	NDT	0.78	6.00		NDT	0.13	0.02	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	10-Feb-11			C/78/11	7.63	2.52	41.7	N			23.00	0.00		20.00	NT	NT	NT	2.84	0.00	2.60	2.50	NDT	NDT	NDT	NDT		NDT	0.26	0.05	0.00	0.24									Odour=N; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	11-Mar-11			C/135/11	7.7	0.88	46	AB			18.10	0.00		23.00	NT	NT	NT	2.84	1.00	4.40	7.00	0.04	NDT	NDT	NDT		NDT	1.00	NDT	0.06	0.14									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-Jul-10			C/333/10	7.31	2.57	36.5	AB			35.30	0.00		24.00	NT	NT	NT			1.18	2.10	0.02	1.00				NDT	0.19	0.14	0.01	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	03-Sep-10			C/466/10	7.34	0.22	40.2	AB			41.00	0.00		25.00	NT	NT	NT	7.95	NDT	1.30	4.20	0.05	NDT	0.26			0.01	0.05	0.03	0.01	0.06		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	10-Dec-10			C/652/10	7.24	0.64	34.8	UO			18.60	0.00		20.00	NT	NT	NT	4.97	1.00	1.20	4.50	4.97	NDT	0.44		NDT	0.01	0.37	0.17	0.01	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	15-Jan-08			C/36/08	6.70	4.25	36.20					0.00			NC	NC	NC	5.68	NDT			NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	17-Jul-08			C/542/08	7.81	3.37	30.20	AB		NDT	25.00	55.00		11.00	NC	NC	NC	5.68		2.20	12.00	NDT	TR			5.00		0.25	0.02	NDT			NDT	22.60						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-Apr-11			C/155/11	7.17	0.02	37.5	AB			19.10	0.00		25.00	NT	NT	NT	3.55	NDT	2.50	4.10	0.03	NDT	--	4.00		NDT	0.06	0.12	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	20-Sep-11			C/314/11	6.5	7.1	41.8	AB		4.00	20.10	0.00		23.00	NC	NC	NC	2.84	NDT	1.10	5.00	NDT	NDT	0.01	2.00	NDT	NDT	0.54	0.01	0.00	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	Cu=; Zn=; Pb	21-Dec-11			C/420/11	7.35	4	47.2	AB		8.00	20.50	2.50		20.00	NC	NC	NC	6.00		3.50	3.25				13.00	NDT	0.01	0.36	0.06	0.07	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	08-Apr-10			C/143/10	7.00	0.24	54.9	AB			16.00	0.00		23.00	NC	NC	NC	3.00		5.00	3.20	0.01	NDT	0.19		2.30														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	25-Jun-11			CO/241/11	6.7	227	23.5	AB		6.00	16.60	30.00		18.00	NT	NT	NT	2.54	NDT	1.80	4.00	0.11	--	0.28	23.00		NDT	4.51	0.38	0.02	0.17									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 = --; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	19-May-08			C/380/08	7.54	36.1	35	AB			10.00	7.50		10.00	NT	NT	NT	4.97	N/A	9.20	11.60	NDT	NDT			0.80		NDT	0.04	0.01			NDT	21.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	17-Oct-08			C/749/08	7.88	30.1				10.00	27.00	10.00			NT	NT	NT		4.00	1.70	0.80	NDT	NDT			NDT		2.19		0.03				26.40						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-May-11				6.8	27	34.8	AB			19.00	2.00		20.00	NC	NC	NC	2.84	1.00	--	--	0.02	NDT	0.29	NDT		NDT	0.06	0.00	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	17-Nov-08			C/890/08	7.58	4.13	28	AB		12.00	20.00	5.00		19.00	NT	NT	NT	4.26	9.20	1.90	5.00	NDT	NDT					0.03	0.07	0.04			NDT	21.00						Odour=AB; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	15-Feb-10			C/078/10	7.31	6.99	61.0			6.00	26.00			27.00				6.99	1.70	2.40	7.30	NDT	21.00				NDT	2.10	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	02-Aug-10			C/387/10	7.38	15.00	41.2	AB			28.00	2.50		15.00	NT	NT	NT	2.13	13.34	0.41	2.30	NDT	TR		1.50		NDT	0.20	NDT	0.07	0.21									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	05-Feb-09			C/69/09	7.6	7.04	17	AB			18.00	2.50		14.00	NT	NT	NT	5.68	NDT	1.10	6.80	NDT	NDT			0.50		0.22	0.16	0.01			0.10	10.20						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	06-Apr-09			C/136/O9	7.49	0.95	50.8	AB			40.00	0.00		29.00	NC	NC	NC	5.68	NDT	2.20	6.25	0.01	T			NDT		NDT	0.06	0.01			NDT	30.48						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	08-Jul-09			C/275/09	7.2	0.74	28	UO		4.00	36.00	0.00		29.00	NC	NC	NC	7.10	NDT	0.60	3.20	NDT	NDT					0.14	0.85	0.02				19.60						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	07-Aug-09			C/314/09	7.44	2.88	38.9	UO			16.00			26.00	NC	NC	NC	7.10	NDT	1.60	5.80	NDT	NDT					0.11	0.03	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	02-Sep-09			C/356/09	7.15	3.01	41	UO		12.00		0.00		25.00	NC	NC	NC	6.39	12.40	1.05	3.60	0.03	NDT					0.60	0.00	0.00										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	12-Feb-08			C/107/08	6.95	3.15	33.90				14.00	2.50		17.00				4.26	NDT	0.35	5.50					0.60							NDT	22.60						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	13-Jan-09			C/15/09	7.61	3.1	37.9	AB			20.00	2.50		21.00	NT	NT	NT	5.68	NDT			NDT	NDT			0.40		0.12	0.09	NDT	NDT		0.20	28.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	17-Oct-08			C/753/08	8.13	3.18				8.00	12.00	10.00			NT	NT	NT		9.20	1.50	0.80	,,	,,			NDT		0.30		0.01				23.20						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	25-Aug-08			C/613/08	7.13	69.10	42.2			14.00	22.00	--		15.00	NT	NT	NT		NDT	2.30	7.50		TR		2.30	1.90	0.08	4.06	0.42	0.62	NDT	0.03		31.70		7.20	1.94	N/D	N/D	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	22-Sep-08			C/698/08	7.4	84	34	AB		13.00	34.00	10.00		34.00	NT	NT	NT	9.26	NDT	2.10	2.60	ND	ND			1.80		1.14	0.15	0.01			0.30	20.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 1 RIVER	249743	9884552	River/stream	04-Feb-08			C/240/08	7.14	2.66	41.1	AB			10.00	7.50			NT	NT	NT	5.68	1.00	1.40	5.00					0.10		0.15					NDT	24.70						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	15-Jan-08	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Sampling at this station requires boat. Also, the surface of stagnant water at this station looks red and petroleum mixed water.	C/35/08	6.80	9.99	38.90					0.00			NC	NC	NC	5.68	0.60			NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	25-Jun-11			CO/239/11	7.02	28.6	31.2	AB		10.00	23.60	7.50		21.00	NT	NT	NT	4.26	NDT	2.70	5.00	0.02	--	0.52	8.00		NDT	0.12	0.19	0.00	0.14									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	12-Feb-08			C/104/08	7.01	5.71	48.70				15.00	5.00		25.00				4.26	NDT	0.50	5.90					AB							NDT	32.40						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	02-Mar-10			C/097/10	6.90		48.6			6.00	8.00			25.00	NC	NC	NC	23.90	3.40	2.00	3.15	0.07	1.00	0.40																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	08-Apr-10			C/144/10	6.90	0.18	51.2	AB			14.00	0.00		25.00	NC	NC	NC	2.00		5.00	3.25	0.01	NDT	1.28		2.60														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	12-Jan-10			C/16/11	7.12	0.37	41.3	AB			50.40	0.00		30.00	NT	NT	NT	5.68	1.00	3.00	5.10	0.01	1.40	0.51	9.00		0.00	NDT	0.05	NDT	0.00									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	10-Feb-11			C/82/11	7.65	0.96	41.8	AB			19.10	0.00		24.00	NT	NT	NT	4.26	0.00	2.70	2.50	NDT	0.01	NDT	NDT		NDT	0.43	0.03	0.00	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	11-Mar-11			C/134/11	7.65	0.79	47.7	AB			20.50	0.00		24.00	NT	NT	NT	5.68	1.00	3.60	4.50	0.01	NDT	0.03	11.00		0.00	1.51	NDT	0.14	0.08									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	03-Sep-10			C/467/10	7.41	0.24	39.2	AB			40.00	0.00		22.00	NT	NT	NT	5.96	1.40	1.30	4.20	0.02	NDT	0.27			NDT	NDT	NDT	0.00	0.03		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KIBATHITHI 2 RIVER	249743	9884552	River/stream	06-Oct-10			C/523/10	7.12	0.23	39.8	AB			25.30	0.00		20.00	NT	NT	NT	7.99	NDT	2.00	5.20	0.01	8.10	NDT	15.00	NDT	0.01	0.25	NDT	0.05	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	10-Dec-10			C/648/10	7.05	0.15	34.1	UO			48.60	0.00		15.00	NT	NT	NT	2.84	3.00	0.80	4.50	2.84	NDT	0.63		NDT	NDT	0.72	0.04	0.01	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	17-Jul-08			C/549/08	7.32	3.53	31.40	AB		14.00	20.00	15.00		14.00	NC	NC	NC	7.10		1.70	9.70	NDT	NDT			0.70		1.82	0.50	NDT			NDT	23.50						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	05-Mar-09			C/101/09	7.37	4.56	40	AB			40.00	0.00		30.00	NT	NT	NT	5.68	NDT	1.40	5.70	NDT	NDT			NDT		0.51	1.31	0.00			NDT	28.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	05-May-11				6.8	5.12	35	AB			22.00	5.00		20.00	NC	NC	NC	2.84	1.00	--	--	NDT	NDT	0.48	4.00		NDT	0.06	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	21-Dec-11			C/419/11	7.37	3.81	45.2	AB		8.00	20.20	2.50		19.00	NC	NC	NC	8.00		4.00	3.50				6.00	NDT	0.01	0.40	0.10	0.02	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	15-Feb-10			C/077/10	7.36	8.12	61.1			6.00	28.00			25.00				0.99	2.70	2.25	7.20	0.03	30.00				NDT	1.94	0.01	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	02-Aug-10			C/393/10	7.31	31.00	40.4	AB			28.00	0.00		31.00	NT	NT	NT	2.13	NDT	0.70	2.40	TR	TR		NDT		0.01	0.28	0.02	0.03	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =TR; F=; Mn= ; Si=NDT; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	13-Jan-09			C/16/09	7.48	1.68	42.2	AB			20.00	2.50		20.00	NT	NT	NT	7.81	NDT			NDT	NDT			0.20		0.82	0.11	0.01	NDT		0.20	31.70						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	05-Feb-09			C/66/09	7.4	5.31	26	AB			20.00	2.00		20.00	NT	NT	NT	4.97	NDT	1.50	5.00	NDT	NDT			1.00		0.45	0.40	0.12			0.10	15.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	06-Apr-09			C/143/09	7.73	0.51	51.4	AB			28.00	0.00		29.00	NC	NC	NC	4.26	0.50	2.83	6.10	NDT	T			0.50		NDT	0.01	0.02			0.10	30.84						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	08-Jul-09			C/278/09	6.97	8.17	34.9	UO		12.00	38.00	2.50		32.00	NC	NC	NC	8.52	NDT	1.60	4.80	NDT	NDT					0.34	0.15	0.07				24.40						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	07-Aug-09			C/315/09	7.33	0.68	55.4	UO			30.00			28.00	NC	NC	NC	7.10	NDT	1.62	6.40	NDT	NDT					0.02	0.00	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	02-Sep-09			C/355/09	7.3	2.89	40.5	UO		10.00		0.00		20.00	NC	NC	NC	7.10	24.60	1.20	4.45	0.04	NDT					1.05	0.60	NDT										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	19-May-08			C/385/08	7.21	3.32	36	AB			25.00	7.50		26.00	NT	NT	NT	4.26	1.59	1.50	5.00	NDT	NDT			NDT		0.17	0.03	NDT			NDT	21.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	25-Aug-08			C614/08	7.16	35.30	43.5			18.00	26.00	--		26.00	NT	NT	NT		NDT	2.30	7.50		AB		2.30	0.70	0.10	3.03	0.47	0.46	0.03	NDT		32.60		6.40	1.94	N/D	0.01	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	22-Sep-08			C/700/08	6.89	43.9	48.3	AB		12.00	34.00	10.00		28.00	NT	NT	NT	8.52	NDT	2.10	2.50	ND	ND			1.90		0.54	0.93	0.02			0.10	28.98						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	05-Apr-11			C/153/11	7.32	0.02	36.2	AB			21.00	0.00		28.00	NT	NT	NT	3.55	NDT	2.60	4.00	0.00	1.70	--	NDT		NDT	0.06	0.06	0.02	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	20-Sep-11			C/313/11	6.89	5.57	48.9	AB		6.00	19.40	1.50		23.00	NC	NC	NC	2.84	NDT	2.00	6.00	NDT	NDT	NDT	18.00	NDT	0.00	0.52	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	14-Mar-08			C/211/08	7.10	5.61	43.90				15.00	0.00		30.00	NT	NT	NT	4.97																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	17-Nov-08			C/891/08	7.43	8.04	27	AB		10.00	20.00	5.00		20.00	NT	NT	NT	3.55	NDT	0.90	4.90	NDT	NDT					0.71	0.08	0.02			NDT	20.20						Odour=AB; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIBATHITHI 2 RIVER	249471	9884797	River/stream	04-Feb-08			C/242/08	7.14	2.63	41.5	AB			24.00	7.50			NT	NT	NT	5.68	1.20	1.50	6.40					AB		0.23					NDT	25.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	09-Apr-08	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Sampling at this station requires boat.	C/638/08	7.13	2.95	34.9	AB		8.00	29.00	1.50		20.00	NT	NT	NT	7.81	NDT	1.67	6.45	ND	ND			NDT		0.17	0.15	0.02			NDT	21.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	12-Jan-11			C/15/11	7.09	0.32	36.6	AB			22.80	0.00		25.00	NT	NT	NT	5.68	NDT	2.80	5.00	NDT	15.50	0.35	7.00		NDT	0.08	0.03	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	05-Mar-09			C/103/09	7.38	2.04	769	AB			20.00	2.50		28.00	NT	NT	NT	17.70	NDT	1.80	5.00	0.00	TR			NDT		0.46	0.25	0.00			NDT	53.80						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	17-Nov-08			C/886/08	7.52	4.4	27	AB		10.00	26.00	7.50		20.00	NT	NT	NT	2.84	3.20	NDT	NDT	NDT	NDT					0.01	0.05	0.02			0.10	20.20						Odour=AB; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	10-Feb-11			C/80/11	7.66	2.89	44.6	AB			29.10	0.00		22.00	NT	NT	NT	2.84	6.00	2.60	2.50	NDT	0.01	0.10	NDT		NDT	0.24	0.07	0.06	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	11-Mar-11			C/138/11	7.31	1.72	43.6	AB			12.40	0.00		28.00	NT	NT	NT	4.97	5.00	4.60	7.00	0.27	1.20	--	10.00		0.01	4.00	1.43	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	05-Apr-11			C/157/11	7.19	0.12	35.9	AB			12.60	0.00		30.00	NT	NT	NT	7.10	NDT	2.60	4.10	NDT	NDT	--	NDT		NDT	0.06	0.05	NDT	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	05-May-11				6.7	3.57	34.9	AB			13.00	1.50		20.00	NC	NC	NC	2.84	5.00	--	--	NDT	NDT	0.71	1.00		NDT	0.09	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	20-Sep-11			C/317/11	7.35	4.51	63.1	AB		12.00	14.10	0.00		32.00	NC	NC	NC	4.26	NDT	2.20	5.00	NDT	NDT	0.03	3.00	NDT	0.02	1.00	NDT	0.01	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	05-Jul-10			C/330/10	7.25	2.58	36.1	AB			17.50	0.00		28.00	NT	NT	NT			0.97	2.00	0.01	1.00				NDT	0.38	NDT	0.01	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	02-Aug-10			C/390/10	7.14	31.00	51.8	AB			20.00	1.00		31.00	NT	NT	NT	2.13	14.09	0.65	2.00	TR	TR		NDT		NDT	0.41	0.23	0.05	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =TR; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	03-Sep-10			C/463/10	7.32	4.07	36.2	AB			60.00	2.50		20.00	NT	NT	NT	5.96	3.00	1.10	4.00	0.03	4.00	0.10			NDT	NDT	0.01	0.03	NDT		2.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	06-Oct-10			C/525/10	7.06	0.15	76.4	AB			35.00	0.00		24.00	NT	NT	NT	9.99	NDT	2.90	5.25	NDT	7.40	0.02	15.00	NDT	NDT	0.04	NDT	0.12	NDT		1.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	10-Dec-10			C/649/10	7.25	0.30	34.3	UO			21.30	0.00		18.00	NT	NT	NT	4.26	1.00	0.40	4.50	4.26	NDT	0.47		NDT	0.00	0.26	0.17	NDT	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	05-Feb-09			C/61/09	7.62	2.94	19	AB			18.00	2.50		15.00	NT	NT	NT	4.97	0.40	1.00	4.20	NDT	NDT			1.50		0.26	0.01	0.01			NDT	11.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	06-Apr-09			C/137/09	7.61	1.1	45	A			35.00	0.00		28.00	NC	NC	NC	4.26	NDT	2.50	6.20	0.00	T			NDT		0.01	0.03	0.04			NDT	27.00						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	08-Jul-09			C/276/09	7.26	0.73	31.1	UNO		6.00	30.00	0.00		30.00	NC	NC	NC	9.23	NDT	1.10	4.60	NDT	NDT					0.18	0.11	0.08				21.70						Odour=UNO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	02-Sep-09			C/352/09	7.18	3.71	42	UNO		8.00		0.00		18.00	NC	NC	NC	7.10	8.20	1.35	3.40	0.03	2.20					0.92	0.73	NDT										Odour=UNO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	15-Jan-08			C/39/08	6.70	4.42	35.90					0.00			NC	NC	NC	5.68	NDT			NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	04-Feb-08			C/244/08	7.18	7.33	106.7	AB			12.00	7.50			NT	NT	NT	5.68	0.40	1.90	6.40					0.40		0.66					NDT	64.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	17-Jul-08			C/547/08	7.46	2.27	32.50	AB		10.00	24.00	20.00		14.00	NC	NC	NC	7.81		2.00	8.30	NDT	NDT			NDT		1.02	NDT	NDT			NDT	24.30						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	20-Aug-08			C/617/08	7.06	3.17	29.50				28.00			20.00								NDT	NDT			AB		1.05	0.20	0.14										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	11-Nov-10			C/594/10	7.12	2.01	38.7	AB			24.00	0.00		24.00	NC	NC	NC	2.84	2.00	0.65	2.50	NDT	NDT	0.21		NDT	NDT	0.17	0.01	0.07	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	06-Apr-08			C/429/08	6.83	186.0	64.0				29.00	50.00		13.00	NT	NT		21.30	NDT	0.90	7.90	NDT	NDT			8.30		0.41	0.03	0.04	NDT		0.10	38.40						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	11-Nov-11			C/592/10	7.04	4.43	38.7	AB			31.60	1.50		20.00	NC	NC	NC	4.26	2.00	1.05	4.80	NDT	NDT	0.07		NDT	NDT	0.24	0.15	0.03	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	06-Apr-08			C/430/08	6.81	15.80	47.9				20.00	25.00		18.00	NT	NT		14.20	NDT	1.10	7.00	NDT	NDT			9.00		0.44	0.22	0.01	"		0.10	28.74						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb ="; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	20-Aug-08			C/611/08	7.18	1.95	38.10				32.00			18.00								NDT	NDT			AB		0.85	0.82	0.01										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	25-Jun-11			CO/243/11	7.02	7.19	28.6	AB		8.00	20.30	5.00		16.00	NT	NT	NT	2.84	NDT	1.80	4.00	0.02	--	0.84	6.00		NDT	0.16	NDT	0.01	0.12									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	21-Dec-11			C/417/11	7.7	5.13	74	AB		4.00	41.20	2.50		22.00	NC	NC	NC	6.00		3.50	4.00				3.00	NDT	NDT	0.47	0.07	0.00	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	15-Feb-10			C/074/10	7.39	7.47	58.9			4.00	28.00			25.00				0.99	6.10	0.80	2.50	0.01	14.00				NDT	1.24	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	02-Mar-10			C/105/10	6.78		44.3			6.00	10.00			22.00	NC	NC	NC	23.90	12.50	1.20	2.80	0.02	8.00	0.17																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	07-Aug-09			C/313/09	7.59	0.44	96.4	UNO			20.00			30.00	NC	NC	NC	8.52	NDT	1.45	5.85	NDT	NDT					NDT	0.01	NDT										Odour=UNO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	17-Oct-08			C/747/08	8.04	0.32				8.00	25.00	0.00			NT	NT	NT		10.50	1.40	0.80	,,	,,			0.20		NDT		0.01				22.80						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	14-Mar-08			C/212/08	6.90	4.00	52.00				22.00	0.00		29.00	NT	NT	NT	5.68																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	25-Aug-08			C/611/08	7.14	8.35	35.0			16.00	20.00	--		15.00	NT	NT	NT		NDT	1.50	5.75		AB		1.50	NDT	0.12	3.06	0.15	0.61	0.20	0.08		26.30		6.40	0.97	N/D	N/D	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	22-Sep-08			C/702/08	7.42	32.5	34	A		17.00	28.00	10.00		27.00	NT	NT	NT	7.81	NDT	1.30	2.20	ND	ND			1.50		0.23	0.08	0.01			NDT	20.40						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	15-Aug-08			C/611/08	7.13	1.95	38	AB		8.00	32.00	0.00		18.00	NT	NT	NT			2.10		NDT	NDT					0.85	0.82	0.01										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	15-Aug-08			C/617/08	7.06	3.17	29.5	AB		7.00	28.00	0.00		23.00	NT	NT	NT			1.20		NDT	NDT					0.81	0.42	0.14										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	19-May-08			C/386/08	7.38	14.4	33	AB			24.00	2.50		23.00	NT	NT	NT	5.68	N/A	1.50	5.80	NDT	NDT			NDT		0.26	NDT	0.02			NDT	20.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	KIMAITI RIVER	249573	9884954	River/stream	13-Jan-09			C/18/09	7.64	1.7	43.3	AB			25.00	2.50		22.00	NT	NT	NT	5.68	NDT			NDT	NDT			0.50		0.31	0.10	0.00	NDT		NDT	32.50						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	02-Aug-10	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Sampling at this station requires boat. Also, the surface of stagnant water at this station looks red and petroleum mixed water.	C/394/10	7.24	20.00	45.2	AB			26.00	0.00		20.00	NC	NC	NC	2.84	NDT	1.08	2.70	0.00	TR		0.10		NDT	0.44	0.02	0.14	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	04-Feb-08			C/239/08	7.00	5.56	54.9	AB			10.00	7.50			NT	NT	NT	5.68	1.20	2.50	8.10					0.40		0.42					NDT	32.90						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	15-Aug-08			C/616/08	7.35	3.11	42	AB		10.00	26.00	0.00		17.00	NT	NT	NT			1.90		NDT	NDT					0.59	0.20	0.08										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	20-Aug-08			C/616/08	7.35	3.11	42.00				26.00			20.00								NDT	NDT			AB		0.81	1.26	0.08										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	12-Jan-11			C/13/11	6.93	1.4	40.7	AB			22.70	0.00		20.00	NT	NT	NT	3.55	NDT	3.00	5.00	NDT	NDT	0.72	17.00		0.01	NDT	NDT	NDT	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	10-Feb-11			C/83/11	7.54	0.8	43	AB			29.40	0.00		22.00	NT	NT	NT	2.84	0.00	2.80	2.50	NDT	NDT	NDT	NDT		NDT	0.10	0.06	NDT	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	05-Apr-11			C/159/11	7.3	0.06	34.8	AB			12.70	0.00		30.00	NT	NT	NT	5.68	3.00	1.60	3.00	0.00	NDT	--	5.00		NDT	0.10	0.01	0.04	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	05-May-11				6.6	24.3	50.4	AB			12.00	1.50		22.00	NC	NC	NC	2.84	1.00	--	--	0.00	NDT	0.20	6.00		NDT	0.81	0.03	NDT	0.11									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	15-Feb-10			C/076/10	7.37	9.83	62.3			6.00	20.00			27.00				6.99	4.90	3.10	7.40	NDT	10.00				NDT	1.94	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	08-Apr-10			C/147/10	6.90	0.07	53.6	AB			16.00	0.00		30.00	NC	NC	NC	4.00		5.60	3.40	0.01	7.08	0.32		1.40														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	05-Jul-10			C/328/10	7.25	2.51	37.8	AB			14.30	0.00		25.00	NT	NT	NT			1.00	2.00	0.01	1.00				NDT	0.54	NDT	0.02	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	03-Sep-10			C/465/10	7.29	0.52	41.6	AB			52.00	0.00		24.00	NT	NT	NT	7.95	NDT	1.30	5.40	0.03	6.00	0.20			NDT	0.49	0.01	0.01	0.09		11.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	06-Oct-10			C/522/10	7.08	0.15	36.9	AB			21.10	0.00		22.00	NT	NT	NT	7.99	NDT	1.82	5.20	0.02	13.30	NDT	12.00	NDT	NDT	NDT	NDT	0.03	NDT		10.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	11-Nov-11			C/598/10	7.26	1.41	39.9	AB			22.30	0.00		25.00	NC	NC	NC	4.26	3.00	1.15	4.50	NDT	NDT	NDT		NDT	0.01	0.09	0.05	0.02	0.11									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	10-Dec-10			C/655/10	6.99	0.31	35.1	UO			22.10	0.00		22.00	NT	NT	NT	2.84	1.00	0.80	4.50	NDT	NDT	0.58		1.50	0.02	0.09	0.05	0.01	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	05-Mar-09			C/100/09	7.52	3.14	87	A			35.00	0.00		30.00	NT	NT	NT	7.10	NDT	2.80	5.80	0.00	TR			2.20		0.41	0.43	NDT			1.60	60.90						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	06-Apr-09			C/138/09	7.64	0.59	52.4	A			29.00	0.00		30.00	NC	NC	NC	4.26	NDT	2.90	6.21	NDT	NDT			NDT		0.14	0.03	0.03			NDT	31.44						Odour=A; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	02-Sep-09			C/360/09	7.24	4.14	63.5	UO				0.00		16.00	NC	NC	NC	7.10	NDT	1.70	4.62	0.02	NDT					2.31	0.02	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	19-May-08			C/387/08	7.51	5.44	42.6	AB			20.00	5.00		24.00	NT	NT	NT	4.97	3.42	2.30	5.80	TR	NDT			NDT		0.26	0.16	0.00			NDT	25.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	17-Jul-08			C/550/08	7.31	3.76	36.80	AB		12.00	18.00	20.00		16.00	NC	NC	NC	7.10		1.70	8.30	NDT	NDT			1.50		0.00	0.16	2.45			NDT	27.60						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	20-Sep-11			C/316/11	7.37	6.2	81.6	AB		12.00	13.10	0.00		41.00	NC	NC	NC	5.68	NDT	2.00	7.00	NDT	NDT	NDT	2.00	0.30	NDT	0.33	0.20	0.02	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	17-Nov-08			C/888/08	7.24	4.21	30	A		8.00	23.00	5.00		18.00	NT	NT	NT	4.26	9.20	1.80	5.00	NDT	NDT					0.45	0.15	0.05			NDT	22.50						Odour=A; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	11-Mar-11			C/133/11	7.6	0.85	63.9	AB			24.80	0.00		22.00	NT	NT	NT	5.68	1.00	13.00	86.70	0.00	NDT	NDT	10.00		NDT	1.09	0.20	0.19	0.14									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	11-Mar-11			C/139/11	7.27	0.93	43.5	AB			12.50	0.00		25.00	NT	NT	NT	4.97	4.00	4.20	5.50	0.01	20.40	--	15.00		0.00	0.74	0.17	NDT	0.14									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	12-Feb-08			C/111/08	6.69	4.60	52.00				10.00	2.50		20.00				4.97	0.20	0.60	7.50					AB							0.10	34.60						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	14-Mar-08			C/209/08	6.80	2.70	39.10				13.00	0.00		33.00	NT	NT	NT	3.55																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	25-Jun-11			CO/245/11	7.05	28.8	33.9	AB		6.00	23.60	7.50		20.00	NT	NT	NT	2.82	5.00	1.90	5.00	0.02	--	0.62	3.00		NDT	0.32	0.23	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	21-Dec-11			C/415/11	7.6	5.61	73	AB		10.00	14.10	2.50		27.00	NC	NC	NC	8.00		4.10	4.50				3.00	0.20	NDT	0.64	0.87	NDT	0.02									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	13-Jan-09			C/19/09	7.85	1.18	221	AB			22.00	2.50		35.00	NT	NT	NT	35.50	NDT			NDT	NDT			0.30		0.13	0.11	0.02	NDT		NDT	165.8						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	07-Aug-09			C/317/09	7.46	2.99	41.6	UO			18.00			25.00	NC	NC	NC	7.10	NDT	2.20	6.45	0.18	NDT					0.03	0.00	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	15-Jan-08			C/34/08	6.70	0.87	46.10					0.00			NC	NC	NC	3.55	0.10			TR	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	22-Sep-08			C/701/08	7.3	8.16	39.6	A		16.00	28.00	7.50		26.00	NT	NT	NT	7.81	NDT	1.60	2.30	ND	ND			1.50		1.14	0.22	0.01			NDT	24.00						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	25-Aug-08			C/617/08	6.91	8.71	49.0			14.00	22.00	--		24.00	NT	NT	NT		NDT	2.60	8.25		AB		2.60	1.50	0.10	3.89	1.02	0.50	0.03	0.13		36.80		7.20	1.94	N/D	N/D	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	06-Apr-08			C/431/08	6.44	12.80	49.0				25.00	30.00		19.00	NT	NT		28.40	NDT	1.80	8.60	TR	NDT			15.80		0.53	0.81	0.03	"		0.20	29.40						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	05-Feb-09			c/62/09	7.58	1.4	31	AB			14.00	1.50		20.00	NT	NT	NT	4.97	1.20	2.90	5.00	NDT	NDT			1.00		0.19	0.46	NDT			NDT	18.60						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	NGETETI RIVER	250062	9883296	River/stream	17-Oct-08			C/750/08	7.93	39.5				12.00	24.00	10.00			NT	NT	NT		2.20	3.30	0.80	,,	,,			1.40		2.92		0.01				42.70						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	10-Jan-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer		C/09/11	6.88	0.72	44.5	AB			24.60	0.00		10.00	NT	NT	NT	2.13	NDT	3.20	5.00	NDT	NDT	1.02	28.00		NDT	0.27	0.03	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	13-Mar-11			C/136/11	7.71	2.26	50.5	AB			14.20	0.00		24.00	NT	NT	NT	5.68	NDT	4.40	7.00	0.01	NDT	0.21	8.00		NDT	1.25	0.12	0.03	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	03-Sep-10			C/460/10	7.51	3.56	42.0	AB			74.00	2.00		24.00	NT	NT	NT	7.95	NDT	1.40	4.80	0.04	2.00	0.28			0.00	0.60	0.02	0.04	0.03		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	11-Nov-10			C/595/10	7.10	2.73	39.7	AB			27.20	0.00		19.00	NC	NC	NC	2.84	1.00	1.15	4.60	NDT	NDT	NDT		NDT	0.00	0.16	0.08	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	10-Dec-10			C/653/10	7.22	3.34	38.1	UO			23.70	0.00		23.70	NT	NT	NT	3.55	1.00	0.80	4.50	3.55	NDT	0.66		NDT	0.01	0.35	0.12	0.00	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	05-Feb-09			C/64/09	7.57	3.69	33	AB			20.00	2.00		23.00	NT	NT	NT	4.97	NDT	2.70	6.40	NDT	NDT			2.00		0.34	0.02	0.04			0.20	19.80						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	06-Apr-09			C/140/09	7.7	1.02	52.3	A			28.00	0.00		29.00	NC	NC	NC	4.26	NDT	2.80	6.26	NDT	NDT			NDT		0.07	0.01	0.03			NDT	31.38						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	02-Sep-09			C/358/09	7.44	4.01	54.4	UO				0.00		25.00	NC	NC	NC	6.39	NDT	1.85	5.60	0.01	NDT					0.27	0.01	0.05										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	04-Feb-08			C/243/08	7.15	6.75	63.5	AB			57.00	10.00			NT	NT	NT	5.68	2.60	3.80	13.30					8.40		0.61					NDT	38.10						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	17-Nov-08			C/885/08	7.71	20.4	38	A		8.00	25.00	10.00		26.00	NT	NT	NT	4.97	3.94	1.20	9.90	NDT	NDT					NDT	0.06	0.02			0.10	28.50						Odour=A; Deposite =p; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	05-Jul-10			C/332/10	7.30	20.80	39.1	AB			46.60	15.00		28.00	NT	NT	NT			1.18	2.30	0.01	5.00				NDT	NDT	0.02	0.01	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =0.013; NO3 =5; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	02-Aug-10			C/386/10	7.39	19.00	47.5	AB			30.00	2.50		19.00	NT	NT	NT	2.13	10.54	1.00	2.50	NDT	TR		NDT		NDT	0.42	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	17-Jun-08			C/459/08	6.81	3.85	51.00				24.00	10.00		21.00	NT	NT		5.68		2.55	10.50	NDT	NDT			8.80		0.08	0.02	0.02	NDT		0.10	30.60						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	17-Jul-08			C/543/08	7.64	0.57	40.50	AB		10.00	26.00	15.00		19.00	NC	NC	NC	4.97		2.20	11.00	NDT	NDT			1.90		1.11	0.31	NDT			NDT	30.30						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	12-Feb-08			C/108/08	7.04	4.32	48.80				11.00	2.50		16.00				7.10	NDT	0.75	9.75					AB							NDT	32.50						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	10-Feb-11			C/79/11	--	3.07	59.2	AB			26.90	1.00		22.00	NT	NT	NT	2.84	2.00	3.00	3.00	NDT	NDT	0.30	NDT		NDT	0.45	0.08	0.02	0.31									Odour=AB; Deposite =P; Alka_Phe =6; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	05-Apr-11			C/156/11	7.26	0.01	42.7	AB			13.90	0.00		36.00	NT	NT	NT	5.68	7.00	2.80	5.00	NDT	NDT	--	6.00		NDT	0.09	0.09	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	05-May-11				6.8	87.2	36.9	AB			14.00	12.50		19.00	NC	NC	NC	2.84	NDT	--	--	NDT	NDT	0.12	7.00		NDT	1.25	0.02	0.00	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	25-Jun-11			CO/240/11	7.06	21.2	36.9	AB		10.00	21.00	7.50		22.00	NT	NT	NT	2.84	NDT	2.40	6.50	NDT	--	0.51	9.00		NDT	0.56	0.02	NDT	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 = --; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	20-Sep-11			C/319/11	7.36	3.23	59.6	AB		8.00	14.80	2.50		30.00	NC	NC	NC	4.26	NDT	3.10	8.00	NDT	NDT	0.05	4.00	0.20	NDT	0.39	0.28	0.00	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	21-Dec-11			C/416/11	7.68	8.14	54.6	AB		8.00	14.00	2.50		23.00	NC	NC	NC	4.00		4.05	5.00				4.00	NDT	NDT	1.00	0.07	0.05	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	15-Feb-10			C/080/10	6.99	5.5	62			4.00	28.00			30.00				6.99	0.90	3.10	8.00	0.02	NDT				NDT	2.11	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	08-Apr-10			C/149/10	7.00	0.26	52.3	AB			10.00	0.00		28.00	NC	NC	NC	5.00		5.40	3.60	0.06	6.64	0.43		2.60														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	06-Oct-10			C/518/10	7.07	0.09	40.8	AB			45.10	0.00		26.00	NT	NT	NT	5.99	NDT	1.90	5.20	NDT	8.90	0.09	6.00	NDT	0.01	0.06	NDT	0.04	NDT		3.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	13-Jan-09			C/20/09	7.74	18.5	57.7	AB			24.00	2.50		20.00	NT	NT	NT	5.68	NDT			NDT	NDT			0.40		0.11	0.12	0.01	NDT		0.20	43.30						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	05-Mar-09			C/108/09	7.07	3.25	43	A			29.00	0.00		30.00	NT	NT	NT	2.13	NDT	2.80	7.40	TR	NDT			0.80		0.47	0.01	NDT			NDT	30.10						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	07-Aug-09			C/312/09	7.62	1.51	42.4	UO			18.00			26.00	NC	NC	NC	7.10	NDT	2.00	6.40	0.16	NDT					0.04	0.02	0.06										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	14-Mar-08			C/205/08	6.70	0.35	53.70				15.00	0.00		25.00	NT	NT	NT	4.26																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	19-May-08			C/383/08	7.33	5.88	42.4	AB			20.00	7.50		23.00	NT	NT	NT	4.97	N/A	2.30	5.80	TR	NDT			4.90		0.40	0.01	NDT			NDT	25.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	06-Apr-08			C/433/08	6.93	5.98	46.8				20.00	18.00		21.00	NT	NT		28.40	NDT	2.10	9.60	TR	NDT			8.20		0.51	0.12	0.03	0.03		0.10	28.08						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	22-Sep-08			C/695/08	7.63	33.2	48.9	A		18.00	29.00	10.00		30.00	NT	NT	NT	9.26	NDT	1.50	4.20	ND	ND			NDT		0.72	0.02	0.03			0.20	23.00						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	18-Nov-08			C/900/08	7.57	2	31	A		8.00	22.00	2.50		18.00	NT	NT	NT	5.68	8.00	1.90	5.50	NDT	NDT					0.44	0.02	NDT			0.20	23.20						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	02-Mar-10			C/100/10	7.13		55.0			6.00	8.00			28.00	NC	NC	NC	19.90	3.00	3.00	4.00	0.02	0.30	0.40																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	17-Oct-08			C/751/08	8.04	46.7				14.00	20.00	10.00			NT	NT	NT		NDT	1.70	0.80	,,	,,			0.40		2.97		0.02				27.60						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	02-Mar-10			C/099/10	7.38		50.3			6.00	10.00			26.00	NC	NC	NC	27.90	6.60	2.40	4.40	0.03	0.70	0.34																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	09-Apr-08			C/640/08	7.3	1.93	43.2	A		10.00	27.00	1.70		29.00	NT	NT	NT	6.39	NDT	2.20	9.20	ND	ND			NDT		0.16	0.06	0.03			NDT	25.90						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	RUIRU RIVER	248100	9883824	River/stream	25-Aug-08			C/612/08	7.27	5.48	40.8			8.00	19.00	--		21.00	NT	NT	NT		NDT	2.10	8.25		AB		2.10	NDT	0.09	2.19	0.14	0.68	0.10	0.08		30.60		3.20	2.67	N/D	0.05	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	15-Jan-08	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals). It is also reported that while Manure is used for horticultures, DAP and CN type fer	Red colour is observed around this area	C/33/08	6.50	0.34	51.50					0.00			NC	NC	NC	5.68	0.20	0.80	15.25	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	15-Jan-08			C/40/08	6.50	3.33	46.10					0.00			NC	NC	NC	3.55	NDT			NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	10-Feb-10			C/85/11	7.53	6.81	44.7	AB			18.50	2.00		26.00	NT	NT	NT	2.84	0.00	2.20	3.00	NDT	NDT	NDT	NDT		NDT	0.55	0.04	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	21-Dec-11			C/423/11	7.2	3.72	65.9	AB		4.00	13.70	2.50		21.00	NC	NC	NC	8.00		9.00	24.50				7.00	0.20	NDT	0.39	0.28	0.06	0.05									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	15-Feb-10			C/081/10	6.95	3.50	45.5			6.00	15.00			20.00				21.90	1.40	1.25	8.70	0.01	NDT				0.58	2.27	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	05-Jul-10			C/334/10	7.29	4.08	40.0	AB			36.30	5.00		22.00	NT	NT	NT			0.97	2.30	0.07	0.00				NDT	NDT	0.01	0.06	0.00									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	02-Aug-10			C/392/10	7.29	15.00	45.5	AB			22.00	0.00		15.00	NT	NT	NT	2.13	NDT	0.80	2.70	TR	TR		0.10		0.00	0.39	0.04	0.03	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	03-Sep-10			C/462/10	7.41	1.87	36.6	AB			53.40	0.00		28.00	NT	NT	NT	7.95	11.60	0.90	5.00	0.03	5.00	0.15			NDT	0.26	0.02	0.02	NDT		1.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	10-Dec-10			C/651/10	7.26	6.55	31.3	UO			25.40	0.00		19.00	NT	NT	NT	3.55	1.00	0.80	4.50	3.55	NDT	0.38		NDT	NDT	0.36	0.20	0.00	0.03									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	04-Feb-08			C/238/08	7.15	4.09	105.4	AB			15.00	7.50			NT	NT	NT	5.68	1.20	1.40	5.80					0.10		0.36					NDT	63.20						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	19-May-08			C/382/08	7.23	1.99	42.3	AB			21.00	2.50		22.00	NT	NT	NT	5.68	N/A	1.40	7.50	NDT	NDT			0.40		0.36	0.10	NDT			NDT	25.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=N/A; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	11-Mar-11			C/132/11	7.65	3.42	108.9	AB			25.30	0.00		22.00	NT	NT	NT	19.88	2.00	16.60	46.20	0.00	NDT	0.58	7.00		0.00	1.26	0.37	0.03	0.11									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	05-Apr-11			C/158/11	7.2	0.01	30.6	AB			26.20	0.00		24.00	NT	NT	NT	5.65	NDT	1.20	5.00	0.00	7.60	--	NDT		NDT	0.01	0.08	0.01	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	12-Feb-08			C/110/08	6.46	2.88	54.30				10.00	2.50		20.00				3.55	0.25	0.30	5.50					AB							0.10	36.20						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	15-Aug-08			C/615/08	6.39	2.43	36.3	AB		10.00	27.00	0.00		20.00	NT	NT	NT			1.90		NDT	NDT					1.15	1.26	0.02										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	20-Aug-08			C/615/08	6.36	2.43	36.30				27.00			18.00								NDT	NDT			AB		0.59	0.44	0.30										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	25-Aug-08			C/616/08	7.04	29.00	40.5			16.00	25.00	--		18.00	NT	NT	NT		NDT	2.10	7.50		AB		2.10	1.20	0.03	3.68	0.28	0.69	0.13	0.03		30.40		5.60	2.18	N/D	1.30	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	25-Jun-11			CO/237/11	6.98	11.5	29.5	AB		4.00	14.10	5.00		21.00	NT	NT	NT	4.26	NDT	3.00	4.50	NDT	--	0.15	7.00		NDT	NDT	0.02	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 = --; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	10-Jan-11			C/10/11	6.88	1.94	36.5	AB			25.30	0.00		30.00	NT	NT	NT	1.42	NDT	1.80	4.00	NDT	NDT	0.96	22.00		0.01	0.19	0.13	0.00	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	05-May-11				6.4	21.3	38.1	AB			14.00	1.50		18.00	NC	NC	NC	2.84	NDT	--	--	0.00	NDT	0.62	1.00		NDT	0.35	0.01	0.06	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	08-Apr-10			C/146/10	7.10	0.18	53.0	AB			10.00	0.00		28.00	NC	NC	NC	5.00		5.40	3.20	0.24	7.53	0.46		3.20														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	06-Oct-10			C/519/10	7.15	0.10	41.1	AB			37.50	0.00		22.00	NT	NT	NT	6.99	NDT	2.15	5.20	0.04	10.30	0.15	12.00	NDT	NDT	0.38	NDT	0.04	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	11-Nov-10			C/591/10	6.97	3.64	38.8	AB			17.90	1.50		24.00	NC	NC	NC	4.26	1.00	0.60	4.30	0.08	NDT	0.54		NDT	0.03	0.90	0.52	0.03	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	05-Feb-09			C/68/09	6.48	4.41	25	AB			18.00	12.50		16.00	NT	NT	NT	5.68	NDT	1.50	5.00	NDT	NDT			0.20		0.17	0.21	0.01			0.10	15.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	06-Apr-09			C/139/09	7.66	1.6	52.1	AB			40.00	0.00		32.00	NC	NC	NC	4.97	0.20	2.60	6.30	NDT	NDT			NDT		0.01	0.01	0.02			NDT	31.26						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	02-Sep-09			C/354/09	7.47	4.01	42.2	UO		8.00		0.00		19.00	NC	NC	NC	5.68	1.30	0.90	4.40	0.03	1.00					0.12	0.01	NDT										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	17-Nov-08			C/889/08	7.49	6.42	23	AB		12.00	22.00	5.00		20.00	NT	NT	NT	3.55	7.80	1.20	5.00	NDT	NDT					NDT	0.16	0.02			NDT	17.20						Odour=AB; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	14-Mar-08			C/206/08	6.90	2.55	45.90				13.00	0.00		20.00	NT	NT	NT	3.26																						Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	05-Mar-09			C/105/09	6.88	4.92	45	AB			25.00	0.00		34.00	NT	NT	NT	6.39	NDT	1.40	6.40	NDT	NDT			0.80		0.60	1.40	NDT			NDT	31.50						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	07-Aug-09			C/318/09	7.47	23.3	42.4	UO			20.00			26.00	NC	NC	NC	4.26	NDT	2.15	6.60	NDT	NDT					0.03	0.00	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	17-Oct-08			C/752/08	7.8	8.26				8.00	17.00	7.50			NT	NT	NT		9.80	1.40	0.80	,,	,,			0.40		0.85		0.02				26.50						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	20-Sep-11			C/312/11	7.02	5.34	46	AB		4.00	13.90	1.50		22.00	NC	NC	NC	3.55	NDT	1.80	6.00	NDT	NDT	0.22	7.00	0.10	NDT	0.15	0.03	0.00	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	13-Jan-09			C/13/09	7.7	2.81	48.4	AB			22.00	2.50		20.00	NT	NT	NT	5.68	NDT			NDT	NDT			NDT		0.23	0.09	NDT	NDT		NDT	36.30						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	17-Jul-08			C/544/08	7.61	1.57	61.10	AB		20.00	29.00	15.00		30.00	NC	NC	NC	8.52		1.70	12.00	NDT	NDT			3.60		0.30	1.03	NDT			NDT	45.80						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	02-Mar-10			C/096/10	7.04		45.1			6.00	18.00			22.00	NC	NC	NC	19.90	0.50	1.45	3.30	0.02	9.00	0.06																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	22-Sep-08			C/696/08	7.63	19.2	38.3	A		19.00	30.00	10.00		30.00	NT	NT	NT	8.52	NDT	2.30	3.40	ND	ND			1.90		0.52	0.06	0.09			0.10	24.60						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	RUIRU	WAIGERE RIVER	249074	9883218	River/stream	02-Mar-10			C/098/10	6.80		43.3			6.00	8.00			22.00	NC	NC	NC	21.90	0.70	1.60	3.00	0.02	0.50	0.80																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	15-Feb-10	The source originates from Mountainous. It seems less activties are in the catchment. However this source has algae that could be due to organic products as a result of wood decomposition.	There is flow guaging at this station	C/088/10	7.19					20.00				45.00				129.90	16.40	4.00							NDT	2.53	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	17-Mar-10			C/129/10	7.20		79.9			20.00	28.00			39.00	NC	NC	NC	9.90	1.10	1.25	3.20	0.05	0.70	0.34																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	12-Apr-10			C/168/10	6.60	3.47	62.4	AB			42.00	5.00		28.00	NC	NC	NC	1.00		3.00	5.80	0.25	9.70	0.34		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	24-Sep-09			C/365/09	7.57	3.01	38.6	UO				0.00		38.00	NC	NC	NC	7.10	1.40	0.55	1.80	1.00	NDT					NDT	0.01	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	17-Oct-08			C/746/08	8.02	0.6				8.00	24.00	0.00			NT	NT	NT		8.70	0.30	0.80	,,	NDT			0.90		0.39		0.01				14.20						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	07-Aug-11			C/266/11	7.67	4.62	15.5	AB		16.00	30.10	0.00		15.00	NT	NT	NT	1.47	2.00	1.25	30.76	NDT	NDT	0.07	NDT		NDT	NDT	0.24	0.02	0.30									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	13-May-11				6.8	25.3	20	AB			21.40	12.00		12.00	NC	NC	NC	2.13	2.00	--	--	NDT	NDT	0.72	NDT		NDT	NDT	0.01	0.02	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	07-Aug-11			C/265/11	7.63	3.7	29.7	AB		16.00	23.90	1.50		24.00	NT	NT	NT	1.42	NDT	1.25	6.26	0.00	NDT	0.35	NDT		NDT	0.27	NDT	NDT	0.30									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	19-Oct-11			C/339/11	7.09	4.63	49.5	AB		12.00		2.50		29.00	NC	NC	NC	8.00	1.00	3.60	6.00	4.00		0.06			NDT	0.24	0.00	0.34	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	10-Nov-11			C/383/11	7.35	1.98	52.8	AB		14.00	21.20	2.50		33.00	NC	NC	NC	2.84	2.00	2.70	7.30	NDT		NDT		NDT	0.01	NDT	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	16-Jul-10			C/376/10	7.82	1.70	69.8	AB			57.30	0.00		42.00	NT	NT	NT			1.18	2.30	0.01	1.00				NDT	0.35	0.07	0.07	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	17-Jul-09			C/296/09	7.15	2.38	48.5	UO		14.00	40.00	0.00		25.00	NC	NC	NC	10.65	NDT	1.00	48.00	NDT	NDT					0.03	NDT	0.00				33.95						Odour=UO; Deposite =ABS; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	13-Aug-09			C/334/09	7.63	3.16	56.9	UO			40.00			45.00				7.10	1.50	1.00	3.80	0.04	NDT					0.15	NDT	NDT										Odour=UO; Deposite =PRES; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =0.041; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	28-Mar-11			C/142/11	7.73	10.5	59.5	AB			21.10	2.50		30.00	NT	NT	NT	7.10	1.00	3.80	7.00	0.01	4.90	--	14.00		0.02	0.66	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	13-Sep-10			C/496/10	7.80	0.14	59.1	AB			85.00	5.00		36.00	NT	NT	NT	7.95	NDT	1.10	9.20	0.01	3.00	0.35			0.36	0.10	0.01	0.06	NDT		5.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	CHANIA INTAKE	239422	9921054	River/stream	15-Oct-10			C/540/10	7.18	4.24	36.9	AB			39.10	2.50		23.00	NT	NT	NT	7.99	NDT	1.90	9.40	NDT	5.40	0.16	5.00	NDT	NDT	0.48	0.02	0.01	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	SASUMUA	DAM SCOURING	242006	9915810	Reservior	10-Nov-11			C/380/11	7.13	24.7	60.8	AB		8.00	24.70	10.00		36.00	NC	NC	NC	4.26	NDT	1.60	7.40	NDT		0.18		NDT	NDT	0.46	0.02	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	17-Oct-08	The source originates from Mountainous. It seems less activties are in the catchment. However this source has algae that could be due to organic products as a result of wood decomposition.	There is flow guaging at this station	C/745/08	8.26	2.43				16.00	30.00	2.00			NT	NT	NT		9.40	0.60	0.80	,,	TRA.			1.50		0.63		0.02				18.80						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TRA.; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	07-May-11			C/259/11	7.66	5.94	29.2	AB		16.00	24.70	1.50		27.00	NT	NT	NT	1.42	3.00	0.61	21.76	NDT	NDT	NDT	6.20		NDT	0.04	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	13-Sep-10			C/497/10	7.88	0.86	44.0	AB			29.00	2.00		33.00	NT	NT	NT	5.96	6.20	1.10	3.80	0.00	3.00	0.49			0.36	0.29	0.02	0.07	NDT		6.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	16-Jul-10			C/375/10	7.58	18.10	47.5	AB			55.00	7.50		26.00	NT	NT	NT			0.70	1.30	0.03	3.00				NDT	0.55	0.02	0.07	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	26-Jan-11			C/51/11	7.18	1.17	45.6	AB			35.50	0.50		24.00	NT	NT	NT	3.55	NDT	1.40	2.00	NDT	NDT	0.81	--		NDT	0.04	NDT	0.01	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	28-Mar-11			C/145/11	7.85	3.48	48.1	AB			23.60	0.00		29.00	NT	NT	NT	4.97	1.00	4.00	2.80	NDT	6.10	--	13.00		0.01	0.19	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	27-Apr-11			C/174/11	7.3	0.83	33.8	AB			22.80	0.00		30.00	NT	NT	NT	2.13	NDT	2.00	4.60	NDT	NDT	--	NDT		NDT	0.21	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	08-May-11				6.8	8.64	29.4	AB			23.50	1.50		20.00	NC	NC	NC	2.84	1.00	--	--	NDT	NDT	0.66	NDT		NDT	0.29	0.00	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	10-Nov-11			C/381/11	7.23	10.5	38.5	AB		12.00	17.20	7.50		23.00	NC	NC	NC	2.14	3.00	2.40	7.00	NDT		0.04		NDT	NDT	0.18	0.00	0.00	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	15-Feb-10			C/089/10	7.3					18.00				37.00				59.90	NDT	1.70							NDT	4.24	NDT	0.00	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	17-Mar-10			C/127/10	6.98		51.5			18.00	17.00			25.00	NC	NC	NC	21.90	7.90	1.20	1.50	0.12	10.00	0.46																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	20-Aug-10			C/433/10	7.95	3.58	60.1	AB			40.00	2.50		32.00	NT	NT	NT	4.97	5.58	1.55	2.30	NDT	TR		1.20		--	0.20	NDT	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	15-Oct-10			C/542/10	7.27	1.81	39.7	AB			44.20	0.00		21.00	NT	NT	NT	3.99	NDT	0.80	2.20	NDT	7.10	NDT	6.00	NDT	NDT	0.16	0.01	0.01	0.06		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	11-Nov-10			C/596/10	7.14	3.88	39.2	AB			45.30	1.50		25.00	NC	NC	NC	2.84	4.00	0.23	1.20	NDT	NDT	NDT		NDT	0.01	0.16	0.02	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	06-Dec-10			C/635/10	7.70	1.02	32.7	UO			55.90	0.00		21.00	NT	NT	NT	2.84	NDT	0.00	2.50	2.84	NDT	NDT		NDT	NDT	0.13	0.40	NDT	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	24-Sep-09			C/364/09	7.54	2.89	42.7	UO				0.00		42.00	NC	NC	NC	8.52	8.20	0.80	1.60	0.57	NDT					0.26	NDT	0.00										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	21-Feb-11			C/102/11	7.98	2.09	46.3	AB			36.40	0.00		30.00	NT	NT	NT	2.84	1.00	4.20	3.50	NDT	NDT	0.00	5.00		NDT	0.32	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	20-Jan-09			C/32/09	7.3	1.17	48.7	AB			32.00	2.50		35.00	NT	NT	NT	6.39	0.50			NDT	NDT			0.30		0.07	0.10	0.06	NDT		0.20	36.50						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	23-Feb-09			C/98/09	7.66	4.34	46	AB			36.00	2.50		27.00	NC	NC	NC	2.84	0.80	0.90	2.50	NDT	NDT					0.11	0.90	NDT			0.20	27.60						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	06-Mar-09			C/110/09	7.2	2.97	51	AB			40.00	0.00		35.00	NC	NC	NC	4.26	NDT	1.40	2.40	0.00	NDT			NDT		0.27	0.01	0.00			NDT	35.70						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	17-Jul-09			C/294/09	7.32	3.05	43.7	UO		14.00	50.00	0.00		220.0	NC	NC	NC	6.39	NDT	0.60	3.00	NDT	NDT					NDT	NDT	NDT				30.59						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	13-Aug-09			C/333/09	7.71	1.23	45.3	UO			34.00			39.00	NC	NC	NC	7.10	1.50	1.15	2.65	NDT	NDT					0.17	0.00	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	15-Jan-08			C/19/08	7.60	1.94	46.2					2.00			NT	NT	NT	3.55	0.10	0.45	15.25	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	04-Feb-08			C/246/08	7.05	3.08	55.5	AB			11.00	7.50			NT	NT	NT	2.54	0.50	8.90	3.30					6.80		0.14					NDT	33.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	KIBURU RIVER	240670	9917487	River/stream	13-Nov-08			C/875/08	7.92	26.8	39.5	AB		12.00	28.00	0.00		20.00	NT	NT	NT	2.84	NDT	0.50	2.20	NDT	NDT					NDT	0.00	0.02			0.20	29.60						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	26-Jan-11			C/52/11	7.18	0.95	51.1	AB			36.80	0.50		24.00	NT	NT	NT	4.97	NDT	2.60	3.50	NDT	12.10	0.35	--		NDT	0.58	0.03	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	21-Feb-11			C/100/11	7.75	2.15	42.3	AB			36.30	0.00		26.00	NT	NT	NT	5.68	1.00	2.60	2.50	NDT	NDT	0.00	10.00		0.04	0.45	0.00	0.38	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	28-Mar-11			C/144/11	7.78	3.78	55.7	AB			21.50	0.00		31.00	NT	NT	NT	5.68	1.00	3.70	3.50	NDT	6.00	--	13.00		0.05	0.19	NDT	NDT	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	27-Apr-11			C/172/11	7.11	0.13	41.1	AB			22.00	0.00		35.00	NT	NT	NT	5.68	4.00	3.00	1.50	NDT	NDT	--	NDT		NDT	0.22	0.05	0.00	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	08-May-11				6.7	0.39	39.6	AB			22.90	1.50		25.00	NC	NC	NC	2.84	5.00	--	--	NDT	NDT	0.45	NDT		0.00	0.14	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	07-May-10			C/258/11	7.5	1.29	32.5	AB		12.00	30.20	1.50		26.00	NT	NT	NT	2.84	4.00	0.97	9.55	NDT	NDT	NDT	10.90		NDT	NDT	0.09	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	15-Feb-10			C/090/10	8.69					20.00				40.00				109.90	3.10	5.10							NDT	2.55	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	17-Mar-10			C/128/10	7.35		79.0			18.00	27.00			35.00	NC	NC	NC	22.90	2.70	2.46	3.80	0.03	12.00	0.33																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	12-Apr-10			C/167/10	6.40	11.20	68.2	AB			32.00	7.50		34.00	NC	NC	NC	1.00		5.20	6.60	314.00	13.00	NDT		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	16-Jul-10			C/377/10	7.62	7.14	66.3	AB			56.20	10.00		30.00	NT	NT	NT			2.00	3.10	0.03	7.00				NDT	1.79	0.04	0.08	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	20-Aug-10			C/430/10	7.42	2.14	74.7	AB			34.00	0.00		35.00	NT	NT	NT	5.68	5.34	0.65	2.00	TR	NDT		0.20		--	1.13	0.02	0.03	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	13-Sep-10			C/498/10	7.90	1.88	60.0	AB			42.00	5.00		45.00	NT	NT	NT	5.96	4.00	1.20	3.80	0.04	1.00	NDT			NDT	1.66	NDT	0.05	NDT		1.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	15-Oct-10			C/541/10	7.24	3.28	53.81	AB			30.80	0.00		30.00	NT	NT	NT	7.99	NDT	0.90	2.20	NDT	6.20	0.19	6.00	NDT	NDT	0.76	NDT	0.03	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	15-Nov-10			C/608/10	7.16	6.67	45.5	AB			29.50	2.50		30.00	NC	NC	NC	2.84	4.00	2.00	2.60	NDT	NDT	0.19		NDT	NDT	2.13	0.01	0.05	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	06-Dec-10			C/636/10	7.74	1.19	44.4	UO			47.70	0.00		24.00	NT	NT	NT	2.84	1.00	1.00	4.20	2.84	NDT	NDT		NDT	0.01	0.28	NDT	NDT	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	20-Jan-09			C/30/09	7.5	4.19	39	AB			26.00	2.50		24.00	NT	NT	NT	7.10	0.50			NDT	NDT			0.40		0.66	0.10	0.01	NDT		0.30	29.30						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	23-Feb-09			C/96/09	7.08	1.46	42	AB			30.00	1.50		25.00	NC	NC	NC	5.68	2.60	1.00	4.00	NDT	NDT					0.29	0.60	NDT			0.30	25.20						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	15-Apr-09			C/154/09	7.87	12.4	57.4	AB			37.00	5.00		26.00	NC	NC	NC	4.97	0.50	0.70	10.80	NDT	15.00			NDT		0.10	0.02	0.04			NDT	34.44						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	17-Jul-09			C/295/09	7.26	4.4	34.7	UO		10.00	36.00	1.25		25.00	NC	NC	NC	7.10	NDT	15.00	2.60	NDT	NDT					0.49	NDT	NDT				24.29						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	13-Aug-09			C/336/09	7.58	1.23	31	UO			32.00			32.00	NC	NC	NC	5.68	NDT	1.18	0.85	NDT	NDT					0.19	0.02	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	24-Sep-09			C/366/09	7.56	2.78	39.8	UO				0.00		35.00	NC	NC	NC	9.23	2.40	0.80	1.80	0.86	4.00					0.32	0.02	0.02										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	15-Jan-08			C/22/08	6.89	2.34	55.1					7.50			NT	NT	NT	3.55	0.10	0.35	9.25	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	16-Jun-08			C/458/08	7.30	1.23	53.30				27.00	5.00		30.00	NT	NT		21.30		0.75	5.25	NDT	NDT			8.70		0.02	0.00	0.04	NDT		0.20	31.98						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	17-Oct-08			C/744/08	8.29	3.38				16.00	34.00	2.00			NT	NT	NT		10.30	0.80	0.80	TRA.	TRA.			1.20		0.75		0.02				24.80						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TRA.; NO3 =TRA.; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	13-Nov-08			C/873/08	7.85	1.69	39.8	AB		16.00	35.00	0.00		21.00	NT	NT	NT	2.84	10.80	0.80	3.20	NDT	NDT					NDT	0.07	0.03			0.30	29.80						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA DAM WATER	241863	9915884	Reservior	24-Sep-09			C/248/08	7.13	9.00	63.3	AB			40.00	10.00			NT	NT	NT	4.97	1.80	1.40	7.50					5.40		1.28					NDT	38.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	15-Apr-09	Above this station, there are abstractions from this source eventhough the source originates from Mountainous. Below this station there is no abstraction and the river flows into Sasumua River.	There is flow guaging at this station	C/156/09	7.99	7.42	29.5	AB			28.00	2.50		27.00	NC	NC	NC	3.55	0.40	0.45	5.10	NDT	NDT			0.50		0.51	0.03	0.02			NDT	17.70						Odour=AB; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	26-Jan-11			C/53/11	7.16	3.39	59.8	AB			65.40	0.50		25.00	NT	NT	NT	4.26	NDT	1.60	3.00	NDT	3.30	0.02	--		NDT	0.05	0.00	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	21-Feb-11			C/101/11	7.84	0.44	64.8	AB			45.90	0.00		35.00	NT	NT	NT	4.26	0.00	2.20	2.30	0.70	NDT	0.00	1.00		NDT	NDT	0.07	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	27-Apr-11			C/173/11	7.11	0.08	38.8	AB			49.60	0.00		30.00	NT	NT	NT	8.52	2.00	1.60	2.80	NDT	1.30	--	NDT		NDT	0.22	0.02	NDT	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	08-May-11				6.9	1.12	34.3	AB			48.00	2.00		25.00	NC	NC	NC	2.13	8.00	--	--	NDT	NDT	0.76	NDT		0.01	0.42	NDT	0.01	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	10-Nov-11			C/382/11	7.26	13.2	58.7	AB		14.00	17.70	7.50		32.00	NC	NC	NC	2.84	2.00	2.60	7.40	NDT		0.09		NDT	NDT	0.50	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	20-Aug-10			C/432/10	7.87	3.15	91.9	AB			38.00	2.50		35.00	NT	NT	NT	5.68	9.05	1.65	3.50	TR	TR		1.40		--	0.06	NDT	0.01	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =TR; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	15-Nov-10			C/609/10	7.24	68.30	57.3	AB			22.60	35.00		25.00	NC	NC	NC	4.26	8.00	1.15	6.00	NDT	NDT	0.14		NDT	0.01	NDT	0.04	0.05	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	06-Dec-10			C/637/10	7.78	1.09	45.8	UO			33.00	0.00		31.00	NT	NT	NT	3.55	1.00	0.20	3.50	3.55	NDT	0.21		NDT	0.00	1.03	0.02	NDT	0.09									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	20-Jan-09			C/31/09	7.39	7.72	56	AB			40.00	5.00		34.00	NT	NT	NT	5.68	NDT			NDT	NDT			0.50		0.16	0.11	0.01	NDT		0.10	42.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	23-Feb-09			C/97/09	7.68	3.34	59	AB			34.00	2.50		40.00	NC	NC	NC	4.26	1.30	0.70	4.00	NDT	NDT					0.14	1.19	NDT			0.10	35.40						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	06-Mar-09			C/112/09	7.37	1.25	41	A			42.00	0.00		27.00	NC	NC	NC	3.55	0.40	1.40	3.80	NDT	NDT			0.30		0.09	0.01	NDT			NDT	28.70						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	15-Jan-08			C/20/08	7.62	2.01	25.9					2.00			NT	NT	NT	2.84	0.10	0.55	4.25	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	04-Feb-08			C/247/08	7.09	2.60	50.2	AB			47.00	7.50			NT	NT	NT	4.26	1.80	8.90	5.00					6.50		0.12					NDT	30.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	13-Nov-08			C/874/08	7.96	1.38	41.2	A		12.00	27.00	0.00		25.00	NT	NT	NT	2.84	10.20	0.70	2.20	NDT	NDT					0.09	0.02	0.03			0.10	30.90						Odour=A; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	SASUMUA	SASUMUA RIVER	238304	9919516	River/stream	07-May-11			C/257/11	7.65	1.71	38.6	AB		16.00	48.60	1.50		32.00	NT	NT	NT	2.84	2.00	0.65	1.67	NDT	NDT	0.22	9.40		NDT	NDT	0.01	0.10	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	04-Apr-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	High density of weeds are observed at this station. It could be related to nutrient released from dam. This kind of problem is also observed at inflow to dam from thika river. Flow measuring guage is also installed.	C/150/11	7.24	0.02	17.8	AB			16.00	0.00		22.00	NT	NT	NT	2.84	3.00	0.60	1.10	NDT	NDT	--	10.00		NDT	0.14	0.12	0.01	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	02-Nov-11			C/364/11	6.71	9.88	26.1	AB		6.00	7.80	5.00		13.00	NC	NC	NC	2.13	NDT	2.60	1.40	NDT		NDT		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	15-Feb-10			C/068/10	7.5	1.57	29.2			6.00	35.00			15.00				5.99	0.60	0.43	1.60	NDT	3.00				NDT	1.52	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	10-Mar-10			C/114/10	7.20		25.6			6.00	10.00			17.00	NC	NC	NC	19.90	15.80	0.45	1.30	0.03	0.70	0.36																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	08-Apr-10			C/155/10	6.30	0.31	19.0	AB			10.00	0.00		13.00	NC	NC	NC	1.99		1.10	0.87	0.02	4.86	0.63		2.60														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	09-Jul-10			C/352/10	6.90	2.77	16.8	AB			22.70	2.00		20.00	NT	NT	NT			0.45	0.90	0.02	4.00				NDT	0.01	0.24	NDT	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	25-Aug-08			C/627/08	7.80	43.90	372.0	AB		10.00	20.00	0.00		15.00	AB	AB	AB		1.75	0.50	1.50	TR	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	13-May-11				6.8	1.28	18.2	AB			15.50	1.50		15.00	NC	NC	NC	2.13	3.00	--	--	0.00	NDT	0.78	8.00		NDT	0.05	0.00	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	08-Mar-11			C/122/11	7.33	1.05	23.2	AB			13.60	0.00		25.00	NT	NT	NT	4.26	4.00	5.00	6.00	NDT	NDT	--	12.00		NDT	1.00	0.00	NDT	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	12-Nov-10			C/604/10	--	12.60	17.6	AB			16.90	7.50		18.00	NC	NC	NC	2.84	2.00	1.15	1.10	NDT	NDT	0.01		NDT	NDT	NDT	0.09	0.00	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	02-Sep-10			C/345/09	7.64	3.28	46	UO		10.00		0.00		24.00	NC	NC	NC	6.93	0.80	0.40	1.85	0.01	NDT					NDT	0.01	0.00										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	08-Feb-11			C/74/11	7.55	1.18	20.9	AB			25.30	0.00		10.00	NT	NT	NT	2.84	NDT	1.00	1.00	NDT	0.00	0.14	12.00		0.00	0.44	0.07	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	13-Jul-09			C/287/09	7.64	0.39	22.4	UO		6.00	48.00	0.00		125.00	NC	NC	NC	8.52	NDT	0.40	1.60	NDT	NDT					NDT	0.02	0.01				15.68						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	COMPENSATION RIVER	262707	9908782	Reservior	09-Aug-09			C/322/09	7.54	2.67	29.6	UO			28.00			23.00	NC	NC	NC	5.68	NDT	0.71	2.65	0.13	NDT					0.20	0.02	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	19-Oct-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)		C/345/11	6.98	2.12	21.1	AB		28.00		2.50		11.00	NC	NC	NC	10.00	NDT	2.20	2.10	NDT		0.05			NDT	0.14	0.56	0.06	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	10-Jan-11			C/06/11	6.84	0.65	16	AB			45.80	0.00		8.00	NT	NT	NT	2.84	NDT	0.90	1.00	0.00	3.00	NDT	9.00		0.01	0.10	NDT	0.00	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	09-Jul-10			C/353/10	6.93	1.92	14.8	AB			15.40	0.00		18.00	NT	NT	NT			0.45	0.80	0.01	2.00				NDT	0.59	NDT	0.03	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	04-Feb-09			C/59/09	7.54	1.41	10	AB			18.00	1.50		11.00	NT	NT	NT	3.55	0.30	0.90	1.90	NDT	NDT			0.80		0.29	0.07	0.03			0.30	6.00						Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	13-May-11				6.9	2.89	13.5	AB			44.70	2.00		10.00	NC	NC	NC	2.84	4.00	--	--	NDT	NDT	0.60	4.00		0.00	0.08	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	07-Sep-10			C/471/10	7.32	0.71	18.4	AB			26.00	0.00		15.00	NT	NT	NT	1.99	1.00	0.60	2.00	0.03	NDT	0.49			0.05	0.23	0.04	0.02	0.01		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	11-Oct-10			C/533/10	7.46	0.56	25.0	AB			28.20	0.00		30.00	NT	NT	NT	7.99	NDT	0.90	2.20	NDT	6.10	0.01	NDT	1.93	0.03	0.37	0.02	0.06	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	15-Dec-10			C/665/10	7.29	1.70	13.1	UO			44.60	0.00		16.00	NC	NC	NC	2.13	NDT	0.10	3.00	0.00	NDT	0.73		1.20	0.01	0.23	0.02	0.02	0.05									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	15-Feb-10			C/071/10	7.44	2.01	22.5			4.00	24.00			14.00				4.99	1.70	0.15	2.40	NDT	NDT				NDT	1.72	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	05-Aug-10			C/398/10	7.47	15.00	21.4	AB			8.00	2.50		15.00	NT	NT	NT	2.13	NDT	0.25	0.80	0.00	TR		0.10		NDT	0.12	0.05	0.10	0.06									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	GITAMBIKI RIVER	258462	9910464	River/stream	08-Apr-10			C/152/10	6.10	0.63	15.6	AB			6.00	0.00		9.00	NC	NC	NC	3.00		0.80	0.67	0.01	4.43	0.73		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	10-Jan-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	Makomboki Tea factory (@260053,9911028,2116) is in the catchment of this source	C/04/11	6.82	0.35	16.8	AB			30.00	0.00		10.00	NT	NT	NT	2.84	NDT	1.00	1.00	0.00	NDT	0.54	9.00		NDT	NDT	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=0.54; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	08-Feb-11			C/73/11	7.69	1.4	20.8	AB			22.40	0.00		11.00	NT	NT	NT	2.84	NDT	1.00	0.80	NDT	NDT	NDT	13.00		0.01	0.14	0.10	0.01	0.11									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	08-Mar-11			C/121/11	7.28	0.51	21.4	AB			35.00	0.00		14.00	NT	NT	NT	5.68	1.00	3.30	24.50	NDT	NDT	--	NDT		NDT	0.56	0.04	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	21-Jul-08			C/556/08	7.82	0.72	18.50	AB		6.00	15.00	7.50		13.00	NT	NT	NT	3.55		2.00	12.50	NDT	NDT			1.40		0.60	0.00	NDT			NDT	18.60						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	25-Aug-08			C/630/08	7.63	1.64	18.3	AB		8.00	19.00	0.00		10.00	NT	NT	NT			0.50	1.50	TR				NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	02-Sep-09			C/347/09	7.37	2.68	36.5	UO		14.00		0.00		19.00	NC	NC	NC	7.10	5.70	0.55	1.40	0.02	1.00					0.05	NDT	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	23-Oct-08			C/779/08	8.01	2.17				20.00	38.00	0.00			NT	NT	NT		9.60	0.40	6.00	TRA.	TRA.			0.70		0.34		NDT				10.60						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TRA.; NO3 =TRA.; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	04-Apr-11			C/149/11	7.01	0.02	17.8	AB			33.00	0.00		24.00	NT	NT	NT	5.68	NDT	1.00	1.50	NDT	6.20	--	9.00		NDT	0.19	0.38	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	13-May-11				6.8	8.09	10.5	AB			16.90	1.50		10.00	NC	NC	NC	2.13	12.00	--	--	NDT	NDT	0.43	1.00		NDT	0.23	NDT	0.01	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	18-Aug-11			C/291/11	7.14	2.19	17	AB		6.00	17.30	0.00		11.00	NT	NT	NT	2.13	NDT	0.99	0.52	NDT	NDT	0.10	3.00		0.01	0.34	0.06	0.10	0.03									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	19-Oct-11			C/338/11	6.9	4.98	15.7	AB		8.00		2.50		10.00	NC	NC	NC	10.00	1.00	2.35	1.25	NDT		0.04			NDT	NDT	NDT	0.08	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	02-Nov-11			C/362/11	6.66	2.48	18.5	AB		4.00	10.70	0.00		11.00	NC	NC	NC	2.13	NDT	2.40	1.25	NDT		NDT		NDT	NDT	NDT	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	15-Feb-10			C/070/10	7.5	1.55	19.5			6.00	12.00			10.00				3.99	0.80	0.25	2.40	0.02	6.00				NDT	1.59	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	10-Mar-10			C/111/10	6.90		16.2			6.00	6.00			14.00	NC	NC	NC	19.90	2.20	2.65	6.00	0.01	7.00	0.25																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	08-Apr-10			C/151/10	6.10	0.74	18.1	AB				0.00		10.00	NC	NC	NC	2.00		5.00	3.48	0.01	3.54	0.50		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	09-Jul-10			C/349/10	6.94	2.89	25.6	AB			21.60	2.00		20.00	NT	NT	NT			0.70	0.90	0.02	1.00				NDT	0.19	0.04	0.10	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	05-Aug-10			C/399/10	7.44	12.00	19.3	AB			8.00	2.50		12.00	NT	NT	NT	0.71	NDT	2.28	0.70	NDT	TR		0.20		0.00	0.21	NDT	0.07	0.17									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =TR; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	07-Sep-10			C/472/10	7.30	0.92	19.1	AB			17.00	0.00		20.00	NT	NT	NT	3.98	NDT	0.70	2.00	0.03	1.00	0.21			NDT	0.02	0.09	0.01	0.07		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	11-Oct-10			C/535/10	7.36	3.39	20.8	AB			28.60	0.00		14.00	NT	NT	NT	5.99	NDT	0.80	1.20	NDT	9.60	NDT	7.00	NDT	NDT	0.77	0.03	0.03	0.02		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	12-Dec-10			C/602/10	7.04	6.65	17.2	AB			17.40	5.00		12.00	NC	NC	NC	2.84	4.00	0.21	0.50	NDT	NDT	NDT		NDT	0.01	0.09	0.00	0.01	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	15-Dec-10			C/662/10	7.67	2.09	18.6	UO			28.20	0.00		14.00	NC	NC	NC	2.13	NDT	0.20	2.50	0.00	NDT	0.06		1.30	NDT	0.16	0.01	0.01	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	04-Feb-09			C/56/09	7.64	2.46	15	AB			22.00	2.00		14.00	NT	NT	NT	2.84	1.30	0.70	1.80	NDT	NDT			1.50		0.11	NDT	0.01			0.30	9.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	09-Mar-09			C/114/09	7.59	1.28	27	A			36.00	0.00		28.00	NT	NT	NT	5.68	NDT	1.10	3.20	NDT	NDT			NDT		0.19	0.04	0.00			NDT	18.90						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	08-Apr-09			C/147/09	7.75	1.26	28.6	A			30.00	0.00		28.00	NC	NC	NC	4.97	0.30	1.50	1.75	NDT	T			NDT		0.29	0.03	0.05			NDT	17.16						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	13-Jul-09			C/283/09	7.36	0.77	16.3	UO		8.00	38.00	0.00		20.00	NC	NC	NC	7.10	NDT	0.55	1.40	NDT	NDT					0.19	0.05	0.02				11.41						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	09-Aug-09			C/321/09	7.73	0.78	17.9	UO			36.00			18.00	NC	NC	NC	6.39	NDT	0.80	1.80	NDT	NDT					0.16	0.00	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	04-Jan-08			C/237/08	7.26	2.20	24.5	AB			25.00	5.00			NT	NT	NT	4.97	0.50	0.80	1.50					0.20		0.13					NDT	15.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	25-Apr-08			C/327/08		18.1	12	AB			13.00	7.50		10.00	NT	NT	NT	4.97	NDT	0.20	0.80	NDT	NDT			0.70		0.11	0.01	0.06			0.10	7.68						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	14-May-08			C/363/08	7.18	8.03	15.5	AB			23.00	5.00		10.00	"	"	"	2.84	"	1.40	0.80	NDT	NDT			1.30			NDT	NDT			NDT	9.30						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	25-Jun-08			C/493/08	6.95	2.01	20.70				15.00	5.00		12.00	NT	NT		2.13		0.43	2.63	NDT	NDT			NDT		0.02	0.04	0.03	NDT		NDT	12.40						Odour=; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	18-Nov-08			C/895/08	7.39	4.27	18.3	A		12.00	26.00	2.50		10.00	NT	NT	NT	3.55	8.70	6.60	NDT	NDT	NDT					0.27	0.02	0.02			0.50	13.70						Odour=A; Deposite =A; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	GITHIKA RIVER	259028	9911578	River/stream	26-Sep-08			C/706/08	7.25	1.6	19.8	A		8.00	18.00	2.50		14.00	NT	NT	NT	9.26	1.00	0.60	0.54	ND	ND			0.90		0.23	NDT	NDT			0.20	11.88						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =ND; NO3 =ND; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	10-Jan-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)		C.02/11	6.77	1.35	25	AB			39.30	0.00		19.00	NT	NT	NT	3.55	NDT	1.40	1.60	0.00	NDT	0.56	12.00		0.01	0.82	0.13	NDT	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	08-Mar-11			C/123/11	7.4	7.51	79.1	AB			15.90	2.00		15.00	NT	NT	NT	2.84	2.00	3.00	4.50	NDT	NDT	NDT	12.00		NDT	0.470.(	0.05	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	11-Oct-10			C/536/10	7.32	1.50	29.5	AB			23.50	0.00		20.00	NT	NT	NT	5.99	NDT	0.90	1.80	NDT	9.90	NDT	11.00	0.36	NDT	0.70	0.01	0.04	0.12		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	12-Nov-10			C/600/10	7.24	6.17	41.2	AB			38.90	2.50		8.00	NC	NC	NC	2.84	1.00	0.73	0.70	NDT	NDT	NDT		NDT	0.01	0.60	0.03	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	02-Sep-09			C/348/09	7.33	3.1	36.8	UO		14.00		0.00		25.00	NC	NC	NC	6.39	9.40	0.80	1.85	0.01	0.30					0.29	NDT	NDT										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	25-Apr-08			C/325/08	7.18	29.7	25.2	AB			12.00	5.00		11.00	NT	NT	NT	4.26	NDT	0.30	1.60	TR	NDT			0.40		0.23	NDT	0.01			0.10	12.70						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	21-Jul-08			C/558/08	7.54	2.96	25.20	AB		10.00	16.00	7.50		13.00	NT	NT	NT	7.10		1.80	11.30	NDT	TR			1.50		0.37	0.00	NDT			0.30	16.70						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	23-Oct-08			C/781/08	7.8	6.88				16.00	34.00	0.00			NT	NT	NT		12.00	0.20	6.00	,,	,,			NDT		0.35		NDT				17.50						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	08-Apr-10			C/157/10	6.00	2.57	19.8	AB			10.00	0.00		9.00	NC	NC	NC	4.00		1.50	1.30	0.02	4.43	0.06		1.30														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	08-Feb-11			C/75/11	7.47	5.48	24.6	AB			25.30	2.00		15.00	NT	NT	NT	2.84	NDT	1.40	0.90	NDT	0.02	NDT	NDT		NDT	0.19	0.03	0.07	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	04-Apr-11			C/151/11	7.38	0.19	68.5	AB			16.00	0.00		44.00	NT	NT	NT	2.84	2.00	1.50	2.00	NDT	6.30	--	8.00		NDT	0.23	0.13	0.03	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	13-May-11				6.7	26.5	16.8	AB			15.30	1.50		10.00	NC	NC	NC	2.13	4.00	--	--	NDT	NDT	0.56	10.00		NDT	0.14	NDT	0.01	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	18-Aug-11			C/288/11	8.53	13.4	38	AB		8.00	16.20	0.00		28.00	NT	NT	NT	1.42	NDT	0.66	0.09	NDT	NDT	NDT	6.00		NDT	0.34	0.08	0.03	0.15									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	19-Oct-11			C/344/11	6.95	3.06	23	AB		20.00		2.50		16.00	NC	NC	NC	6.00	NDT	2.70	2.00	NDT		0.08			NDT	0.37	0.00	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	02-Nov-10			C/361/11	6.62	5.54	27.2	AB		6.00	17.00	2.50		12.00	NC	NC	NC	2.84	NDT	2.50	1.80	NDT		NDT		NDT	NDT	0.04	0.00	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	15-Feb-10			C/072/10	7.41	3.34	24.8			6.00	10.00			12.00				4.99	0.90	0.20	1.80	NDT	8.00				NDT	1.79	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	10-Mar-10			C/110/10	6.60		24.0			4.00	4.00			18.00	NC	NC	NC	19.90	18.50	0.90	2.80	0.02	9.00	0.34																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	09-Jul-10			C/348/10	7.08	7.94	19.7	AB			28.70	2.50		20.00	NT	NT	NT			0.70	1.00	0.03	1.00				NDT	0.19	NDT	0.02	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	05-Aug-10			C/401/10	7.22	15.00	25.3	AB			12.00	2.50		15.00	NT	NT	NT	1.42	NDT	0.41	1.10	0.00	NDT		NDT		0.00	0.32	0.01	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	07-Sep-10			C/470/10	7.71	1.27	27.3	AB			30.00	0.00		16.00	NT	NT	NT	5.96	1.00	1.00	2.00	0.03	NDT	0.36			NDT	0.11	0.07	0.04	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	15-Dec-10			C/667/10	7.25	2.80	18.4	UO			38.20	1.50		19.00	NC	NC	NC	3.55	NDT	0.10	3.25	0.00	NDT	NDT		1.60	NDT	0.22	0.00	NDT	0.13									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	04-Feb-10			C/57/09	7.57	1.27	14	AB			22.00	1.50		16.00	NT	NT	NT	3.55	0.60	1.30	2.80	NDT	NDT			1.00		0.14	NDT	0.00			0.40	8.40						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	09-Mar-09			C/113/09	7.55	2.4	63	A			34.00	0.00		25.00	NT	NT	NT	3.55	0.40	1.60	3.40	NDT	NDT			NDT		0.12	NDT	NDT			NDT	44.10						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	08-Apr-09			C/145/09	7.65	3.36	37.8	A			25.00	2.50		26.00	NC	NC	NC	5.68	0.30	2.27	2.50	NDT	NDT			0.30		0.27	NDT	0.03			NDT	22.68						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	13-Jul-09			C/284/09	7.4	2.01	28.4	UO		8.00	36.00	0.00		15.00	NC	NC	NC	7.10	NDT	1.00	1.80	NDT	NDT					0.26	0.04	0.33				19.88						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	09-Aug-09			C/324/09	7.51	2.06	27.6	UO			20.00			25.00	NC	NC	NC	5.68	0.80	0.90	2.70	0.10	NDT					0.08	0.00	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	04-Jan-08			C/235/08	7.28	4.88	33.3	AB			18.00	2.50			NT	NT	NT	4.26	1.00	0.50	4.00					AB		0.22					NDT	20.00						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	14-May-08			C/362/08	7.35	36.7	23.7	AB			27.00	5.00		11.00	NT	NT	NT	2.84	NDT	1.40	8.30	NDT	NDT			0.70		0.12	NDT	0.00			NDT	14.20						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	25-Jun-08			C/491/08	6.80	4.05	32.80				18.00	5.00		14.00	NT	NT		2.84		0.43	3.50	NDT	NDT			NDT		4.86	0.06	0.12	NDT		NDT	20.00						Odour=; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	18-Nov-08			C/897/08	7.44	5.25	23.1	AB		10.00	24.00	2.50		15.00	NT	NT	NT	2.84	8.70	0.30	1.00	NDT	NDT					0.24	0.04	0.02			0.40	17.30						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	26-Sep-08			C/704/08	7.35	5.29	34.4	AB		8.00	20.00	2.50		20.00	NT	NT	NT	7.81	0.20	0.80	1.10	ND	ND			1.30		0.18	0.04	0.11			0.50	20.64						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KAYUYU RIVER	256530	9909934	River/stream	18-May-08			C/376/08	6.88	1.03	230	AB			83.00	0.00		47.00	NC	NC	NC	35.50	1.89	32.50	32.50	0.15	NDT			1.40		0.02	NDT	0.02			NDT	138.0						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	10-Jan-10	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)		C/05/11	6.78	0.49	21.9	AB			3.00	0.00		15.00	NT	NT	NT	2.13	NDT	1.00	1.00	NDT	NDT	0.48	9.00		NDT	0.15	0.25	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	08-Feb-11			C/76/11	7.5	0.85	23	AB			14.80	0.00		15.00	NT	NT	NT	2.84	NDT	1.00	0.80	NDT	0.00	0.07	NDT		0.11	0.59	0.06	0.12	0.26									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	08-Mar-11			C/125/11	7.47	0.84	24.5	AB			8.50	0.00		13.00	NT	NT	NT	5.68	3.00	3.00	2.00	0.00	6.60	0.02	1.00		0.02	0.57	1.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	11-Nov-10			C/599/10	7.30	5.52	42.1	AB			30.60	2.50		25.00	NC	NC	NC	2.84	2.00	1.05	1.10	NDT	NDT	NDT		NDT	0.02	0.30	0.14	0.12	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	21-Jul-08			C/559/08	5.63	0.37	17.80	AB		8.00	14.00	10.00		11.00	NT	NT	NT	7.10		1.70	10.40	NDT	NDT			3.60		0.44	0.00	NDT			0.40	18.90						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	07-Sep-10			C/473/10	7.34	0.84	18.9	AB			25.00	0.00		490.0	NT	NT	NT	1.99	NDT	0.60	0.80	0.03	NDT	0.38			NDT	0.23	0.03	0.00	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	09-Jul-10			C/354/10	7.52	1.41	14.8	AB			25.70	0.00		17.00	NT	NT	NT			0.45	0.90	0.02	3.00				NDT	0.36	0.33	0.06	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	08-Apr-10			C/156/10	6.20	1.86	25.9	AB			10.00	0.00		13.00	NC	NC	NC	3.00		2.20	0.85	0.01	6.64	0.26		2.50														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	13-Jul-09			C/285/09	7.25	3.78	18.1	UO		6.00	43.00	0.00		20.00	NC	NC	NC	6.39	NDT	0.70	1.20	NDT	NDT					0.04	0.35	0.11				12.67						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	09-Aug-09			C/326/09	7.4	2.38	18.3	UO			24.00			20.00	NC	NC	NC	6.38	NDT	0.55	1.60	NDT	NDT					0.03	0.22	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	02-Sep-09			C/346/09	7.34	2.41	27.2	UO		12.00		0.00		18.00	NC	NC	NC	5.68	6.00	0.55	1.40	0.01	NDT					0.07	0.25	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	15-Dec-10			C/663/10	7.42	0.37	13.4	UO			30.10	0.00		16.00	NC	NC	NC	2.13	1.00	0.10	3.00	NDT	NDT	0.24		1.10	0.03	0.18	0.49	0.05	0.03									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	13-May-11				6.8	3.25	25.8	AB			12.40	2.00		17.00	NC	NC	NC	2.84	3.00	--	--	0.10	NDT	0.61	1.00		NDT	1.37	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	18-Aug-11			C/290/11	7.1	2.35	20.4	AB		6.00	12.50	0.00		10.00	NT	NT	NT	2.13	NDT	0.70	0.08	NDT	NDT	NDT	5.00		NDT	0.40	0.07	0.14	0.18									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	19-Oct-11			C/341/11	7.26	3.06	17.7	AB		8.00		2.50		13.00	NC	NC	NC	6.00	1.00	2.30	1.20	NDT		0.02			NDT	0.31	0.09	0.05	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	02-Nov-11			C/360/11	6.77	8.25	28.8	AB		8.00	6.30	5.00		10.00	NC	NC	NC	3.55	NDT	2.60	1.40	NDT		NDT		NDT	NDT	0.05	0.00	0.00	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	15-Feb-10			C/073/10	7.37	2.86	32.3			6.00	9.00			17.00				5.99	7.00	0.40	1.60	0.00	NDT				NDT	1.73	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	10-Mar-10			C/112/10	6.90		28.9			4.00	6.00			10.00	NC	NC	NC	21.10	2.80	0.60	1.20	0.03	10.00	0.37																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	05-Aug-10			C/397/10	7.55	25.00	31.1	AB			8.00	5.00		25.00	NT	NT	NT	2.13	4.69	0.43	1.50	NDT	NDT		NDT		NDT	0.33	0.05	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	11-Oct-10			C/538/10	7.18	0.89	29.5	AB			11.00	0.00		15.00	NT	NT	NT	7.99	NDT	0.60	1.20	NDT	4.00	0.26	NDT	NDT	NDT	0.60	0.12	0.04	0.18		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	11-Oct-10			C/538/10	7.18	0.89	29.5	AB			11.00	0.00		15.00	NT	NT	NT	7.99	NDT	0.60	1.20	NDT	4.00	0.26	NDT	NDT	NDT	0.60	0.12	0.04	0.18		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	KIAMA RIVER	258922	9907942	River/stream	04-Apr-11			C/146/11	7.26	0.08	16.2	AB			10.00	0.00		22.00	NT	NT	NT	2.84	9.00	0.60	0.60	0.00	7.60	--	NDT		NDT	0.38	0.12	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	KIMAKIA RIVER	258331	9905461	River/stream	19-Oct-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)		C/340/11	7.24	5.59	19.4	AB		12.00		2.50		12.00	NC	NC	NC	8.00	2.00	2.35	1.25	NDT		NDT			NDT	0.49	NDT	0.14	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	KIMAKIA RIVER	258331	9905461	River/stream	21-Jul-08			C/562/08	7.33	3.38	21.20	AB		8.00	20.00	7.50		25.00	NT	NT	NT	4.97		2.50	7.50	NDT	NDT			1.80		0.75	0.00	NDT			0.20	34.20						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	09-Aug-09	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	Sampling is from surface level. Guaging is available at this station	C/323/09	7.34	1.72	18.5	UO			20.00			21.00	NC	NC	NC	7.10	1.20	0.70	1.40	NDT	NDT					0.02	0.33	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	02-Sep-09			C/349/09	7.4	1.89	27.7	UO		8.00		0.00		15.00	NC	NC	NC	6.39	NDT	0.35	1.00	0.01	0.20					0.11	0.39	0.00										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	14-May-08			C/365/08	7.28	2.43	16.4	AB			24.00	5.00		10.00	"	"	"	4.26	0.89	13.70	2.50	NDT	NDT			0.40			NDT	0.01			NDT	9.84						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC="; TRC ="; CC ="; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	13-Jul-09			C/281/09	7.26	3.76	23.3	UO		10.00	38.00	2.50		17.00	NC	NC	NC	7.10	NDT	0.50	1.00	NDT	NDT					NDT	0.05	0.05				16.31						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	09-Aug-09			C/325/09	7.52	0.67	17.5	UO			16.00			22.00	NC	NC	NC	5.68	NDT	0.50	1.45	0.24	NDT					NDT	0.02	NDT										Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	10-Jan-11			C/03/11	6.79	0.41	18.1	AB			42.30	0.00		20.00	NT	NT	NT	2.13	NDT	1.40	1.50	0.00	NDT	0.24	8.00		0.02	NDT	NDT	NDT	0.02									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	25-Aug-08			C/628/08	7.68	1.87	25.3	AB		7.00	18.00	0.00		13.00	NT	NT	NT			1.10	1.50	TR	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	02-Sep-09			C/351/09	7.45	3.58	25.1	UO		10.00		0.00		14.00	NC	NC	NC	5.68	NDT	0.35	1.03	0.02	NDT					0.13	0.45	0.03										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	09-Jul-10			C/351/10	6.93	2.46	16.6	AB			17.70	2.00		20.00	NT	NT	NT			0.45	0.80	0.02	1.00				NDT	0.80	0.26	0.05	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	08-Feb-11			C/75/11	7.48	1.07	17.7	AB			9.00	0.00		10.00	NT	NT	NT	2.84	0.00	0.80	0.60	NDT	NDT	0.01	16.00		0.01	0.05	NDT	0.03	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	08-Mar-11			C/120/11	7.79	0.68	20.2	AB			33.80	0.00		14.00	NT	NT	NT	3.55	NDT	4.20	8.50	0.10	30.20	--	3.00		0.03	0.72	0.07	0.00	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	04-Apr-11			C/147/11	7,34	0.01	14.6	AB			34.20	0.00		22.00	NT	NT	NT	5.68	NDT	0.60	0.80	0.01	NDT	--	NDT		NDT	0.11	0.13	0.01	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	13-May-11				6.8	1.29	15	AB			32.40	1.50		11.00	NC	NC	NC	2.84	1.00	--	--	0.01	NDT	NDT	NDT		NDT	0.06	0.01	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	02-Nov-11			C/363/11	6.69	0.4	22.2	AB		4.00	7.60	0.00		10.00	NC	NC	NC	2.13	1.00	2.80	1.60	NDT		0.01		NDT	NDT	NDT	0.00	0.14	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	15-Feb-10			C/069/10	7.53	2.57	20.6			6.00	10.00			10.00				5.99	2.50	0.40	1.50	NDT	3.00				NDT	1.49	NDT	0.00	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	10-Mar-10			C/109/10	6.90		23.5			4.00	14.00			10.00	NC	NC	NC	25.90	1.50	2.65	6.00	0.01	13.00	0.33																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	08-Apr-10			C/154/10	6.20	0.02	17.7	AB			8.00	0.00		12.00	NC	NC	NC	1.00		1.10	0.67	0.01	5.31	0.64		2.40														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	05-Aug-10			C/402/10	6.63	10.00	20.4	AB			10.00	2.50		10.00	NT	NT	NT	2.13	10.60	0.27	0.70	0.00	NDT		NDT		NDT	0.09	0.15	0.01	0.26									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=NDT; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	07-Sep-10			C/469/10	7.26	0.76	18.7	AB			58.00	0.00		17.00	NT	NT	NT	5.96	1.00	0.50	0.80	0.02	NDT	0.21			NDT	0.10	0.01	0.01	NDT		1.00							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	11-Oct-10			C/537/10	7.35	0.98	20.8	AB			26.00	0.00		19.00	NT	NT	NT	5.99	NDT	0.70	2.10	NDT	6.20	0.02	4.00	NDT	NDT	0.26	0.00	0.03	0.10		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	11-Oct-10			C/537/10	7.35	0.98	20.8	AB			26.00	0.00		19.00	NT	NT	NT	5.99	NDT	0.70	2.10	NDT	6.20	0.02	4.00	NDT	NDT	0.26	0.00	0.03	0.10		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	12-Nov-10			C/601/10	7.10	1.91	24.1	AB			23.00	0.00		10.00	NC	NC	NC	4.26	1.00	0.19	0.60	NDT	NDT	NDT		NDT	0.02	0.14	0.05	0.08	0.18									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	15-Dec-10			C/666/10	7.24	1.62	18.1	UO			45.30	0.00		14.00	NC	NC	NC	2.13	NDT	0.10	3.00	0.00	NDT	0.29		1.40	NDT	0.09	0.01	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	04-Feb-09			C/58/09	7.59	0.95	10	AB			20.00	0.00		12.00	NT	NT	NT	2.84	0.50	0.60	1.50	NDT	NDT			0.30		0.07	NDT	0.17			0.30	6.00						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	09-Mar-09			C/115/09	7.46	0.54	12	A			28.00	0.00		30.00	NT	NT	NT	4.97	NDT	0.90	1.80	NDT	NDT			NDT		0.14	0.03	0.01			0.20	8.40						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	08-Apr-09			C/144/09	7.8	1.09	25.1	A			30.00	0.00		31.00	NC	NC	NC	4.26	0.40	0.80	1.02	NDT	NDT			0.20		0.12	0.01	0.02			NDT	15.06						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	13-Jul-09			C/282/09	7.18	1.87	16.1	UO		6.00	44.00	0.00		15.00	NC	NC	NC	6.39	NDT	0.70	1.40	NDT	NDT					0.37	0.29	0.02				11.27						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	04-Jan-08			C/234/08	7.37	1.11	36.9	AB			33.00	0.00			NT	NT	NT	2.84	2.00	0.50	4.00					1.80		0.11					NDT	22.10						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	25-Apr-08			C/326/08		4.15	21	AB			22.00	7.70		13.00	NT	NT	NT	5.68	NDT	0.80	3.30	NDT	NDT			NDT		0.29	0.01	1.18			NDT	12.70						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	25-Jun-08			C/494/08	7.06	1.78	16.00				17.00	5.00		10.00	NT	NT		5.7		0.40	2.63	NDT	NDT			NDT		0.25	0.05	0.03	NDT		NDT	31.90						Odour=; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	21-Jul-08			C/557/08	7.66	0.70	22.30	AB		6.00	17.00	7.50		9.00	NT	NT	NT	5.68		1.70	10.50	NDT	NDT			NDT		0.28	0.00	NDT			NDT	13.80						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	23-Oct-08			C/782/08	8.17	1.42				18.00	30.00	0.00			NT	NT	NT		NDT	0.50	5.30	,,	,,			,,		0.15		0.01				15.20						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	18-Nov-08			C/898/08	7.35	2.32	17.2	AB		10.00	25.00	0.00		12.00	NT	NT	NT	2.84	10.00	0.70	1.60	NDT	NDT					NDT	0.03	0.01			0.30	12.90						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	DAM SURFACE WATER	260846	9909084	Reservior	26-Sep-08			C/707/08	7.51	2.32	17.7	AB		8.00	17.00	2.50		14.00	NT	NT	NT	7.10	1.00	0.70	1.10	ND	ND			1.40		0.14	0.09	0.19			0.10	10.62						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA DAM OUTLET	258994	9908048	Reservior	18-Aug-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	The water has high smell. This could be due to bacterial reduction of sulphates under anaerobic conditions that can produce hydrogen sulphide, which is an objectionable gas smelling of bad eggs. The odour rapidly disappears with effective aeration.	C/293/11	6.85	29.6	26.3	AB		6.00	12.40	7.50		14.00	NT	NT	NT	2.13	NDT	0.98	1.20	NDT	NDT	NDT	3.00		NDT	2.57	0.93	0.06	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	THIKA DAM OUTLET	258994	9908048	Reservior	19-Oct-11			C/346/11	6.5	2.95	29.6	AB		12.00		2.50		22.00	NC	NC	NC	10.00	1.00	2.20	1.00	NDT		0.06			NDT	0.79	0.09	0.02	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	THIKA DAM OUTLET	258994	9908048	Reservior	18-Aug-11			C/289/11	6.95	1.41	26.9	AB		6.00	15.20	0.00		17.00	NT	NT	NT	1.42	NDT	0.90	0.12	NDT	NDT	NDT	4.00		0.00	0.44	0.49	0.37	0.06									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA DAM OUTLET	258994	9908048	Reservior	19-Oct-11			C/342/11	7.22	0.9	28.7	AB		12.00		2.50		20.00	NC	NC	NC	10.00	NDT	2.20	1.25	NDT		0.06			NDT	0.08	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	THIKA DAM OUTLET	258994	9908048	Reservior	12-Nov-10			C/603/10	7.02	2.74	14.6	AB			14.70	0.00		15.00	NC	NC	NC	2.84	5.00	0.47	0.50	NDT	NDT	NDT		NDT	0.02	0.40	0.03	0.16	0.07									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	10-Jan-11	Tea farming is the main activity in the catchment; Small scale individual horticulture, coffee; Small scale husbandry (cultivation and breeding of crops and animals)	This source is the main inflow to the dam (about half of the total). There is also flow measuring guage at this station.	C/01/11	6.75	1.04	43.7	AB			50.20	0.00		19.00	NT	NT	NT	2.84	NDT	1.40	1.50	0.00	NDT	NDT	10.00		0.01	NDT	NDT	NDT	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=NDT; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	08-Mar-11			C/72/11	7.6	3.18	29.4	AB			22.10	0.00		15.00	NT	NT	NT	2.84	6.00	1.40	0.80	NDT	0.01	NDT	26.00		0.01	0.24	0.08	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	08-Feb-11			C/124/11	7.47	0.63	43.1	AB			14.90	0.00		19.00	NT	NT	NT	3.55	1.00	3.00	1.50	0.00	12.80	NDT	11.00		NDT	0.40	0.04	NDT	0.22									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	02-Sep-09			C/350/09	7.41	2.46	33.3	UO		8.00		0.00		22.00	NC	NC	NC	4.97	NDT	0.45	1.05	0.01	0.20					0.07	NDT	0.01										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	23-Oct-08			C/780/08	8.11	1.49				20.00	40.00	0.00			NT	NT	NT		7.90	0.70	4.50	,,	,,			0.20		0.16		NDT				12.90						Odour=; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	21-Jul-08			C/555/08	7.84	0.78	24.90	AB		14.00	22.00	10.00		25.00	NT	NT	NT	7.10		2.00	12.50	NDT	NDT			0.60		0.69	0.00	NDT			NDT	46.50						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	02-Nov-11			C/359/11	6.83	7.59	37.1	AB		6.00	7.40	5.00		11.00	NC	NC	NC	2.13	NDT	2.80	1.30	NDT		0.01		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	09-Jul-10			C/350/10	7.06	1.09	18.4	AB			20.30	2.00		22.00	NT	NT	NT			0.45	0.90	0.02	0.00				NDT	0.20	0.02	0.05	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	04-Apr-11			C/148/11	7.5	1.22	19.8	AB			15.00	0.00		20.00	NT	NT	NT	3.55	32.00	0.80	0.80	0.00	4.40	--	15.00		NDT	0.01	0.07	0.04	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	13-May-11				6.8	12.8	11.9	AB			14.40	1.50		10.00	NC	NC	NC	2.84	9.00	--	--	NDT	NDT	NDT	NDT		0.00	0.05	NDT	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn=NDT ; Si=NDT; Cu=; Zn=; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	18-Aug-11			C/292/11	7.21	6.28	19.1	AB		6.00	16.90	0.00		11.00	NT	NT	NT	2.13	NDT	0.78	0.15	NDT	NDT	NDT	4.00		NDT	0.28	0.03	0.06	0.15									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	19-Oct-11			C/343/11	7.07	1.73	28.4	AB		8.00		2.50		13.00	NC	NC	NC	8.00	NDT	2.60	1.25	NDT		0.04			NDT	0.14	0.00	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	15-Feb-10			C/067/10	7.89	1.46	33.9			6.00	28.00			20.00				4.99	0.60	0.43	1.80	0.05	NDT				NDT	1.52	0.00	0.00	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	10-Mar-10			C/113/10	6.80		20.5			4.00	10.00			10.00	NC	NC	NC	23.90	3.20	0.60	0.80	0.02	13.00	0.34																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	08-Apr-10			C/153/10	6.20	0.96	15.4	AB			6.00	0.00		10.00	NC	NC	NC	1.00		1.00	0.42	0.01	3.98	0.42		2.30														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	05-Aug-10			C/400/10	7.36	14.00	22.4	AB			12.00	2.50		14.00	NT	NT	NT	1.42	4.72	0.27	0.80	TR	TR		0.10		0.01	0.41	0.00	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =TR; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	11-Oct-10			C534/10	7.39	4.51	25.6	AB			38.00	0.00		15.00	NT	NT	NT	3.99	NDT	0.90	1.80	NDT	5.80	NDT	12.00	NDT	NDT	0.30	0.26	0.06	0.14		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=NDT
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	15-Dec-10			C/664/10	7.34	1.52	12.8	UO			47.80	0.00		16.00	NC	NC	NC	2.13	NDT	0.10	2.50	0.00	NDT	0.73		0.70	0.00	0.12	NDT	NDT	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =NDT; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	04-Feb-10			C/60/09	7.55	1.55	12	AB			16.00	1.50		18.00	NT	NT	NT	2.84	1.10	0.80	1.60	NDT	NDT			2.00		0.17	0.01	0.01			0.20	7.20						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	09-Mar-09			C/116/09	7.47	0.79	21	A			32.00	0.00		35.00	NT	NT	NT	3.55	NDT	1.00	1.80	NDT	NDT			NDT		0.11	NDT	NDT			0.40	14.70						Odour=A; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	08-Apr-09			C/146/09	7.68	0.54	36.6	A			28.00	0.00		33.00	NC	NC	NC	4.97	0.40	1.50	1.70	NDT	NDT			NDT		0.16	0.01	0.02			NDT	21.96						Odour=A; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	13-Jul-09			C/286/09	7.35	0.76	24	UO		8.00	45.00	0.00		20.00	NC	NC	NC	5.68	NDT	0.60	1.20	NDT	NDT					NDT	0.07	0.05				16.80						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	09-Aug-09			C/327/09	7.12	0.45	25.6	UO			24.00			24.00	NC	NC	NC	5.68	NDT	0.60	1.65	0.05	2.00					0.09	NDT	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	04-Jan-08			C/236/08	7.35	2.77	58.8	AB			20.00	5.00			NT	NT	NT	5.68	0.50	0.90	2.10					0.10		0.26					2.70	35.30						Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	25-Apr-08			C/328/08		6.27	12.4	AB			25.00	5.00		9.00	NT	NT	NT	4.26	NDT	0.30	1.60	TR				NDT		NDT	NDT	0.04			0.20	8.40						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	14-May-08			C/364/08	7.29	4.3	19.6	AB			23.00	5.00		14.00	"	"	"	3.55	"	0.80	0.80	TR	NDT			0.10			NDT	NDT			NDT	11.80						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	25-Jun-08			C/492/08	6.92	2.34	20.30				18.00	5.00		14.00	NT	NT		2.84		0.43	2.63	NDT	NDT			NDT		0.15	0.02	0.03	NDT		NDT	12.20						Odour=; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=NDT
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	25-Aug-08			C/631/08	7.63	2.79	21.60	AB		7.00	20.00	0.00		15.00	NT	NT	NT			0.50	1.50	TR				NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	18-Nov-08			C/896/08	7.30	1.92	17.1	AB		10.00	24.00	0.00		12.00	NT	NT	NT	2.84	8.50	0.30	1.10	NDT	NDT					0.39	0.01	0.03			0.40	12.80						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	07-Sep-10			C/474/10	7.26	1.50	24.0	AB			13.00	0.00		120.0	NT	NT	NT	1.99	NDT	0.60	0.85	0.03	1.00	0.21			NDT	0.17	0.31	0.01	0.04		1.00							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	THIKA	THIKA RIVER	256309	9910871	River/stream	26-Sep-08			C/705/08	7.38	1.59	26.1	AB		7.00	23.00	2.50		15.00	NT	NT	NT	7.10	1.00	0.80	1.00	ND	ND			1.20		0.23	NDT	0.01			0.10	15.66						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =ND; NO3 =ND; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	25-Aug-08	It is within the City and the catchment is mainly residnetial areas	The Impoundment is populated with algea and weeds which is an indication of high nutrient (eutriphication). High amount of disinfection will be required for this kind of source as algea will cause different impact based on the species of algea.	C/629/08	7.67	3.36	34.7	AB		8.00	19.00	0.00		17.00	NT	NT	NT			1.60	3.25	TR	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	02-Aug-10			C/395/10	7.36	51.00	270.0	AB			38.00	2.50		51.00	1.50	1.80	0.30	35.50	NDT	4.45	16.50	0.00	0.05		9.20		0.01	0.00	0.01	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=1.5; TRC =1.8; CC =0.3; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	13-Feb-11			C/88/11	8.62	0.61	243	AB			93.30	0.00		54.00	NT	NT	NT	35.50	0.00	9.20	17.50	3.80	NDT	0.24	38.00		0.02	0.10	0.08	NDT	0.04									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	16-Mar-10			C/122/10	7.20		305.0			24.00	20.00			32.00	NC	NC	NC	19.90	1.50	5.80	22.20	0.63	11.00	0.23																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	20-Jul-09			C/299/09	6.74	0.08	224	UO		28.00	58.00	0.00		50.00	NC	NC	NC	47.57	0.60	6.40	2.80	NDT	NDT					0.05	NDT	NDT				156.8						Odour=UO; Deposite =ABS; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	24-Sep-09			C/362/09	7.2	1.24	233	UO				0.00			NC	NC	NC	44.73	6.00	5.75	4.46	0.47	27.00					0.11	0.02	0.05										Odour=UO; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	06-Oct-10			C/511/10	7.20	0.08	72.1	AB			60.20	0.00		51.00	NT	NT	NT	7.99	NDT	8.00	28.38	0.05	20.20	0.07	8.00	NDT	NDT	NDT	0.01	0.07	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	29-Feb-08			C/167/08	7.60	0.26	230.0				60.00	0.00		26.00	1.30	1.40	0.10	30.00	2.80	0.35	7.50	NDT	ABST			0.50							NDT	153.0						Odour=; Deposite =AB; Alka_Phe =AB; FRC=1.3; TRC =1.4; CC =0.1; SO4=; NO2 =NDT; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	16-Apr-08			C/304/07	6.64	1.92	258.00	AB			76.00	2.50						4.97	5.60	6.40	45.00					NDT		0.10					NDT	154.8						Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	14-Jan-08			C/44/08	6.50	0.50	256.00					0.00			NC	NC	NC		0.10																					Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	13-Dec-10			C/659/10	7.65	0.04	297	UO			71.80	0.00		50.00	NC	NC	NC	38.34	4.00	0.20	11.00	0.01	NDT	NDT		2.40	0.02	NDT	0.02	0.04	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	13-Dec-10			C/660/10	7.47	0.17	282.0	UO			77.40	0.00		50.00	NC	NC	NC	28.40	NDT	1.20	22.00	0.01	NDT	NDT		0.70	NDT	0.06	0.03	0.00	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	18-Oct-11			C/336/11	6.8	1.5	316	AB		40.00		2.50		65.00	NC	NC	NC	5.60	0.00	8.80	28.70	NDT		0.52			NDT	NDT	0.00	0.49	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	05-Feb-11			C/65/11	8.09	1.24	275	AB			85.90	0.00		46.00	0.90	1.00	0.10	36.92	0.00	9.40	15.00	NDT	0.01	0.55	16.00		NDT	NDT	0.01	0.01	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=0.9; TRC =1; CC =0.1; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	14-Feb-11			C/89/11	7.4	0.38	253	AB			76.80	0.00		48.00	1.50	1.80	0.30	35.50	NDT	9.40	18.00	NDT	NDT	0.47	32.00		0.02	0.10	0.04	NDT	0.40									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=1.5; TRC =1.8; CC =0.3; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	23-Dec-11			C/426/11	7.38	1.5	332	AB		44.00	42.40	0.00		49.00	NC	NC	NC	32.00		8.50	26.50				20.00	0.20	NDT	0.06	0.01	0.06	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	15-Feb-10			C/086/10	8.49		279			24.00				70.00				69.90	1.60	32.00		NDT					NDT	2.54	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	05-Nov-11			C/571/10	7.68	0.88	278.0	AB			64.20	0.00		52.00	0.20	0.30	0.10	35.50	3.00	3.40	11.00	0.05	NDT	0.06		NDT	NDT	0.08	0.08	0.03	0.13									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=0.2; TRC =0.3; CC =0.1; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Station_Type	Sampling_Date	Landuse_Activties	Remark	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	30-Mar-09			C/13509	6.32	1.06	283	AB			50.00	0.00		52.00	NT	NT	NT		1.70			0.00	NDT			NDT		0.05	0.02	0.01				169.8						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	07-Aug-09			C/320/09	7.27	0.28	225	UO			74.00			17.00	NC	NC	NC	48.28	0.20	5.75	13.00	NDT	NDT					0.01	0.02	0.02										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	11-Jun-08			C/824/08	6.70	0.35	245	AB		20.00	48.00	2.00		45.00	1.10	1.20	0.10	7.81	14.00	4.40	15.70	NDT	NDT					0.08	0.03	0.03			0.10	183.7						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=1.1; TRC =1.2; CC =0.1; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	11-Aug-08			C/849/08	6.40	0.41	244	AB		30.00	65.00	0.00		50.00	1.00	1.10	0.10	7.10	10.20	13.90	17.10	NDT	NDT					1.37	0.03	0.13			NDT	183.0						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=1; TRC =1.1; CC =0.1; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	15-Apr-10			C/176/10	6.00	0.07	274.0	AB			46.00	0.00		190.0	NC	NC	NC	1.00		11.40	31.00	0.06	15.49	0.28		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	18-Jan-11			C/24/11	6.58	1.17	262	AB			56.80	0.00		52.00	NT	NT	NT	37.63	NDT	9.80	30.60	0.01	NDT	0.14	21.00		0.01	NDT	NDT	0.02	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	30-Apr-11			C/177/11	--	0.02	260	AB			88.20	0.00		50.00	NT	NT	NT	29.82	2.00	18.40	28.60	NDT	0.40	--	8.00		NDT	0.06	0.01	0.05	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	07-Aug-11			C/261/11	7.45	0.85	217	AB		12.00	93.80	0.00		82.00	NT	NT	NT	17.04	1.00	5.24	3.66	NDT	NDT	NDT	8.00		NDT	0.01	0.05	0.02	0.08									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	23-May-08			C/394/08	6.3		249	AB			90.00	0.00		24.00	NC	NC	NC	29.80	2.48	9.20	32.50	NDT	NDT			NDT		0.04	0.00	0.01				149.4						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	02-Dec-11			C/401/11	8.06	0.81	273	AB		40.00	29.40	0.00		63.00	NC	NC	NC	52.00		8.50	25.00				16.00	NDT	NDT	NDT	NDT	0.00	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	02-Dec-11			C/402/11	8.09	0.92	288	AB		36.00	28.40	0.00		58.00	NC	NC	NC	52.00		4.00	8.00				15.00	NDT	0.00	NDT	0.02	0.00	0.07									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	14-Sep-11			C/304/11	6.39	0.44	314	AB		40.00	82.40	0.00		63.00	NC	NC	NC	34.08	3.00	7.40	29.00	NDT	NDT	0.29	1.00	0.30	NDT	NDT	0.16	NDT	0.02									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=NDT; Zn=NDT; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	15-Nov-11			C/389/11	6.66	1.58	289	AB		36.00	45.80	0.00		52.00	NC	NC	NC	26.98	26.50	7.50	29.00	NDT		0.09		NDT	NDT	0.04	0.01	0.13	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	19-Jul-10			C/378/10	7.52	0.42	248.0	AB			77.00	0.00		55.00	NC	NC	NC			4.60	14.00	0.02	12.00				NDT	NDT	0.01	0.07	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	21-Apr-09			C/174/09	7.26	1.07	290	AB			35.00	0.00		30.00	NC	NC	NC	46.15	2.00	7.83	27.10	0.01	T			NDT		NDT	0.06	NDT			NDT	174.0						Odour=AB ; Deposite =; Alka_Phe =0; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; Cu=; Zn=NDT; Pb =; COD=NDT
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	11-Jun-08			C/830/08	6.70	0.65	237	AB		20.00	51.00	0.00		45.00	NT	NT	NT	35.50	28.60	4.30	5.50	NDT	NDT					NDT	0.08	0.09			0.20	177.7						Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	26-Mar-10			C/139/10	6.00		419.0			36.00	53.00			62.00	NC	NC	NC	74.80		5.78	26.70	0.05	0.30	0.33																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	26-Mar-10			C/140/10	6.00		383.0			38.00	70.00			50.00	NC	NC	NC	72.90		7.54	24.10	0.02	0.70	0.25																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	02-Dec-11			C/400/11	8.08	0.79	264	AB		8.00	30.20	0.00		65.00	NC	NC	NC	5.00		3.80	3.00				16.00	NDT	NDT	NDT	0.01	0.01	0.04									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=NDT; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	11-Feb-09			C/89/09	6.3	0.65	243	AB			49.00	0.00		50.00	NC	NC	NC	34.00	1.70	6.20	22.50	NDT	NDT					NDT	0.01	0.22			0.10	145.8						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	16-Apr-08			C/307/08	6.21	2.79	89.20	AB			52.00	2.50							7.40	1.40	16.70					1.70		NDT						53.50						Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KIKUYU SPRING-RAW WATER	240691	9861804	Spring	29-Feb-08			C/171/08	7.28	0.98	258.0				55.00	0.00		27.00	NT	NT	NT	31.00	1.00	0.60	7.50	NDT	ABST			1.00							NDT	171.0						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =AB; F=; Mn= ; Si=; Cu=; Zn=; Pb =; COD=NDT

Key

FRC	Free Residual Chlorine	NDT	lot Detected
TRC	Total Residual Chlorine	AB	Absent
CC	Combined Chlorine	AB	Nill
PV	Permanaganate Value	TR	Trace
		P	Present
		NT	lot Treated
		UO	Presence of material is Un-Objectionable
		NC	ɔt chlorinated

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Treatment	NGETHU	MATARAA INTAKE			21-Jul-08	C/561/08	7.56	2.11	45.60	AB	AB	12.00	21.00	10	AB	10.00	NT	NT	NT	4.97		2.2	11.5	NDT	NDT			3.50		0.75	0.00	NDT			0.30	13.30						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =;
Treatment	NGETHU	MATARAA INTAKE			07-Aug-11	C/263/11	7.81	2.37	32.4	AB	P	8	29.9	0	AB	30	NT	NT	NT	1.42	NDT	0.69	4.8	NDT	NDT	0.5	NDT		NDT	0.13	0.11	0.12	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; PV = ; Cu=NDT;
Treatment	NGETHU	NGETHU TREATED WATER	266672	9897653	07-Aug-11	C/262/11	7.73	2.81	33.1	AB	P	8	34.2	1.5	AB	30	NT	NT	NT	1.42	NDT	0.68	3.5	NDT	NDT	0.13	NDT		NDT	0.03	0.04	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; PV = ; Cu=NDT;
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	11-Feb-08	C/199/08	7.32	3.47	109.2				25.0	70	AB	30.0	N/A	N/A	N/A	3.55																						Odour=; Deposite =; Alka_Phe =AB; FRC=N/A; TRC =N/A; CC =N/A; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	15-Feb-10	C/095/10																												0.5								Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	11-Mar-10	C/115/10			64.6				8.0			15.0	NC	NC	NC	19.90				0.31	0.50	0.51																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	06-Apr-10	C/142/10	--	--	--	---	--			--	--	--	--	--	---	--		--	--	--	--	--		--														Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = --; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	18-Feb-09	C/92/09																																				Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	19-Mar-09	C/134/09											NC	NC	NC																							Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	15-Apr-09	C/158/09	8.15																	NDT											147	534						Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	23-Jun-09	C/302/09	7.63	-	-				40	0	AB	-				-	-	1.1	5.1	NDT	NDT					-	-	-										Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=-; NO2 =NDT; NO3 =NDT; F=; Mn=- ; Si=; PV = ; Cu=; Zn=-; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	11-Aug-09	C/329/09	7.26	-	59.9				30		AB					19				<0.5	<2.5			19.6							200		40					Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =<0.5; NO3 =<2.5; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	06-Feb-08	C/79/08	7.34	37.10	54.1				15	15	AB	20.0				10.65				NDT	NDT			3.00							NDT	36.0						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	04-Sep-08	C/276/08	8.03		61.30	AB	AB		36.0	0			NT	NT	NT	3.55	54.1									0.16					NDT							Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	11-Jul-08	C/841/08	7.25	420	32	AB	P	8	20	0	AB	30	NT	NT	NT	4.26	NDT	2	5.2	NDT	NDT					0.07	0.03	0.18			NDT	324						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =;
Treatment	NGETHU	NGETHU BACKWASH	266672	9897653	29-May-08	C/421/08	7.14	516.0	56.8		AB		29.0	75	AB	29.0	NT	NT		4.26		1.0	3.5	NDT	NDT			0.40		0.0	NDT	0.1	NDT		NDT	34.1						Odour=; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT;
Treatment	NGETHU	NGETHU DOWNSTREAM	266672	9897653	10-Nov-11	C/375/11	6.84	974	--	AB	P	--	--	225	AB	12	NC	NC	NC	--	--	--	--	--		--		--	--	--	--	--	--									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	10-Feb-11	C/77/11	7.58	1.66	43.5	AB	AB		32.5	0	AB	25	NT	NT	NT	2.84	1	1.8	1.6	NDT	0.01	0.04	NDT		NDT	0.28	0.01	NDT	0.24									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	18-Feb-11	C/95/11	7.69	1.02	89	AB	AB		35.4	0	AB	26	NT	NT	NT	4.26	4	3.6	3.1	8.6	NDT	0.25	10		0.05	0.23	0.01	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=10; PV = ; Cu=; Zn=NDT; Pb
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	06-Apr-11	C/164/11	7.28	0.12	42.3	AB	AB		34.3	0	AB	38	NT	NT	NT	2.84	22	10.5	2	0.006	5.9	--	NDT		__	0.3	0.11	0.01	0.09									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	26-Apr-11	C/171/11	7.3	0.44	41.6	AB	P		34.6	0	AB	35	NT	NT	NT	7.1	NDT	3.5	2	0.006	1.6	--	NDT		NDT	0.24	0.08	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	30-May-11		8.55	3.5	42.4	AB	P		--	1.5	AB	--	NC	TR	NC	4.26	5	--	--	NDT	NDT	0.6	NDT		NDT	0.06	0.02	NDT	0.09									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =TR; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; PV = ; Cu=NDT;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	19-Sep-11	C/323/11	7.34	1.8	65.5	AB	P	12	26.8	0	AB	35	NC	NC	NC	1.42	7	1.4	5.2	NDT	NDT		2	0.1	NDT	0.26	0.01	0	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	06-Oct-11	C/327/11	7.44	0.38	75.1	AB	P	12		15	AB	35	NC	NC	NC	6	7	2.8	8.5	NDT		0.14			NDT	0.02	0.01	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	07-Nov-11	C/365/11	6.72	28.3	47.2	AB	P	10	16.6	15	AB	17	1.2	1.4	0.2	2.13	8	1.4	6.2	NDT		0.18		NDT	NDT	0.74	NDT	0	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=1.2; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	20-Jul-10	C/381/10	7.52	2.72	54.0	AB	AB		38.4	0	AB	32.0	NT	NT	NT			__	__	--	--				NDT	0.35	NDT	0.11	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	01-Nov-10	C/561/10	7.16	5.07	45.0	AB	P		35.0	0	AB	30.0	NT	NT	NT		2.0	0.60	3.0	0.048	NDT	NDT		NDT	NDT	0.300	0.300	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; PV = NDT; Cu=NDT;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	25-Nov-10	C/625/10	7.69	0.78	41.2	UO	P		30.4	0	AB	33.0	NT	NT	NT	3.55	NDT	0.2	4.0	3.55	NDT	0.15		NDT	NDT	0.297	0.022		NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	23-Jul-09	C/303/09	7.02	2.86	55.6	UO	AB		44	0	AB	42	NC	NC	NC	7.1	1.2	1.15	4.6	NDT	NDT					0.33	NDT	NDT				38.9						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT;
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	13-Aug-09	C/337/09	7.51	1.5	56.8	UO	AB		34		AB	45	NC	NC	NC	7.1	NDT	3.7	1.4	NDT	NDT					0.15	NDT	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=;
Treatment	NGETHU	NGETHU TREATED WATER	266672	9897653	06-Oct-11	C/328/11	6.96	161	50.1	AB	AB	8		2.5	AB	30	2	2.2	0.2	6	2	3.9	5.25	NDT		0.09			NDT	NDT	0.01	0.02	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	NGETHU	NGETHU TREATED WATER	266672	9897653	19-Sep-11	C/324/11	7.48	0.42	81.3	AB	AB	12	33.8	0	AB	37				1.42	4	1.7	9.5	NDT	NDT		2	NDT	NDT	NDT	0.14	0.01	0.02									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =;
Treatment	NGETHU	NGETHU TREATED WATER	266672	9897653	07-Nov-11	C/366/11	7.28	1.35	66.7	AB	P	10	17.2	0	AB	17	NC	NC	NC	2.13	8	1.8	8.7	NDT		0.11		NDT	NDT	0.01	0.01	0	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	10-Nov-11	C/374/11	7.1	10.8	--	AB	P	--	--	5	AB	32	NC	NC	NC	--	--	--	--	--		--		--	--	--	--	--	--									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	09-Sep-10	C/484/10	8.09	0.22	46.20	AB	AB		37.00	0.0	AB	25.0	NT	NT	NT	7.95	3.00	1.00	3.00	0.01	3.00	0.59			0.01	0.10	0.034	0.19	0.04		2.00							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	NGETHU	NGETHU RAW WATER	266672	9897653	04-Oct-10	C/508/10	-	0.92	49.8	AB	AB		33.9	0	AB	29.0	NT	NT	NT	7.99	NDT	2.10	3.50	0.02	10.30	NDT	11.0	NDT	0.0	0.27	NDT	0.010	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=;
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	15-Jan-08	C/21/08	7.54	9.45	73.8		AB			150			NT	NT	NT	4.26	0.6	0.8	7.5	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	08-Nov-11	C/373/11	6.36	142	78.7	AB	P	12	22.7	60	AB	36	NC	NC	NC	5.68	4	2.2	5.2	NDT		NDT		0.25	0	NDT	0.08	0.1	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT;
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	15-Apr-09	C/155/09	7.85	5.43	53.4	AB			32	2.5	0	30	NC	NC	NC	4.26	0.5	0.8	6.3	NDT				NDT		0.25	0.01	0.02			NDT	32						Odour=AB; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	08-Nov-11	C/372/11	6.86	9.46	54.5	AB	P	12	18.9	5	AB	35	NC	NC	NC	2.84	5	1.8	3.8	NDT		0.2		NDT	NDT	0.73	NDT	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT;
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	06-Dec-11	C/405/11	7.53	163	65	AB	P	12	21.4	85	AB	12	NC	NC	NC	10		4	2.8				20	0.3	0	0.04	0.77	0.1	0.05									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	15-Feb-10	C/091/10						26																						0.67								Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	17-Mar-10	C/130/10	7.00										NC	NC	NC					0.02	13.00	0.25																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	12-Apr-10	C/169/10			96.7	AB	AB		30.0		--	--	--	--	--	--		--	--	--	--	--		--														Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	23-Feb-09	C/95/09																																				Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	06-Mar-09	C/109/09											NC	NC	NC																							Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	15-Apr-09	C/157/09	7.86																	NDT	NDT										43.2	356						Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	17-Jul-09	C/297/09	7.6	-	-			-	70	0	AB	-				-	-	1.05	1.6	NDT	NDT					-	-	-										Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	13-Aug-09	C/335/09	7.68		46.5		P		30		AB		NC	NC	NC	16			3	<0.5	<2.5			93.5							640		70					Odour=; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =<0.5; NO3 =<2.5; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	08-Feb-08	C/81/08	6.65	481.0	68.9				20.0	0	AB	18.0				3.55				NDT	NDT										NDT	45.9						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Treatment	SASUMUA	SASUMUA BALANCING TANK	242289	9916012	22-Sep-11	C/322/11	7.42	0.65	104	AB	P	12	29.7	0	AB	40	0.2	0.3	0.1	2.84	NDT	2.4	12	NDT	NDT		7	NDT	0.01	0.02	0.04	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb
Treatment	SASUMUA	SASUMUA BALANCING TANK	242289	9916012	24-Oct-11	C/358/11	7.09	1.22	85.7	AB	AB	16		0	AB	45		0.05	0.15	9	9	3.4	10	NDT		0.2			NDT	NDT	0.03	0.14	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	SASUMUA	SASUMUA BALANCING TANK	242289	9916012	06-Dec-11	C/403/11	7.65	0.12	128	AB	AB	44	27.2	0	AB	53	1.5	1.7	0.2	10		8.5	24.5				2	NDT	NDT	0.07	0.01	0.02	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	22-Sep-11	C/321/11	7.4	4.65	86.2	AB	P	24	49.2	0	AB	58	NC	NC	NC	2.13	8	2	4.2	NDT	NDT	0.35	3	0.2	NDT	0.49	0.02	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	24-Oct-11	C/357/11	6.86	2.77	61	AB	P	16		2.5	AB	38	NC	NC	NC	10	1	3.35	3.5	NDT		0.05			NDT	0.67	0.13	0.14	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	06-Dec-11	C/404/11	7.83	5.69	61	AB	P	16	20	2.5	AB	25	NC	NC	NC	6		4.1	10				2	NDT	0	1	0.02	0.01	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT;
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	06-Mar-09	C/111/09	7.3	0.99	51	AB	P		35	0	AB	28	NC	NC	NC	3.55	NDT	1.4	3	NDT	NDT			0.1		0.07	0.01	NDT			NDT	35.7						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT;
Treatment	SASUMUA	SASUMUA TREATED TANK	242289	9916012	08-Nov-11	C/371/11	6.93	0.42	99.8	AB	AB	10	28.3	0	AB	45	NC	NC	NC	3.55	NDT	2.6	10	NDT		0.05		NDT	1.01	NDT	0.01	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT;
Treatment	SASUMUA	SASUMUA BACKWASH	242289	9916012	13-Nov-08	C/872/08	7.08	38.9	49.2	AB	P	18	40	10	AB	18	AB	AB	AB	5.68	4.9	1.2	10.1	NDT	NDT					0.29	0.01	0.07			0.3	36.9						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =;
Treatment	SASUMUA	SASUMUA RAW WATER	242289	9916012	24-Sep-08	C/703/08	7.47	19.5	48.3	AB	P	18	27	2.5	AB	25	NT	NT	NT	7.81	0.2	1.4	1.7	ND	ND			NDT		0.61	NDT	0.02			0.1	29						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =ND; NO3 =ND; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=;
Treatment	SASUMUA	SAUMUA BACKWASH	242289	9916012	14-Jan-09	C/27/09	7.5	151	104	AB	P		42	0	AB	34	NT	NT	NT	6.39				NDT	NDT			0.2		0.3	1.36	0.02	NDT		0.1	78						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT;
Treatment	SASUMUA	SAUMUA BACKWASH	242289	9916012	17-Oct-08	C/743/08	8.06	37.7			P	14	24	10			AB	AB	AB		4.3	0.8	0.8	NDT	NDT			0.8		0.75		0.02				35						Odour=; Deposite =P; Alka_Phe =; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	24-Oct-11	C/355/11	7.21	30.7	69.4	AB	P	16		15	AB	30				10	5	3.7	7.5	NDT		0.26			NDT	0.15	0.26	0.04	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	13-Sep-11	C/302/11	7.34	0.27	66.3	AB	AB	8	29.2	0	AB	37	0.6	0.8	0.2	4.26	2	2.8	9.5	NDT	NDT	NDT	20	NDT	NDT	0.02	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT;
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	17-Oct-08	C/755/08	8.17	0.02			P	8	17	0			AB	AB	AB		12.1	1.4	6.4	NDT	NDT			0.9		NDT		0.04				37.5						Odour=; Deposite =P; Alka_Phe =; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	20-Nov-11	C/393/11	7.51	7.2	139	AB	AB	8	93.1	0	AB	67	2	2.2	0.2	8.52	3	4	6	NDT		NDT		NDT	NDT	0.27	0.03	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	13-Mar-10	C/118/10			169.5				35.0			30.0	NC	NC	NC	27.9				0.02	0.40	0.3																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	19-Apr-10	C/199/10	--	--	--	AB	AB			0	--	--	AB	AB	AB	--		--	--	--	--	--		--														Odour=AB; Deposite =AB; Alka_Phe =; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	11-Nov-08	C/864/08	7.99			AB	P	12	24	0	AB	28	0.2	0.3	0.1	5.68	13.9	1.2	11.2	NDT	NDT					NDT	0.02	0.05			NDT	132						Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =;
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	19-Jan-09	C/29/09	7.53	36.4	69.6	AB	AB		16	0	AB	24	0.8	1.2	0.4	7.81				NDT	NDT			0.4		NDT	0.68	0	NDT		0.1	52.2						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =0.4; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT;
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	17-Feb-09	C/91/09																																				Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	10-Mar-09	C/117/09											NC	NC	NC																							Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	20-Apr-09	C/166/09	7.86																	NDT											135	166						Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	15-Jan-08	C/12/08	7.37	2.40			AB			0			NC	NC	NC	9.23	0.1	0.5	10.9	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE BACKWASH	250296	9860544	02-Jun-08	C/80/08	7.33	1.29	84.6				10	2.5	AB	25.0				7.10	1.3			NDT	NDT			0.50							NDT	56.4						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Treatment	WESTERN	KABETE DOWNSTREAM	250296	9860544	15-Feb-10	C/065/10	7.55		49.9			20	22			20				8.99	17.4	0.1	0.1	0.093	NDT				NDT	1.28	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	17-Oct-11	C/332/11	7.23	2.15	77.4	AB	AB	12		0	AB	30	1	1.2	0.2	14	6	3.8	9.5	NDT		0.18			NDT	0.26	0.02	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT;
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	08-Nov-11	C/370/11	7.3	0.54	99.5	AB	AB	8	19	0	AB	24	1.4	1.6	0.2	4.26	2	3	10	NDT		NDT		NDT	0.01	NDT	0.01	0.01	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT;
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	14-Dec-11	C/409/11	7.42	0.15	110	AB	AB	6	12.4	0	AB	21	1.2	1.5	0.3	6		4	5.5				15	NDT	NDT	0.12	0	0.01	0.02									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	30-Jul-08	C/578/08	7.21	0.76	77.70	AB	AB	10.0	25.0	0	AB	34.0	1.30	1.50	0.20					NDT	NDT			3.00		0.0	NDT	NDT										Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =;
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	18-Oct-11	C/334/11	6.93	0.89	289	AB	AB	40		0	AB	60	3	3.2	0.2	48	0	8	28.1	NDT		0.2			NDT	0.04	0.01	0.49	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	18-May-08	C/378/08	7.33	1.03	187	AB	AB		85	0	AB	48	1.5	1.8	0.3	37.6	1.83	8.2	33	NDT	NDT			2.5		NDT	0.01	0.02			NDT	112						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =;
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	29-Feb-08	C/169/08	7.59	0.27	256.0		AB		57.0	0	AB	25.0	AB	AB	AB	31.00	2.0	0.4	5.5	NDT	AB			1.80							NDT	170.0						Odour=; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =AB; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	23-May-08	C/395/08	6.5		176	AB	AB		90	0	AB	30	1.2	1.3	0.1	34	1.98	9.3	33	NDT	NDT			NDT		NDT	NDT	0				105						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =;
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	14-Sep-11	C/303/11	6.67	1.01	289	AB	AB	64	29.1	0	AB	62	1.8	2	0.2	38.3	1	7.4	29	NDT	NDT	0.02	19	NDT	NDT	0.01	0.18	0.01	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb
Treatment	WESTERN	KIKUYU SPRING TREATED TANK2	240736	9861800	21-Sep-08	C/683/08	6.98	0.4	255	AB	AB	12	32	0	AB	30	1.5	1.8	0.3	7.1	1.75	1.2	5.3	ND	ND			NDT		0.14	0.02	0.21			NDT	42.1						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =;
Treatment	WESTERN	KIKUYU SPRING TREATED TANK1	240335	9861882	18-Oct-11	C/335/11	6.23	1.92	263	AB	AB	34		0	AB	53	2	2.2	0.2	5	1	7.4	25	NDT		0.15			NDT	NDT	0	0.2	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	02-Aug-10	C/396/10	7.36	46.00	276.0	AB	P		36.0	0.0	AB	46.0	NT	NT	NT	35.50	NDT	4.60	16.70	NDT	NDT		9.1		0	0.08	0.33	0.04	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	15-Jan-08	C/45/08	7.94	0.34	242.0		AB			0			NT	NT	NT		0.1																					Odour=; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	30-Apr-11	C/178/11	--	0.11	237	AB	P		83.6	0	AB	53	0.8	1	0.2	36.9	NDT	17.5	26.6	NDT	14.5	--	4		0.01	0.08	0.03	0.06	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	18-Jan-11	C/25/11	6.69	0.58	263	AB	P		54.2	0	AB	30	0.8	1	0.2	37.6	1	9.8	31.2	0.006	3.1	1.22	22		0.01	0.29	NDT	0.01	0.01									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 1	240335	9861882	27-Sep-11	C/326/11	6.16	0.17	245	AB	AB	48	84	0	AB	54	AB	AB	AB	27	2.8	7.6	30	NDT	NDT	0.19	3	NDT	NDT	NDT	0	0.01	0.11									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=;
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 1	240335	9861882	15-Nov-11	C/388/11	6.98	1.49	267	AB	AB	38	59.1	0	AB	59	3.5	4	0.5	34.1	28.7	7.5	29	NDT		0.04		NDT	NDT	NDT	NDT	0.05	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 1	240335	9861882	19-Jul-10	C/379/10	7.67	0.32	272.0	AB	AB		56.2	0	AB	62.0	1.50	1.80	0.30			4.6	14	0.01	18.00				NDT	0.18	0.02	0.08	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 1	240335	9861882	10-Sep-10	C/487/10	7.80	0.40	305.0	AB	AB		66.0	0.0	AB	65.0	2.00	2.20	0.20	5.96	5.00	5.9	28.20	0.01	2.00	1.07			NDT	0.23	0.023	0.03	0.04		5.0							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	20-Jul-09	C/298/09	7.5	0.09	231	UO	AB	32	56	0	AB	55	2	2.5	0.5	48.3	0.8	0.85	2	NDT	NDT					0.08	0.01	0.04				162						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	15-Nov-11	C/390/11	6.49	1.82	290	AB	AB	32	36.9	0	AB	49	2.8	3	0.2	26.9	3	7.6	28	NDT		0.2		NDT	NDT	NDT	NDT	0.04	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	16-Apr-08	C/308/08	6.28	1.47	245.0	AB	AB		23.0	2.5							5.8	1.9	11.7					0.60		0.0			0.0			147.0						Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	KIKUYU SPRING TREATED TANK 2	240736	9861800	18-Apr-08	C/309/08	6.49	1.10	80.80	AB	AB		28.0	0			AB	AB	AB		4.8	1.4	10.8					NDT		0.0			0.0			48.5						Odour=AB; Deposite =AB; Alka_Phe =; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	RUIRU 12 INLET TO KABETE TREATMENT	250296	9860544	13-Sep-11	C/300/11	7.51	0.37	53.2	AB	AB	8	32.3	0	AB	25	NC	NC	NC	2.84	NDT	2.6	6	NDT	NDT	0.05	3	0.1	0	NDT	0.01	NDT	0.01									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT;

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Treatment	WESTERN	RUIRU 12 INLET TO KABETE TREATMENT	250296	9860544	17-Oct-11	C/330/11	7.25	5.91	52.4	AB	P	8		7.5	AB	28	NC	NC	NC	10	1	3.7	5.25	NDT		0.2			NDT	0.29	0.36	0.05	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	WESTERN	RUIRU 12 INLET TO KABETE TREATMENT	250296	9860544	08-Nov-11	C/368/11	6.81	16.3	52.8	AB	P	8	14.4	7.5	AB	21	NC	NC	NC	2.84	4	2.6	5	NDT		0.07		0.25	0	0.26	NDT	0	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	13-Sep-11	C/301/11	6.92	1.34	59	AB	AB	8	30.6	0	AB	27	NC	NC	NC	2.84	2	2.8	7	NDT	NDT	NDT	NDT	0.2	NDT	NDT	0.02	0.04	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=NDT; PV = ;
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	17-Oct-11	C/331/11	7.26	4	49.8	AB	P	8		5	AB	27	NC	NC	NC	12	2	3.8	5.5	NDT		0.14			NDT	0.26	0.08	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	08-Nov-11	C/369/11	6.73	18.6	52.7	AB	P	8	10.4	10	AB	23	1.5	1.8	0.3	2.84	4	2.6	6	NDT		NDT		NDT	NDT	0.17	NDT	0	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	14-Dec-11	C/408/11	7.45	3.81	50	AB	AB	8	16.8	2.5	AB	20	NC	NC	NC	6		8.2	27.5				5	NDT	NDT	0.52	0.02	0.07	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT;
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	15-Aug-08	C/612/08	7.25	2.70	42.1	AB	P	8.0	26.0	0	AB	23.0	NT	NT	NT			1.2		NDT	NDT					1.0	0.05	0.0										Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =;
Treatment	WESTERN	RUIRU 16 INLET TO KABETE TREATMENT	250296	9860544	20-Aug-08	C/612/08	7.25	2.70	42.10		AB		26.0		AB	23.0								NDT	NDT			AB		1.0	0.2	0.0										Odour=; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Treatment	WESTERN	RUIRU 9 INLET TO KABETE TREATMENT	250296	9860544	13-Sep-11	C/299/11	7.64	0.71	55.5	AB	AB	8	30.1	0	AB	28	NC	NC	NC	2.13	1	2.6	6	NDT	NDT	0.14	4	0.2	NDT	0.02	0	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT;
Treatment	WESTERN	RUIRU 9 INLET TO KABETE TREATMENT	250296	9860544	17-Oct-11	C/329/11	7.2	3.08	55.6	AB	P	4		7.5	AB	30	NC	NC	NC	10	1	4.5	7	NDT		0.22			NDT	0.82	0.05	0.02	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT;
Treatment	WESTERN	RUIRU 9 INLET TO KABETE TREATMENT	250296	9860544	08-Nov-11	C/367/11	6.82	13.3	54.2	AB	P	8	18.9	7.5	AB	20	NC	NC	NC	2.84	3	2.6	5	NDT		0.1		NDT	NDT	0.22	0.01	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb
Treatment	WESTERN	RUIRU 9 INLET TO KABETE TREATMENT	250296	9860544	14-Dec-11	C/406/11	7.52	11.9	54	AB	P	10	17.3	5	AB	20	NC	NC	NC	8		4.7	4.5				4	NDT	NDT	0.53	0	0.01	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =;
Treatment	WESTERN	KABETE TREATED WATER	250296	9860544	15-Aug-08	C/618/08	7.09	1.36	49.4			8.0	41.0	--	AB	23	NT	NT	NT		--	1.2	9.5		AB			AB	0.01	1.03	0.42	1.15	NDT	0.03		29.64		3.2	8	--	0.01	Odour=; Deposite =; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =AB; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =NDT; COD=
Treatment	WESTERN	RUIRU 12 INLET TO KABETE TREATMENT	250296	9860544	14-Dec-11	C/407/11	7.54	4.08	51	AB	P	4	16.5	2.5	AB	26	NC	NC	NC	8		4.5	4.7				4	NDT	0	0.54	0	0.04	0.04									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=

Key

FRC	Free Residual Chlorine	NDT	ɴot Detected
TRC	Total Residual Chlorine	AB	Absent
CC	Combined Chlorine	AB	Nill
PV	Permanaganate Value	TR	Trace
		P	Present
		NT	Not Treated
		UO	Presence of material is Un-Objectionable
		NC	ot chlorinated

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	CENTRAL	IMARA DAIMA ESTATE BOREHOLE	264255	9853549	16-Feb-11	C/92/11	8.96	0.3	1861	AB	AB		103.5	0	5	385	NT	NT	NT	248.5	15	12.4	32.9	NDT	0.17	1.37	56		NDT	0.058	0.0418	0.0843	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	CENTRAL	IMARA DAIMA ESTATE BOREHOLE	264255	9853549	21-Nov-11	C/396/2011	7.82	26	1954	AB	AB	56	101.3	10	AB	495	NC	NC	NC	71	85	22.9	103.9	NDT		1.25		NDT	NDT	0.6205	0.0056	0.3756	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	CENTRAL	IMARA DAIMA ESTATE BOREHOLE	264255	9853549	23-Aug-10	C/447/10	8.79	2.14	2.1	AB	AB		26.0	0.0	8.00	428.00	NT	NT	NT	248.5	NDT	0.75	4.70	0.00	TR		1.4		--	NDT	0.0111	0.1558	0.0854									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =TR; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	CENTRAL	IMARA DAIMA ESTATE BOREHOLE	264255	9853549	17-Aug-11	C/286/11	8.59	0.44	1835	AB	AB	24	110	0	AB	412	0.05	0.1	0.05	276.9	110	5.479	2.234	NDT	NDT	1.61	22		0.004	NDT	0.0715	0.4052	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	CENTRAL	MIDLAND COURT ESTATE BOREHOLE	257741	9853278	15-Nov-10	C/605/10	8.92	3.20	349.0	AB	AB		12.0	0	35	155.0	NC	NC	NC	4.97	4.0			0.019	NDT	8.20		NDT	NDT	0.858	0.013	0.035	0.669									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Source	CENTRAL	MIDLAND COURT ESTATE BOREHOLE	257741	9853278	25-Nov-10	C/617/10	8.97	--	--	AB	AB		--	--	20	165.0	NT	NT	NT	9.23	4.0	4.37	5.85	NDT	NDT	8.00		--	NDT	NDT	NDT	NDT	0.003									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Source	CENTRAL	MIDLAND COURT ESTATE BOREHOLE	257741	9853278	15-Nov-10	C/606/10	8.47	0.27	340.0	AB	AB		9.0	0	32	160.0	NC	NC	NC	10.65	6.0			0.035	NDT	4.35		NDT	NDT	1.187	0.038	0.211	0.022									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Source	CENTRAL	MIDLAND COURT ESTATE BOREHOLE	257741	9853278	17-Sep-11	C/307/11	9.32	0.21	467	AB	AB	4	5	0	12	215	NC	NC	NC	9.94	1	8	60	NDT	NDT	15.2	14	NDT	NDT	0.005	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	CENTRAL	WILSON RESERVIOR BOREHOLE	257560	9853660	15-Jul-11	C/272/11	9.11	0.14	263	AB	AB	52	6.2	0	20	166	NT	NT	NT	3.55	60	0.87	32.79	0.037	NDT	0.55	9		NDT	0.1682	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	CENTRAL	WILSON RESERVIOR BOREHOLE	257560	9853660	14-Apr-10	C/173/10	8.20	0.02	432.0	AB	AB		4.0	0	AB	26.0	NC	NC	NC	3.00		11.0	82.5	0.02	NDT	8.25		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	CENTRAL	WILSON RESERVIOR BOREHOLE	257560	9853660	07-Jul-10	C/339/10	8.46	0.32	441.0	AB	P		34.7	0	30.00	260.0	NT	NT	NT			4.8	28.8	0.02	0.00				NDT	0.03	0.01	0.02	NDT									Odour=AB ; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	ATHI PRIMARY SCHOOL BOREHOLE	293794	9870943	11-Nov-11	C/384/11	7.96	1.41	1023	AB	AB	10	55.7	0	AB	24	NC	NC	NC	3.55	2.8	5.6	28.2	NDT		2.2		NDT	NDT	NDT	0.006	0.1585	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	BONQUE VILLA ESTATE BOREHOLE			03-Aug-11	C/131/11	7.64	4.48	295	AB	P		11	0	AB	22	NT	NT	NT	--	8	7.8	56.6	0.039	--	3.25	71		0.003	0.4706	NDT	1.7995	0.0156									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	EASTERN	DOHNOLM PRIMARY SCHOOL BOREHOLE	265703	9856570	16-Nov-11	C/391/11	8.54	0.82	503	AB	AB	4	55	0	14	144	0.3	0.5	0.2	8.52	4	17.2	56.9	NDT		6.39		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	DOHNOLM PRIMARY SCHOOL BOREHOLE	265703	9856570	22-Jan-11	C/39/11	8.45	0.44	415	AB	AB		21.6	0	35	160	NT	NT	NT	14.2	NDT	9	71.7	NDT	NDT	6.75	5		NDT	0.5797	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	DOHNOLM PRIMARY SCHOOL BOREHOLE	265703	9856570	25-Nov-10	C/618/10	8.61	0.02	460.0	AB	AB		8.9	0	20	120.0	NC	NC	NC	12.78	6.0	6.21	5.88	0.015	NDT	15.10		NDT	NDT	0.0352	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	DOHNOLM PRIMARY SCHOOL BOREHOLE	265703	9856570	23-Jun-11	CO/249/11	9.62	0.71	261	AB	AB	21.6	21.6	0	23	170	NT	NT	NT	8.52	4	18.8	66.3	NDT	--	19.1	6		NDT	NDT	0.0147	NDT	0.2609									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Source	EASTERN	DOHNOLM PRIMARY SCHOOL BOREHOLE	265703	9856570	15-Apr-10	C/184/10	9.10	0.01	497.0	AB	AB		6.0	0	AB	245.0	NC	NC	NC	6.00		12.0	115	0.01	7.08	6.85		1.50														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	EASTERN	EMBAKASI RESERVIOR BOREHOLE	267375	9854749	22-Jan-11	C/36/11	9.07	0.17	570	AB	AB		16	0	37	190	NT	NT	NT	22.01	11	9	81.8	NDT	1.6	12.5	24		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	EMBAKASI RESERVIOR BOREHOLE	267375	9854749	09-Nov-10	C/586/10	9.08	0.01	533.0	AB	AB		15.0	0	48	159.0	NC	NC	NC	19.88	8.0	5.04	30	0.042	NDT	11.40		NDT	0.005	0.116	0.083	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	FEDHA ESTATE BOREHOLE	266218	9854434	23-Aug-10	C/443/10	7.00	--	608.0	AB	AB		26.0	2.0	10.00	220.00	0.60	0.80	0.20	28.40	26.8	6.65	22.5	TR	TR		NDT		--	0.0313	0.0037	0.042	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =TR; NO3 =TR; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	EASTERN	FEDHA ESTATE BOREHOLE	266218	9854434	26-Mar-10	C/138/10	7.70		1315			28.0	630.0			30.0	NC	NC	NC	119.9		1.5	7.5	0.02	0.50	0.43																Odour=; Deposite =; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	EASTERN	FEDHA ESTATE BOREHOLE	266218	9854434	23-Feb-11	C/106/11	--	0.1	436	AB	AB		9.1	0	AB	AB	NT	NT	NT	19.88	6	12.8	34.7	1.2	0.007	9.6	78		3E-04	0.0916	NDT	0.0707	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	EASTERN	MATOPENI BOREHOLE KAYOLE	269448	9860450	22-Jan-11	C/35/11	8.71	0.24	393	AB	AB		12.6	0	35	135	NT	NT	NT	16.33	4	7.4	65.9	NDT	NDT	9.3	39		0.012	0.4949	NDT	NDT	0.0115									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Source	EASTERN	MATOPENI BOREHOLE KAYOLE	269448	9860450	27-Apr-10	C/204/10	9.07	0.04	422.0	AB	AB		34.0	0	50.00	180.0	NC	NC	NC	6.00		9.00	75.0	0.02	3.54	5.8		1.10														Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	EASTERN	MATOPENI BOREHOLE KAYOLE	269448	9860450	10-Aug-10	C/409/10	9.05	3.68	414.0	AB	P		10.0	2.5	AB	31.0	NT	NT	NT	7.10	14.9	0.7	44.0	NDT	NDT		9.2		0.005	NDT	0.009	0.005	0.2916									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	EASTERN	MATOPENI BOREHOLE KAYOLE	269448	9860450	23-Oct-10	C/559/10	8.97	0.08	45.3	AB	AB		9.7	0	32.00	150.0	NT	NT	NT	11.99	NDT	2.90	56.90	NDT	7.00	0.06	7.0	NDT	NDT	0.08	0.013	0.007	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	EASTERN	MATOPENI BOREHOLE KAYOLE	269448	9860450	23-Jun-11	CO/248/11	9.68	0.64	233	AB	AB	4	13.5	0	34	138	NT	NT	NT	5.68	4	18.9	66.9	NDT	--	14.7	3		NDT	NDT	NDT	NDT	0.1423									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Source	CENTRAL	IMARA DAIMA ESTATE BOREHOLE	264255	9853549	22-Jan-11	C/37/11	7.45	0.51	2150	AB	AB		17.8	0	35	390	NT	NT	NT	282.6	118	46.3	174	NDT	3.4	1.48	6		NDT	NDT	0.007	0.272	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	RUAI STAFFS QUARTER BOREHOLE	278297	9860407	20-May-11		7.17	0.91	645	AB	P		31.3	0	AB	335	NC	NC	NC	26.98	19	--	--	NDT	NDT	15	5		0.012	0.0634	NDT	0.0363	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	EASTERN	RUAI STAFFS QUARTER BOREHOLE	278297	9860407	27-Apr-10	C/205/10	8.96	0.02	843.0	AB	AB		36.0	0	AB	410.0	NC	NC	NC	61.00		17.0	143	0.01	4.87	8.75		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	EASTERN	RUAI STAFFS QUARTER BOREHOLE	278297	9860407	23-Oct-10	C/558/10	8.21	0.04	70.4	AB	AB		40.5	0	5.00	210.0	NT	NT	NT	9.99	NDT	6.20	78.70	NDT	8.30	0.03	6.0	NDT	NDT	0.03	0.004	0.010	0.10		3.00							Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Source	EASTERN	RUAI BOYS HIGH SCHOOL BOREHOLE	277323	9860367	03-Aug-11	C/130/11	8.7	9.44	703	AB	P		55.1	0	20	290	NT	NT	NT	34.08	21	10.2	77.6	NDT	10.5	7.8	33		0.008	0.7353	0.0056	0.479	NDT									Odour=AB; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	EASTERN	RUAI STAFFS QUARTER BOREHOLE	278297	9860407	03-Aug-11	C/127/11	8.65	0.35	478	AB	P		31.3	0	20	260	NT	NT	NT	29.82	23	3	1	0.005	1.1	7.4	49		NDT	NDT	0.0826	NDT	NDT									Odour=AB; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	RUAI STAFFS QUARTER BOREHOLE	278297	9860407	21-Oct-11	C/353/11	8.53	0.3	672	AB	AB	28		0	10	312	NC	NC	NC	56	22	9.6	66.7	NDT		0.23			NDT	0.019	NDT	0.0424	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	RUAI BOYS HIGH SCHOOL BOREHOLE	277323	9860367	21-Oct-11	C/352/11	8.51	0.31	768	AB	AB	28		0	8	396	NC	NC	NC	51	18	11.6	74.1	NDT		0.4			NDT	NDT	NDT	0.0674	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	SOWETO COMMUNITY SOCIAL HALL BOREHOLE	267725	9857612	17-Aug-11	C/285/11	9.45	0.4	406	AB	AB	6	21.6	0	2.2	175	AB	AB	AB	11.36	1	38.14	5.571	NDT	NDT	12	37		0.017	NDT	NDT	0.034	0.0598									Odour=AB; Deposite =AB; Alka_Phe =; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	EASTERN	THAWABU PRIMARY SCHOOL BOREHOLE	268082	9858587	23-Jun-11	CO/251/11	9.62	0.38	219	AB	AB	22.3	22.3	0	24	150	NT	NT	NT	12.78	3	16.5	61	NDT	--	12.9	3		0.006	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	THAWABU PRIMARY SCHOOL BOREHOLE	268082	9858587	15-Feb-10	C/062/10	7.97		502.0			6.0	7.0			200.0				1.59	30.70	7.9	98.0	0.04	3.00				NDT	1.1	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	UMOJA I PRIMARY SCHOOL BOREHOLE	264870	9858375	03-Aug-11	C/126/11	7.55	8.78	253	AB	P		8.3	0	18	170	NT	NT	NT	12.78	1	3.2	1	NDT	13.1	6.15	47		NDT	2.4118	0.0436	4.9804	NDT									Odour=AB; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	UNITY PRIMARY SCHOOL BOREHOLE	265524	9858077	09-Aug-10	C/407/10	8.17	20.00	12.9	AB	P		32.0	2.0	AB	20.0	NC	NC	NC	77.39	9.56	2.80	81.00	TR	NDT		1.2		NDT	0.437	0.0026	0.114	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =TR; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	UNITY PRIMARY SCHOOL BOREHOLE	265524	9858077	19-Apr-10	C/196/10	7.80	0.01	1361	AB	AB		34.0	0	AB		NC	NC	NC	3.00		35.0	135.0	0.02	7.08	2.35		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	EASTERN	UNITY PRIMARY SCHOOL BOREHOLE	265524	9858077	10-Nov-10	C/588/10	8.22	0.02	1108	AB	AB		64.3	0	AB	460.0	NC	NC	NC	76.68	37.0	--	23.0	0.022	NDT	3.25		NDT	0.014	NDT	0.008	0.175	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Source	EASTERN	UNITY PRIMARY SCHOOL BOREHOLE	265524	9858077	10-Sep-10	C/489/10	9.14	0.11	136	AB	AB		60.0	0.0	AB	455.0	NT	NT	NT	19.88	42.0	22.6	32.50	0.02	3.00	2.9			0.007	0.038	0.008	0.072	0.04		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Source	EASTERN	UNITY PRIMARY SCHOOL BOREHOLE	265524	9858077	15-Feb-10	C/085/10	8.52		1355			4.0				568.0				129.9	55.2	120		NDT					0.589	2.4	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	USHIRIKA PRIMARY SCHOOL BOREHOLE	267661	9862641	03-Aug-11	C/129/11	8.28	14.4	533	AB	P		144.8	0	10	90	NT	NT	NT	52.54	31	7.4	56.4	0.2	NDT	1.09	10		NDT	0.4265	0.4083	4.1587	NDT									Odour=AB; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	EASTERN	UTAWALA ESTATE BOREHOLE	274458	9857349	15-Dec-11	C/412/11	8.95	0.05	756	AB	AB	6	32	0	26	265	NC	NC	NC	24		9.2	78.55				14	2.2	0.002	0.0552	0.0086	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Source	EASTERN	UTAWALA ESTATE BOREHOLE	274458	9857349	27-Apr-10	C/203/10	9.00	0.02	805.0	AB	AB		32.0	0	59.00	250.0	NC	NC	NC	7.00		13.00	152.0	0.01	3.54	6.7		0.20														Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	02-Sep-10	C/455/10	8.20	0.06	74.3	AB	AB		48.7	0.0	AB	34.0	NT	NT	NT	13.92	4.00	1.10	6.20	0.03	2.00	9.5			NDT	0.0663	0.020	0.2277	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	04-Nov-10	C/569/10	8.80	0.11	366.0	AB	AB		6.5	0	18	100.0	NC	NC	NC	7.1	2.0	4.60	14.0	0.243	NDT	0.50		NDT	NDT	0.0263	0.026	0.0136	0.0446									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	23-Jun-11	CO/247/11	9.29	0.56	215	AB	AB	4	19.1	0	30	130	NT	NT	NT	4.26	1	13	62.6	NDT	--	17.7	2		NDT	NDT	0.0503	0.014	0.0474									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	17-Apr-10	C/186/10	9.20	0.01	417.0	AB	AB		6.0	0	AB	185.0	NC	NC	NC	1.00		8.50	75.00	0.02	NDT	9.5		1.70														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	10-Dec-10	C/657/10	8.78	0.04	346	UO	AB		19.1	0	AB	155.0	NC	NC	NC	8.52	NDT	1.0	150.0	0.002	NDT	9.05		NDT	NDT	0.055	0.006	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=NDT; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Source	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL BOREHOLE	263630	9857604	21-Oct-11	C/354/11	9.09	0.42	382	AB	AB	6		0	25	175	NC	NC	NC	14	2	6.3	48.6	NDT		0.63			NDT	0.3079	NDT	0.001	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	N.EASTERN	DANDORA 41 HOSPITAL BOREHOLE	267311	9862494	03-Aug-11	C/128/11	8.7	3.13	369	AB	P		7.3	0	19	136	NT	NT	NT	9.94	4	3	56.4	0.004	NDT	10.2	27		NDT	1.8676	0.017	1.3104	0.4377									Odour=AB; Deposite =P; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	N.EASTERN	HURUMA GIRLS SECONDARY SCHOOL BOREHOLE	262122	9857152	17-Aug-11	C/284/11	8.55	0.26	928	AB	AB	20	30.3	0	AB	338	NT	NT	NT	83.78	47	6.638	2.915	NDT	NDT	11.2	27		NDT	NDT	NDT	0.4543	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	N.EASTERN	KARIOKOR CHIEFS CAMP BOREHOLE	259210	9858702	17-Aug-11	C/283/11	8.28	0.28	542	AB	AB	8	120.3	0	AB	178	NT	NT	NT	48.25	25	20.93	4.457	NDT	NDT	4.05	28		NDT	0.046	NDT	0.459	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	N.EASTERN	MAKADARA HEALTH CENTRE BOREHOLE	263296	9856576	23-Jun-11	CO/250/11	9.54	0.64	256	AB	AB	24.4	24.4	0	20	170	NT	NT	NT	11.36	16	19.9	59.9	NDT	--	14	2		NDT	0.0407	0.0042	0.0122	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	N.EASTERN	MAKADARA HEALTH CENTRE BOREHOLE	263296	9856576	02-Sep-10	C/454/10	8.84	0.04	518.0	AB	AB		9.7	0.0	AB	230.0	NT	NT	NT	19.88	6.00	6.50	125.0	0.05	3.00	1.9			0.01	0.0946	0.110	0.0278	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Source	N.EASTERN	MAKADARA HEALTH CENTRE BOREHOLE	263296	9856576	15-Dec-11	C/4111/11	8.92	0.07	543	AB	AB	8	24.7	0	20	170	NC	NC	NC	60		8.9	63.71				2	NDT	0.012	0.1656	0.0019	NDT	0.1063									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Source	N.EASTERN	MAKADARA HEALTH CENTRE BOREHOLE	263296	9856576	04-Nov-10	C/570/10	8.57	0.14	210.0	AB	AB		24.4	0	20	156.0	NC	NC	NC	8.52	5.0	5.20	17.0	0.055	NDT	0.60		NDT	0.002	0.124	0.124	0.0072	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Source	N.EASTERN	METROPOLITANT HOSPITAL BOREHOLE	263544	9857602	06-Sep-11	C/297/11	9.31	0.1	333	AB	AB	12	29.1	0	AB	168	0.1	0.2	0.1	5.68	NDT	5.4	47.6	NDT	NDT	2.3	36	NDT	NDT	0.0323	NDT	0.004	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=NDT; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=0.004; Pb =NDT; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	25-Jul-11	C/277/11	7.14	0.42	602	AB	AB	8	82.4	0	AB	32	NT	NT	NT	17.04	8	11.77	28.79	0.033	NDT	1.64	4		NDT	0.5467	0.0726	0.0692	0.3971									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	21-Oct-11	C/350/11	7.41	0.33	872	AB	AB	8		0	AB	594	NC	NC	NC	13	1	16.8	76.1	NDT		0.85			NDT	NDT	0.1377	0.0053	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	01-Dec-11	C/398/11	8.56	0.14	705	AB	AB	6	83.4	0	32	406	NC	NC	NC	26		4.8	6				25	0.8	NDT	NDT	0.0162	0.0163	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	24-Apr-10	C/201/10	8.43	0.02	947.0	AB	AB		36.0	0	AB	640.0	AB	TR	TR	21.00		30.0	162.0	0.04	NDT	0.54		0.70														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =TR; CC =TR; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	07-Jul-10	C/340/10	7.30	0.65	865.0	AB	P		120.0	0	AB	677.0	NC	NC	NC			12.6	38.2	0.05	2.00				NDT	0.08	0.30	0.03	NDT									Odour=AB ; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	09-Sep-10	C/475/10	7.35	0.01	922.0	AB	AB		38.0	0.0	AB	40.0	NT	NT	NT	25.84	5.00	18.2	111.6	0.03	1.00	1.22			0.004	0.2413	0.069	0.0162	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	13-Jul-09	C/289/09	7.38	40.6	969	UO	AB	36	99	0	AB	520	NC	NC	NC	17.75	6.5	14.5	138	0.063	NDT		27.997			0.0098	0.267	0.2203			NDT	678						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Source	NORTHERN	KAHAWA WEST CHIEFS OFFICE BOREHOLE	266490	9868945	11-Jul-09	C/291/09	6.65	0.37	352	UO	AB	34	81	0	AB	180	NC	NC	NC	48.28	4	3.2	1.6	0.036	NDT					0.0344	0.2913	0.0704			2.8	246						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	NORTHERN	KAMITI MAXIMUM SECURITY PRISON BOREHOLE	266317	9870916	27-Jan-11	C/58/11	7.1	0.12	1160	AB	AB		140	0	16	555	NT	NT	NT	12.07	4	32.7	108.7	NDT	1.4	1.42	--		NDT	NDT	0.066	NDT	0.369									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Source	NORTHERN	KAMITI MAXIMUM SECURITY PRISON BOREHOLE	266317	9870916	20-May-11		8.34	0.7	903	AB	P		38.4	0	AB	--	NC	NC	NC	8.52	3	--	--	NDT	NDT	2.55	5		NDT	0.007	0.0013	0.0376	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KAMITI MAXIMUM SECURITY PRISON BOREHOLE	266317	9870916	21-Nov-11	C/394/11	7.25	0.6	929	AB	AB	8	18	0	AB	18	NC	NC	NC	7.1	4	30.2	105.3	NDT		1.8		NDT	0.008	NDT	0.092	0.0164	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Source	NORTHERN	KIWANJA PRIMARY SCHOOL BOREHOLE	268754	9870604	17-Sep-11	C/308/11	8.16	0.79	663	AB	AB	28	87	0	AB	364	NC	NC	NC	19.88	3	7.2	61	NDT	NDT	1.71	33	0.1	NDT	0.0944	NDT	0.2366	0.0235									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	NORTHERN	KIWANJA PRIMARY SCHOOL BOREHOLE	268754	9870604	08-Dec-10	C/644/10	8.44	1.41	548	UO	P		43.7	0	AB	336.0	NC	NC	NC	22.1	5.0	0.4	120.0	22.1	NDT	6.18		NDT	NDT	0.119	NDT	0.506	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KIWANJA PRIMARY SCHOOL BOREHOLE	268754	9870604	21-Oct-11	C/351/11	7.78	0.89	625	AB	AB	56		0	AB	382	NC	NC	NC	32	3	12.8	58.2	NDT		1.11			NDT	0.019	NDT	0.1183	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	KIWANJA PRIMARY SCHOOL BOREHOLE	268754	9870604	21-Dec-11	C/425/11	7.67	1.75	548	AB	AB	14	89	0	AB	298	NC	NC	NC	4		13.44	48.11				15	0.2	0.014	0.4443	0.2006	0.3383	0.0472									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	NORTHERN	MAHIGA PRIMARY SCHOOL BOREHOLE	266163	9869137	15-Feb-10	C/093/10	8.01					6.0				307.0				377.8	10.7	77							NDT	4.2	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	NORTHERN	MIREMA PRIMARY SCHOOL BOREHOLE	264953	9865876	27-Jan-11	C/60/11	7.97	4.03	393	AB	AB		74	0	10	110	NT	NT	NT	18.46	2	18.4	49.4	0.068	6.5	0.51	--		NDT	0.0649	0.0092	0.4591	0.2214									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	NORTHERN	MWIKI PRIMARY SCHOOL BOREHOLE	268350	9865826	13-Feb-11	C/87/11	8.8	3.25	564	AB	AB		77.5	3	AB	190	NT	NT	NT	5.68	6	24.2	40.9	NDT	NDT	1.9	78		NDT	0.4714	0.4183	0.0729	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	NORTHERN	MWIKI PRIMARY SCHOOL BOREHOLE	268350	9865826	13-Aug-10	C/420/10	7.42	1.54	666.0	AB	P		22.0	0.0	AB	--	NC	NC	NC	21.30	7.33	2.6	47.50	TR	NDT		0.9		NDT	0.1708	0.1832	0.0527	0.0364									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =TR; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	NORTHERN	MWIKI PRIMARY SCHOOL BOREHOLE	268350	9865826	15-Jul-09	C/293/09	7.46	0.16	601	UO	AB	56	60	0	AB	82	NC	NC	NC	58.93	10.7	31	1.65	NDT	NDT		37.205			0.0835	0.314	0.2119			NDT	421						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Source	NORTHERN	MWIKI PRIMARY SCHOOL BOREHOLE	268350	9865826	15-Dec-11	C/410/11	7.39	0.09	480	AB	AB	68	38.9	0	AB	130	NC	NC	NC	8		16.98	39.82				28	NDT	0.005	NDT	0.2234	0.0803	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Source	NORTHERN	ST BENEDICT CATHOLIC CHURCH BOREHOLE	261628	9861565	15-Jan-08	C/46/08	7.32	0.06	272.0		AB			0			0.80	1.00	0.20		0.1																					Odour=; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	SOUTHERN	NYAYO HIGHRISE ESTATE BOREHOLE	255732	9854412	17-Aug-11	C/287/11	9.3	0.95	416	AB	AB	12	15.3	0	1.4	148	0.1	0.2	0.1	7.81	9	1.259	0.144	NDT	NDT	11.5	26		0.004	1.4272	0.0715	0.0633	0.1195									Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	SOUTHERN	KAREN C. PRIMARY SCHOOL BOREHOLE	248763	9851949	30-Apr-11	C/183/11	8.43	0.01	282	AB	P		20.3	0	AB	28	NC	NC	NC	56.8	3	19.6	43.4	NDT	NDT	--	5		0.008	NDT	0.0153	0.013	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	SOUTHERN	KAREN C. PRIMARY SCHOOL BOREHOLE	248763	9851949	15-Apr-10	C/177/10	7.10	0.02	348.0	AB	AB		34.0	0	AB	175.0	NC	NC	NC	5.00		11.00	30.00	0.01	4.43	1.21		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	SOUTHERN	KAREN C. PRIMARY SCHOOL BOREHOLE	248763	9851949	10-Aug-10	C/412/10	7.92	1.93	305.0	AB	P		12.0	0.0	AB	31.0	NT	NT	NT	8.52	NDT	6.25	2.50	TR	TR		0.2		0.004	0.516	NDT	0.0849	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =TR; NO3 =TR; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	SOUTHERN	KAREN C. PRIMARY SCHOOL BOREHOLE	248763	9851949	15-Jul-10	C/372/10	8.43	0.23	319.0	AB	AB		50.4	0.00	AB	213.0	NC	NC	NC			6.2	20	0.02	13.00				NDT	0.13	0.01	0.12	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	SOUTHERN	MBAGATHI RIDGE BOREHOLE	244743	9851222	18-Aug-08	C/625/08	8.77	1.12	319.0	AB	AB	6.0	228.0	0	AB	135.0	AB	AB	AB		1.75	18.5	77.5	NDT	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	SOUTHERN	MIMOSA BOREHOLE			19-Aug-09	C/342/09	8.82	0.24	372	UO					AB	180	NC	NC	NC	14.2	6	14	90	NDT	NDT					NDT	NDT	NDT										Odour=UO; Deposite =; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Source	SOUTHERN	MIOTONI BOREHOLE	245922	9854311	18-Aug-08	C/626/08	8..55	0.22	372.0	AB	AB	10.0	227.0	0	AB	190.0	AB	AB	AB		1	10.0	53.8	NDT	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	SOUTHERN	OLYMPIC SECONDARY SCHOOL BOREHOLE	253241	9854737	21-Nov-11	C/395/11	8.1	2.65	349	AB	AB	6	14.1	0	AB	156	NC	NC	NC	7.1	3	5.8	33.54	NDT		2.76		NDT	NDT	NDT	0.067	0.6696	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	DAGORETTI INSPECTORATE BOREHOLE	250576	9855921	18-Jan-11	C/29/11	7.76	0.35	256	AB	AB		44.7	0	20	126	NT	NT	NT	5.68	NDT	11	45.5	NDT	NDT	3.35	33		0.003	0.0564	NDT	0.014	0.0029									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	DAGORETTI INSPECTORATE BOREHOLE	250576	9855921	14-Mar-09	C/130/09	8.43	0.23	296	AB	AB		26	0	AB	30	0.1	0.2	0.1	7.1	1	1.5	8.5	NDT	NDT			NDT		0.0422	NDT	0.0118				207						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	WESTERN	KANGEMI CHIEFS OFFICE BOREHOLE	249533	9860217	15-Aug-09	C/339/09	7.21	11.2	251	UO	AB		30		AB	137	NC	NC	NC	17.75	1.6	1.45	25	0.008	5					0.7911	0.0251	2.1259										Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	NDURARUA PRIMARY SCHOOL BOREHOLE	248514	9857373	14-Apr-10	C/172/10	7.40	0.05	301.0	AB	AB		12.0	0	AB	210.0	NC	NC	NC	3.00		14.0	60.00	0.13	5.31	4.05		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	WESTERN	NDURARUA PRIMARY SCHOOL BOREHOLE	248514	9857373	18-Jan-11	C/31/11	7.57	0.14	263	AB	AB		14.8	0	5	140	NT	NT	NT	10.65	1	11.1	45.6	NDT	NDT	9.85	31		0.003	NDT	NDT	NDT	0.0029									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	18-Jan-08	C/30/11	7.6	0.16	272	AB	AB		32.8	0	2	133	NT	NT	NT	8.52	7	12	45	NDT	NDT	2.95	35		0.001	0.1679	NDT	0.0335	0.0014									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	13-Jul-11	C/268/11	8.18	0.33	283	AB	AB	8	33.6	0	6	124	0.2	0.3	0.1	7.1	3	0.9	7.73	0.045	NDT	2.8	8		NDT	NDT	NDT	0.0211	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	17-Nov-11	C/392/11	8.2	0.98	309	AB	AB	8	12.6	0	10	125	0.3	0.5	0.2	6.39	3	12	45	NDT		2.78		NDT	NDT	NDT	NDT	0.1236	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	24-Apr-10	C/200/10	8.35	0.51	271.0	AB	AB		30.0	0	AB	165.0	NC	NC	NC	18.00		13.0	53.00	0.01	3.98	4.7		0.60														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	15-Jul-10	C/373/10	8.40	0.24	414.0	AB	AB		32.0	0.00	AB	178.0	NC	NC	NC			5.3	20	0.03	4.00				NDT	0.09	0.05	0.13	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	NGANDO CHIEFS OFFICE BOREHOLE	248405	9856071	07-Sep-08	C/524/08	7.09	0.65	513	AB	AB	86.0	146.0	0	AB	39.0	NT	NT	NT	106.5		1.4	10.5	NDT	NDT			2.4		0.0	0.00	0.1			NDT	385						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Source	WESTERN	RUTHIMITU PRIMARY SCHOOL BOREHOLE	244409	9858700	22-Aug-10	C/441/10	8.36	0.98	314.0	AB	AB		26.00	0.00	AB	145.00	NT	NT	NT	7.10	6.22	4.40	13.40	NDT	TR		1.40		--	0.5283	0.0738	0.166	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =TR; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Source	WESTERN	RUTHIMITU PRIMARY SCHOOL BOREHOLE	244409	9858700	15-Apr-10	C/183/10	7.90	5.63	298.0	AB	AB		20.0	2.5	AB	225.0	NC	NC	NC	7.00		17.50	60.00	0.06	3.09	4.65		0.70														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	TREE LANE BOREHOLE	244620	9853378	15-Jul-10	C/371/10	8.36	0.27	538.0	AB	AB		35.2	0.00	AB	185.0	NC	NC	NC			5.8	24.5	0.02	3.00				NDT	0.00	0.02	0.04	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	TREELANE BOREHOLE	244620	9853378	21-Jul-11	C/274/11	8.26	0.06	213	AB	AB	4	29.9	0	8	125	NT	NT	NT	9.94	7	5.18	7.87	0.025	NDT	5.6	3		NDT	0.4205	NDT	0.016	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =; NO3 =NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	TREELANE BOREHOLE	244620	9853378	15-Apr-10	C/179/10	7.90	0.01	370.0	AB	AB		28.0	0	AB	165.0	NC	NC	NC	6.00		16.0	66.50	0.06	3.98	7.75		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	WESTERN	UTHIRU CHIEFS OFFICE BOREHOLE	245953	9860182	14-Apr-10	C/171/10	7.10	0.31	306.0	AB	AB		32.0	0	AB	180.0	NC	NC	NC	6.00		11.1	41.00	0.07	6.20	1.16		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source	WESTERN	UTHIRU CHIEFS OFFICE BOREHOLE	245953	9860182	14-Jul-09	C/288/09	7.05	0.39	243	UO	AB	38	51	0	AB	100	NC	NC	NC	21.3	0.2	3.5	26	0	NDT		31.764			0.0835	0.1068	0.4033			0.8	170						Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Source	WESTERN	WAITHAKA DEO's OFFICE BOREHOLE	245853	9858291	02-Jun-11	C/68/11	7.6	1.95	398	AB	AB		101.6	0	AB	57	NT	NT	NT	49.7	5	12.6	34.7	NDT	0.004	0.81	14		NDT	0.0391	0.2868	2.4573	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=; NO2 =NDT; NO3 =; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Source	WESTERN	WAITHAKA DEO's OFFICE BOREHOLE	245853	9858291	13-Jul-11	C/269/11	6.86	0.35	533	AB	AB	8	98.2	0	AB	61	TR	0.1	0.1	41.18	7	5.38	6.72	0.045	NDT	3.85	7		NDT	0.1338	0.0966	2.0795	0.3153									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC =0.1; CC =0.1; SO4=; NO2 =; NO3 =NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Source	WESTERN	WAITHAKA DEO's OFFICE BOREHOLE	245853	9858291	15-Apr-10	C/178/10	7.40	0.93	416.0	AB	AB		36.0	0	AB	133.0	NC	NC	NC	4.00		13.5	69.00	0.07	43.00			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NC; TRC =NC; CC =NC; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Source		BOREHOLE CHARLES KIMANI			09-Feb-08	C/90/08	7.11	0.49	345.0				128.0	2	AB	340.0				11.36		0.4	11.0	NDT	NDT			AB							NDT	290.0						Odour=; Deposite =; Alka_Phe =AB; FRC=; TRC =; CC =; SO4=; NO2 =NDT; NO3 =NDT; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Source		BOREHOLE IMPALA			04-Nov-08	C/277/08	8.67	7.48	1580	AB	AB		30.0	0			1.00	1.20	0.20	5.68	5.8									0.0203					NDT							Odour=AB; Deposite =AB; Alka_Phe =; FRC=; TRC =; CC =; SO4=; NO2 =; NO3 =; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Key

FRC Free Residual Chlorine
TRC Total Residual Chlorine
CC Combined Chlorine
PV Permanaganate Value

Not Detected
Absent
Nill
Trace
Present
Not Treated
Presence of material is Un-Objectionable
Not chlorinated

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	CENTRAL	HIIL TANK	255463	9856903	21-Apr-09	C/172/09	7.87	2	70	AB			28	0	0	29	0.8	1	0.2	4.26	0.4	2.09	7.42	NDT	T			NDT		NDT	NDT	0.0157			NDT	42								Odour=AB; Deposite =; Alka_Phe =0; SO4=; NO2 =NDT; NO3 =T; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	27-Jan-11	C/54/11	7.66	0.24	62.6	AB	AB		32.9	0	AB	35	0.6	0.8	0.2	4.26	12	2.6	7	NDT	10.3	0.25	--		NDT	0.005	0.0147	0.0035	0.192											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	02-Jun-11	C/71/11	7.81	0.39	66.7	AB	P		32.1	0	AB	28	0.6	0.7	0.1	5.68	6	2.2	4	--	NDT	0.16	14		NDT	NDT	0.1536	NDT	0.342											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	03-Jun-11	C/115/11	7.86	2.06	71.6	AB	AB		45.8	0	AB	30	0.6	0.7	0.1	5.68	5	3.2	8	NDT	9.9	--	2		NDT	0.441	0.3551	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	30-Apr-11	C/182/11	7.35	0.01	71.8	AB	P		32.7	0	AB	130	0.5	0.6	0.1	7.1	12	4.6	11	NDT	NDT	--	10		0.003	0.107	0.1957	0.0127	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	15-Feb-10	C/055/10	7.25	1.45	88.5			6.0	36.0			35.0				8.99	24.70	3.0	13.8						0.008	0.8	NDT	0.0	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	06-Mar-10	C/108/10	7.20		117.0			6.0	15.0			34.0	0.10	0.20	0.10	23.90	35.70	4.4	10.0	0.01	3.00	0.46																		Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	11-Jul-10	C/355/10	7.48	1.89	15.7	AB	AB		51.8	0	AB	38.0	1.30	1.50	0.20			1.4	5.1	0.02	2.00				NDT	0.08	0.21	0.10	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	17-Aug-10	C/423/10	7.62	0.78	75.6	AB	AB		32.0	0.0	AB	32.0	0.60	0.70	0.10	2.84	12.67	1.09	4.50	TR	NDT		1.2		0.016	0.076	0.0465	0.0151	0.486											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	22-Oct-10	C/556/10	7.40	0.35	69.3	AB	AB		42.2	0	AB	32.0	0.5	0.60	0.10	5.99	NDT	0.93	8.70	0.00	--	NDT	10.0	NDT	0.0	0.02	NDT	NDT	0.12		3.00									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	16-Dec-10	C/676/10	7.17	0.39	71.3	UO	AB		34.9	0	AB	30.0	0.8	1.0	0.2	5.68	5.0	0.6	10.0	0.005	NDT	0.03		0.80	0.011	0.077	0.029	0.010	0.015											Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	14-Mar-09	C/124/09	8.22	0.18	80	AB	AB		40	0	AB	37	0.8	1	0.2	4.97	0.5	1.1	7.5	NDT	NDT			NDT		0.021	0.0364	0.0093				56								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	15-Jan-08	C/15/08	7.61	0.39	80.0		AB			0			0.50	0.80	0.30	2.84	0.1	0.8		NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	15-Feb-08	C/119/08	7.36	0.78	74.30				13.0	0	AB	27.0	1.00	1.20	0.10	4.97	1.3							AB							0.70	49.5								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	16-Apr-08	C/303/08	7.19	2.43	98.10	AB	AB		35.0	0			0.20	0.30	0.10	4.26	5.4	1.9	16.7					1.70		0.1					NDT	58.9								Odour=AB; Deposite =AB; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	16-May-08	C/369/08	6.8	1.92	72.5	AB	AB		26	0	AB	30	0.2	0.3	0.1	4.97	6.28	2	11.7	NDT	NDT			5.6		NDT	NDT	0.0094			NDT	43.5								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	14-Jun-08	C/447/08	7.06	0.78	82.30		AB		27.0	0	AB	26.0	0.40	0.45		5.68		1.5	12.3	NDT	NDT			2.0		0.1	0.00	0.0	NDT		NDT	49.4								Odour=; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	08-Aug-08	C/585/08	7.76	0.14	67.2	AB	AB	16.0	31.0	0	AB	27.0	0.80	1.00	0.20		2.75	1.4	8.3	NDT	NDT			NDT		0.1	0.0	0.0												Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	15-Sep-08	C/672/08	7.41	0.41	67.5	AB	AB	12	32	0	AB	28	0.7	0.8	0.1	5.68	1.75	1.2	5.5	ND	ND			NDT		0.009	0.0242	0.0434			NDT	40.05								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	23-Oct-08	C/775/08	6.7	0.01			AB	16	27	0			0.6	0.7	0.1		18.1	0.7	0.8	,,	,,			,,		0.003		NDT				40.4								Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	HILL TANK	255463	9856903	01-Nov-08	C/799/08	6.94	0.08	73.4	AB	AB	8	22	0	AB	30	0.7	0.8	0.1	5.68	22.8	1.5	8.9	NDT	NDT					NDT	0.038	0.0314			NDT	55								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILL TANK	255463	9856903	05-Sep-10	C/459/10	7.56	0.41	69.3	AB	AB		29.0	0.0	AB	31.0	0.80	1.00	0.20	7.95	3.00	1.60	10.20	0.04	2.00	0.24			NDT	NDT	0.007	0.1107	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	24-May-08	C/399/08	7.39	0.73	65.5	AB	AB		38	0	AB	26	0.9	1	0.1	4.97	2.18	1.9	9.2	NDT	NDT			NDT		0.032	NDT	0.0839				39.3								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	04-Apr-08	C/251/08	7.46	0.33	80.0	AB	AB		30	0			0.20	0.30	0.10	6.39	11.0									0.1					NDT									Odour=AB; Deposite =AB; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	05-Sep-11	C/295/11	7.76	0.18	117.9	AB	AB	12	28.2	0	AB	69	0.4	0.5	0.1	2.84	6	2.6	20	NDT	NDT	1.34	NDT	NDT	NDT	NDT	NDT	0.0108	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	07-Jul-10	C/338/10	7.18	0.15	79.0	AB	AB		70.70	0	AB	40.00	0.80	1.00	0.20			0.9	3.7	0.01	2.00				NDT	0.02	0.02	0.19	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	04-Oct-08	C/714/08	7.86	0.35			AB	8	18	0			0.8	1	0.2		7.8	0.9	2.1	,,	,,			,,		0.149		0.0538				39.6								Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	WILSON RESERVIOR	257507	9853663	14-Apr-10	C/174/10	6.90	0.01	76.9	AB	AB		22.0	0	AB	52.0	0.20	0.30	0.10	2.00		2.15	7.70	0.01	4.43	0.84		NDT																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	EMBAKASI RESERVIOR	267363	9854741	18-Jun-08	C/460/08	7.49	0.69	309.00		AB		41.0	0	AB	95.0	TR	TR		28.40		5.26	44.63	NDT	NDT			NDT		0.2	0.03	0.0	NDT		NDT	185.4								Odour=; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC =TR; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	EASTERN	EMBAKASI RESERVIOR	267363	9854741	09-Jul-08	C/528/08	8.11	2.94	54	AB	AB	24.0	92.0	0	AB	167.0	TR			63.90		1.7	8.4	NDT	NDT			NDT		0.0	0.01	0.7			NDT	40.5								Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	EMBAKASI RESERVOIR	267363	9854741	16-Jan-11	C/21/11	7.4	27.1	83.2	AB	P		30.3	10	AB	35	0.2	0.3	0.1	5.68	10	1.9	10	0.004	NDT	1.53	7		NDT	0.842	0.267	0.0161	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	EMBAKASI RESERVOIR	267363	9854741	15-Feb-10	C/084/10	7.95	0.09	40.0			4.0	10.0			265.0				39.9	19.40	150		0.03					NDT	2.3	NDT	NDT	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	EMBAKASI RESERVOIR	267363	9854741	10-Apr-10	C/164/10	7.80	0.02	352.0	AB	AB		16.0	0	AB	310.0	AB	TR	TR	2.00		8.60	80.00	0.02	1.33	10.5		3.10																Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =TR; CC =TR; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	EMBAKASI RESERVOIR	267363	9854741	03-Sep-10	C/457/10	7.73	0.63	171.5	AB	AB		55.0	0.0	AB	30.0	0.10	0.20	0.10	5.96	7.00	2.20	17.00	0.04	2.00	0.52			0.009	0.147	0.018	0.1843	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	EASTERN	EMBAKASI RESERVOIR	267363	9854741	12-Apr-10	C/166/10	7.10	0.38	83.6	AB	AB		24.0	0	8.00	44.0	0.20	0.30	0.10	2.00		2.60	9.40	0.01	2.21	0.78		6.40																Odour=AB; Deposite =AB; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	12-Aug-10	C/641/10	7.91	0.54	66.2	UO	AB		33.4	0	AB	30.0	0.6	0.8	0.2	3.55	5.0	0.4	9.0	3.55	NDT	0.23		NDT	0.008	0.064	0.004	0.090	NDT											Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	GIGIRI INCOMING 2	256426	9863962	18-Mar-08	C/224/08/N	7.21	0.38	87.90				20.0	0	AB	24	0.30	0.40	0.10	6.39																								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GIGIRI INCOMING 1	256426	9863962	30-Jul-08	C/576/08	7.53	0.99	61.20	AB	AB	12.0	31.0	0	AB	28.0	1.15	1.20	0.05		1.75			NDT	NDT			NDT		NDT	0.0	0.0												Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GIGIRI PUMPING STATION	256398	9863837	30-Jul-08	C/577/08	7.25	0.20	64.40	AB	AB	12.0	25.0	0	AB	22.0	1.20	1.25	0.05					NDT	NDT			6.00		0.1	0.0	NDT												Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	GIGIRI PUMPING STATION	256398	9863837	20-May-11		7.28	0.46	66.5	AB	P		28.2	0	AB	36	1.3	1.5	0.2	2.84	7	--	--	NDT	NDT	0.51	6		0.004	0.06	0.0076	0.0181	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	GIGIRI PUMPING STATION	256398	9863837	23-Jan-11	C/44/11	7.37	0.24	70.8	AB	AB		24.9	0	AB	30	0.8	1	0.2	3.55	5	1.8	8	NDT	NDT	0.52	5		0.012	0.247	0.0163	NDT	0.012											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	GIGIRI PUMPING STATION	256398	9863837	12-Mar-10	C/626/10	7.73	0.20	64.6	UOB	AB		26.4	0	AB	27.0	0.8	1.0	0.2	3.55	5.0	0.4	8.5	3.55	NDT	NDT		NDT	NDT	NDT	0.013	NDT	NDT											Odour=UOB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	GIGIRI RESERVIOR	256479	9863835	25-Jan-09	C/50/09	6.8	0.58	51	AB	AB		22	0	AB	29	0.9	1.1	0.2	5.68	1.2			NDT	NDT			NDT		NDT	0.1282	NDT	NDT		NDT	38.3								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Distribution	NORTHERN	GIGIRI RESERVIOR	256479	9863835	07-Apr-08	C/270/08	7.33	0.25	66.10	AB	AB		37.0	0			1.00	1.20	0.20	2.84	5.8									0.1					NDT									Odour=AB; Deposite =AB; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GIGIRI RESERVOIR	256479	9863835	09-Apr-10	C/160/10	7.20	0.02	94.4	AB	AB		18.0	0	AB	36.0	0.25	0.30	0.05	2.00		9.50	4.82	0.01	NDT	0.24		1.70																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GIGIRI RESERVOIR	256479	9863835	11-Jul-10	C/359/10	7.17	1.42	72.6	AB	AB		38.8	0	AB	43.0	1.00	1.20	0.20			1.2	3.5	0.03	2.00				NDT	0.03	0.01	0.36	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	GIGIRI RESERVOIR	256479	9863835	20-Aug-10	C/428/10	7.86	2.04	80.1	AB	AB		32.0	0.0	AB	28.0	0.70	0.80	0.10	5.68	6.18	1.45	5.00	NDT	TR		1.0		--	NDT	0.0148	0.0198	0.032											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =TR; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GIGIRI RESERVOIR	256479	9863835	20-Sep-08	C/689/08	8.06	0.73	72.6	AB	A	12	34	0	AB	27	0.6	0.8	0.2	5.68	1	1.2	4.7	ND	ND			NDT		0.081	0.0009	0.0168			NDT	42.2								Odour=AB; Deposite =A; Alka_Phe =AB; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GIGIRI RESERVIOR	256479	9863835	19-May-08	C/391/08	7.4	0.37	63.5	AB	AB		34	0	AB	33	0.8	1	0.2	5.68	16.1	1.5	7.5	NDT	NDT			NDT		NDT	0.011	NDT				38.1								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	GIGIRI RESERVIOR	256479	9863835	15-Jan-08	C/04/08	7.72	0.95	72.0		AB			0			1.00	1.20	0.20	7.10	0.1	0.4	10.5	NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	22-Mar-10	C/137/10	7.20		99.8			8.0	40.0			50.0	1.0	1.20	0.20	9.9	21.60	1.6	7.6	0.06	0.70	0.4																		Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	29-Sep-10	C/507/10	7.33	0.18	73.8	AB	AB		37.3	0	AB	33.0	NT	NT	NT	5.99	NDT	2.50	9.00	0.02	6.40	NDT	2.0	NDT	NDT	0.10	NDT	0.058	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=NT; TRC =NT; CC =NT; SO4=NDT; NO2 =; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	15-Feb-10	C/046/10	7.01	0.90	90.0			4.0	48.0			41.0				5.99	15.70	1.6	11.8		7.00				NDT	0.6	NDT	0.0	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	10-Oct-08	C/736/08	7.17	0.44			AB	12	27	0			1	1.2	0.2		19.4	1.2	1.5	NDT	,,			,,		NDT		0.0594				46								Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVIOR	260207	9863270	17-Sep-11	C/306/11	7.43	0.61	76.8	AB	AB	8	28.3	0	AB	35	1.2	1.4	0.2	2.84	5	1.9	19	NDT	NDT	0.37	35	NDT	NDT	0.003	NDT	0.0827	0.012											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVIOR	260207	9863270	15-Jan-08	C/02/08	7.58	1.55	72.0		AB			0			1.00	1.20	0.20	5.68	0.0	0.5	9.8	NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVIOR	260207	9863270	04-Feb-08	C/76/08	7.53	2.47	63.4				17.0	0	AB	25.0				4.26	N/	0.4	5.9	NDT	NDT			"								42.2								Odour=; Deposite =; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVIOR	260207	9863270	18-Mar-08	C/223/08/N	7.48	0.65	69.10				25.0	0	AB	26	1.00	1.20	0.20	4.97																								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	24-Jan-09	C/41/09	6.9	0.79	52	AB	AB		23	0	AB	35	1	1.2	0.2	5.68	1.6			NDT	NDT			NDT		0.131	0.1502	0.0228	NDT		NDT	39								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	27-Jan-11	C/57/11	7.09	0.14	60	AB	AB		34	0	AB	30	0.7	0.9	0.2	7.1	1	1.8	7	0.003	8.5	0.63	--		NDT	NDT	NDT	0.0509	0.138											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	19-Feb-11	C/97/11	7.86	0.25	69.8	AB	AB		27.7	0	AB	32	0.8	1	0.2	5.68	7	1.4	0.9	0.6	NDT	0.17	19		NDT	0.058	0.0247	0.0114	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	17-May-11		7.3	0.64	70.2	AB	P		25.9	0	AB	30	0.6	0.7	0.1	2.84	13	--	--	NDT	NDT	0.85	10		NDT	NDT	0.0038	0.0406	0.057											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	10-Nov-11	C/377/11	7.49	0.14	79.9	AB	AB	6	21	0	AB	24	0.8	0.9	0.1	4.26	NDT	1.2	6.2	NDT		0.32		NDT	NDT	0.093	0.008	0.064	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	15-Feb-10	C/059/10	7.12	2.17	104.3			6.0	36.0			45.0				0.99	2.00	2.2	10.4	0.03	4.00				NDT	1.1	NDT	NDT	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	07-Mar-10	C/106/10	7.40		94.0			8.0	8.0			26.0	0.80	1.00	0.20	21.90	28.20	3.5	8.0	0.02	7.00	0.28																		Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	09-Apr-10	C/162/10	7.20	0.27	69.9	AB	AB		16.0	0	AB	33.0	0.50	0.60	0.10	1.00		2.36	8.00	0.05	NDT	NDT		2.60																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	11-Jul-10	C/357/10	7.47	2.41	117.9	AB	AB		29.5	0	AB	45.0	1.00	1.20	0.20			0.9	4.6	0.01	4.00				NDT	0.02	0.02	0.21	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	09-Sep-10	C/479/10	7.38	0.55	63.2	AB	AB		27.0	0.0	AB	35.0	0.40	0.60	0.20	5.96	3.00	1.00	9.00	0.02	1.00	0.34			NDT	0.066	0.011	0.0719	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	12-Oct-10	C/532/10	7.67	0.02	75.0	AB	AB		36.3	0	AB	32.0	0.7	0.90	0.20	5.99	NDT	0.90	9.70	NDT	5.80	NDT	6.0	NDT	NDT	NDT	NDT	0.264	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	12-Aug-10	C/642/10	8.03	0.21	66.9	UO	AB		36.9	0	AB	33.0	0.7	0.9	0.2	3.55	5.0	0.4	9.0	3.55	NDT	0.08		NDT	NDT	0.084	NDT	NDT	NDT											Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	13-Apr-09	C/153/09	7.85	1.19	79.6	A			32	0	0	28	1	1.2	0.2	4.97	3	1.43	8.2	0.004	T			NDT		0.006	0.0106	0.1171			NDT	47.76								Odour=A; Deposite =; Alka_Phe =0; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	12-May-08	C/346/08	7.51	2.48	65.1	AB	AB		33	0	AB	25	1	1.1	0.1	4.97	8.19	1.6	10	NDT	NDT			NDT			0.0151	0.0493			NDT	38.88								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	08-Sep-08	C/662/08	7.57	2.35	60.4	AB	AB	8	27	0	AB	27	1	1.2	0.2	5.68	0.9	1.1	5.6	TR	ND			NDT		NDT	0.0073	0.263			NDT	37.4								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =TR; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	02-Aug-09	C/82/09	7.8	0.14	64.4	AB	AB		20	0	AB	30	0.8	1	0.2	5.68	1.6	1.2	10	NDT	NDT			NDT		0.514	0.0066	0.1432			NDT	41.6								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	05-Oct-08	C/720/08	7.9	1.27			AB	12	26	0			1.1	1.3	0.2		5.04	0.8	0.8	NDT	NDT			NDT		NDT		0.0679				40.7								Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	02-Nov-08	C/805/08	7.94	0.06	78.2	AB	AB	8	30	0	AB	30	1	1.2	0.2	5.68	5.74	1.4	7.6	NDT	NDT					0.039	0.0227	0.0281			NDT	58.6								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KARURA RESERVOIR	260207	9863270	18-Mar-09	C/133/09	8.06	0.12	86.1	AB	AB		24	0	AB	28	1	1.2	0.2	4.97	3	1.5	10	TR	NDT			NDT		NDT	0.0061	0.1544				60.2								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVOIR	264107	9865807	02-Aug-09	C/79/09	7.84	0.54	64.2	AB	AB		20	0	AB	28	1	1.2	0.2	4.97	2.4	1.3	8	NDT	NDT			NDT		0.031	0.0212	0.0823			NDT	38.5								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	15-Jan-08	C/01/08	7.55	0.84	71.0		AB			0			1.00	1.20	0.20	4.26	0.0		10.5	NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	04-Feb-08	C/78/08	7.58	0.66	69.6				16.0	0	AB	15.0				5.68	1.0	0.4	9.3	NDT	NDT			"								46.4								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	16-Feb-08	C/124/08	7.75	1.87	77.80				20.0	0	AB		1.00	1.20	0.20	5.68	1.0							AB								51.8								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	22-Jun-08	C/472/08	7.31	1.19	64.70		AB		23.0	0	AB	23.0	0.80	0.90		4.97		1.0	8.6	NDT	NDT			NDT		0.1	0.03	NDT	NDT		NDT	40.0								Odour=; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	24-Jan-09	C/44/09	7	0.64	56	AB	AB		24	0	AB	28	1	1.2	0.2	7.81	1.5			NDT	NDT			NDT		NDT	0.1118	0.0399	NDT		NDT	42								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	19-Feb-11	C/98/11	7.92	0.03	71.5	AB	AB		30.9	0	AB	26	--	--	--	7.1	6	1	0.8	1.2	NDT	0.26	5		0.197	NDT	0.0177	0.1213	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	14-Jul-11	C/270/11	7.5	0.23	70.1	AB	AB	10	27.7	0	AB	30	1	1.3	0.3	5.68	70	5.83	35.92	0.002	NDT	1.74	NDT		NDT	0.033	NDT	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	18-Apr-10	C/191/10	7.80	0.17	82.8	AB	AB		20.0	0	AB	30.0	0.50	0.60	0.10	3.00		3.20	9.80	0.02	NDT	NDT		1.20																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	07-Jul-10	C/341/10	6.75	1.10	64.0	AB	AB		23.9	0	AB	41.0	0.80	1.00	0.20			0.8	4.1	0.01	3.00				NDT	NDT	0.01	0.22	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	12-Oct-10	C/528/10	7.49	0.33	74.8	AB	AB		30.7	0	AB	33.0	0.6	0.80	0.20	7.99	NDT	2.90	9.70	NDT	11.30	0.14	5.0	NDT	NDT	NDT	NDT	0.067	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	11-Sep-10	C/587/10	8.16	0.19	89.6	AB	AB		36.9	0	AB	35.0	0.80	1.00	0.20	5.68	7.0	1.01	9.2	0.011	NDT	0.87		NDT	0.032	0.011	0.008	0.096	0.045											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	19-Aug-09	C/341/09	7.85	0.5	161	UO	AB		34		AB	49	1	1.2	0.2	9.23	13	1.5	10	NDT	NDT					0.073	0.0079	0.2144												Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	07-Aug-09	C/596/08	7.72	0.18	64.3	AB	AB	7.0	27.0	0	AB	29.0	1.20	1.3	0.10		2.5	1.0	8.3	NDT	NDT			AB		0.1	0.00	0.2												Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	21-Sep-08	C/684/08	7.99	0.08	70.2	AB	AB	8	28	0	AB	28	1	1.2	0.1	7.1	1.75	1.2	NDT	ND	ND			NDT		0.089	NDT	0.1154			NDT	42.7								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =ND; NO3 =ND; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	06-Oct-08	C/731/08	6.41	1.66			AB	8	16	0			1	1.2	0.2		2.4	0.9	0.8	,,	,,			,,		0.306		0.0351				45.9								Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	13-Nov-08	C/880/08	7.93	0.02	72.4	AB	AB	10	22	0	AB	30	0.6	0.65	0.1	6.39	23.9	1.1	9.1	NDT	NDT					0.193	0.0127	0.2198			NDT	54.3								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KASARANI RESERVIOR	264107	9865807	16-Feb-08	C/123/08	7.71	2.15	75.80				18.0	0	AB		1.00	1.20	0.20	4.26	0.3							AB								50.5								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVOIR	268695	9869298	12-Jan-11	C/397/11	7.8	0.1	104	AB	AB	4	24.2	0	AB	25	0.6	0.8	0.2	6		20.2	57.81				1	NDT	NDT	0.064	NDT	0.0075	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVOIR	268695	9869298	25-Jan-09	C/48/09	7	0.47	54	AB	AB		22	0	AB	29	0.8	1	0.2	4.97	2.5			NDT	NDT			NDT		NDT	0.1249	.0.0407	NDT		NDT	40.5								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVOIR	268695	9869298	06-Jul-08	C/512/08	7.43	0.21	50.3	AB	AB	16.0	20.0	0	AB	26.0	0.70	0.80	0.10	4.97		1.3	9.7	NDT	NDT			5.20		0.3	0.3	0.3			NDT	30.2								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVOIR	268695	9869298	13-Apr-09	C/151/09	7.76	0.36	80.4	AB			28	0	0	29	1	1.2	0.2	4.97	3	1.27	8.25	0.003	T			NDT		NDT	0.174	0.0509			NDT	48.24								Odour=AB; Deposite =; Alka_Phe =0; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	01-May-09	C/02/09	7.64	0.59	73.4	AB	AB		20	0	AB	29	0.6	0.8	0.2	8.52	4.5			NDT	NDT			NDT		0.064	0.0921	0.0465	NDT		NDT	55.1								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	24-Jan-09	C/42/09	6.5	0.68	53	AB	AB		25	0	AB	30	1	1.2	0.2	7.1	1.8			NDT	NDT			NDT		0.042	0.1184	0.3016	NDT		NDT	39.8								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	15-Jan-08	C/03/08	7.67	1.48	73.0		AB			0			1.20	1.30	0.10	5.68	0.1	0.5	10.5	NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	02-Apr-08	C/74/08	7.53	0.27	62.2				16.0	0	AB	27.0				7.10	90.3	0.3	7.5	NDT	NDT			"								41.4								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	18-Mar-08	C/225/08/N	7.52	1.20	77.30				26.0	0	AB	28	1.00	1.20	0.20	6.39																								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	19-Feb-11	C/99/11	7.95	0.08	72.3	AB	AB		30	0	AB	31	0.6	0.8	0.1	5.68	6	2.8	3	3.2	0	0.29	21		0.05	0.041	0.0628	NDT	0.312											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	03-Feb-11	C/111/11	7.74	0.42	--	AB	AB		22.5	0	AB	31	--	--	--	5.68	7	3.2	10.2	NDT	28.1	--	25		0.003	0.353	0.0208	0.2289	0.109											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	20-May-11		7.3	0.32	63.9	AB	P		30.4	0	AB	32	0.4	0.5	0.1	4.28	10	--	--	NDT	NDT	NDT	4		NDT	NDT	0.0152	0.0168	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	09-Apr-10	C/163/10	7.10	2.07	71.8	AB	AB		12.0	0	AB	34.0	0.90	1.00	0.10	2.00		2.40	7.50	0.01	NDT	0.84		2.30																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	11-Jul-10	C/358/10	7.56	3.57	74.6	AB	AB		35.2	0	AB	41.0	0.40	0.60	0.20			0.9	4.7	0.02	2.00				0.00	0.04	0.00	0.21	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	12-Oct-10	C/531/10	7.56	0.33	75.0	AB	AB		27.3	0	AB	33.0	0.7	0.90	0.70	7.99	NDT	2.70	10.20	NDT	6.10	NDT	4.0	NDT	0.0	0.26	NDT	0.132	0.04		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	13-Apr-09	C/152/09	7.82	0.34	78.3	AB			24	0	0	30	1	1.2	0.2	4.26	5	1.43	7.05	0.003	T			NDT		NDT	0.0157	0.0622			NDT	46.98								Odour=AB; Deposite =; Alka_Phe =0; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	12-May-08	C/347/08	7.43	1.42	47.5	AB	AB		30	0	AB	19	1	1.24	0.2	4.97	6.51	1.6	8.3	NDT	NDT			NDT		ND	0.0015	0.0346			NDT	38.64								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	08-Sep-08	C/659/08	7.37	0.35	60.9	AB	AB	8	26	0	AB	25	1	1.2	0.2	5.68	1.75	1.3	7.1	ND	ND			NDT		0.072	0.0059	0.1138			NDT	36.54								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVOR	257282	9862792	07-Aug-09	C/595/08	7.65	0.03	59.5	AB	AB	8.0	28.0	0	AB	27.0	1.00	1.20	0.20		2	1..0	10.8	NDT	NDT			0.10		NDT	0.00	0.1												Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIAMBU RESERVOIR	257282	9862792	02-Nov-08	C/807/08	7.82	0.01	68.8	AB	AB	10	22	0	AB	33	1.2	1.4	0.2	7.1	21.6	1.3	7.4	NDT	NDT					NDT	NDT	0.1038			NDT	51.6								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIAMBU RESERVIOR	257282	9862792	02-Aug-09	C/81/09	7.81	0.11	66.3	AB	AB		18	0	AB	30	0.8	1	0.2	5.68	1.7	1.3	8	NDT	NDT			NDT		NDT	0.0185	0.3528			NDT	39.8								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	04-Feb-08	C/75/08	7.55	0.59	62.1				15.0	0	AB	28.0				3.55	1.0	0.4	9.3	NDT	NDT			"								41.4								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	15-Jul-10	C/374/10	7.56	0.46	79.7	AB	AB		40.6	0.00	AB	40.0	0.60	0.80	0.20			1.18	4.7	0.01	4.00				NDT	0.02	NDT	0.18	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	16-Jan-11	C/19/11	7.18	0.13	70.1	AB	P		30	0	AB	30	0.4	0.5	0.1	3.55	15	1.8	8	0.003	NDT	0.68	7		0.005	NDT	0.0104	0.0029	0.005											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	19-Nov-10	C/611/10	7.15	0.05	58.2	AB	AB		31.0	0	AB	30.0	0.60	0.80	0.20	4.97	8.0	1.06	5.1	0.03	NDT	0.39		NDT	NDT	NDT	0.0255	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	15-Jan-08	C/47/08	7.98	0.67	70.00		AB			0			0.80	1.00	0.20		0.2																							Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY RESERVIOR	268695	9869298	19-May-08	C/389/08	7.49	1.29	65.7	AB	AB		37	0	AB	34	1	1.2	0.2	4.26	12.4	1.4	9.2	NDT	NDT			NDT		NDT	NDT	0.0014				39.4								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	BOOSTER 2	250824	9862413	25-Jan-09	C/49/09	7.2	0.08	87	AB	AB		20	0	AB	30	1	1.2	0.2	5.68	1.5			NDT	NDT			NDT		NDT	0.1074	0.0183	NDT		NDT	65.3								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	BOOSTER 2	250824	9862413	18-Mar-08	C/227/08/N	7.46	1.13	86.40				20.0	0	AB	30	0.20	0.30	0.10	6.39																								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	BOOSTER 2	250824	9862413	08-Apr-10	C/159/10	7.30	0.34	156.8	AB	AB		20.0	0	AB	70.0	1.50	1.70	0.20	2.00		26.50	4.70	0.02	4.43	0.61		1.80																Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	WESTERN	BOOSTER 2	250824	9862413	20-Jul-09	C/301/09	7.42	0.02	69.5	UO	AB	12	34	0	AB	35	0.8	1	0.2	11.36	0.8	1.6	3.85	NDT	NDT					0.138	NDT	NDT				48.65								Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	DAGORETI RESERVIOR	241935	9857126	04-Jul-08	C/506/08	7.00	0.59	84.3	AB	AB	20.0	20.0	0	AB	27.0	0.70	0.90	0.20	9.94		1.7	13.6	NDT	TR			0.20		0.1	0.2	0.2			NDT	50.6								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =TR; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	DAGORETI RESERVIOR	241935	9857126	02-May-11	C/64/11	7.89	0.2	83.7	AB	AB		38	0	AB	27	0.1	0.2	0.1	5.68	6	2.2	4	NDT	0.01	NDT	11		NDT	NDT	0.0707	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	DAGORETI RESERVIOR	241935	9857126	22-Aug-10	C/438/10	7.19	1.14	82.2	AB	AB		24.0	0.0	AB	35.00	0.40	0.50	0.10	2.84	4.65	4.45	13.50	NDT	TR		NDT		--	NDT	0.0018	0.0138	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =TR; F=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	DAGORETI RESERVIOR	241935	9857126	18-May-08	C/379/08	7.33	0.85	75	AB	AB		31	0	AB	29	0.2	0.25	0.05	5.68	3.14	2	33	NDT	NDT			3.8		0.208	NDT	NDT			NDT	45								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	22-Feb-08	C/161/08	7.78	0.59	79.60		AB		20.0	0	AB	27.00	1.00	1.10	0.10	7.10	8.0				NDT			AB							NDT	51.0								Odour=; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	16-Jan-11	C/22/11	7.46	0.99	72.5	AB	P		26.5	0	AB	28	0.6	0.8	0.2	4.26	4	2	8	0.013	NDT	1.12	12		0.015	0.01	0.2163	NDT	0.147											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	02-Jun-11	C/70/11	7.79	0.56	65.4	AB	P		32.7	0	AB	27	0.7	0.8	0.1	5.68	5	2.2	5	NDT	NDT	NDT	22		0.007	NDT	0.2585	NDT	0.342											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	03-Jun-11	C/116/11	7.78	0.89	71.4	AB	P		35.5	0	AB	30	0.6	0.8	0.2	5.68	10	3.2	8.5	NDT	2.6	--	18		0.008	0.044	0.6956	0.1595	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	17-May-11		7.18	0.74	68.4	AB	P		27.4	0	AB	30	1	1.1	0.1	2.84	9	--	--	0.001	NDT	0.19	4		NDT	0.155	0.0178	0.3739	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	28-Jun-11	CO/255/11	7.45	3.97	51.9	AB	AB	29.5	29.5	0	AB	30	1.5	1.7	0.2	4.26	12	4.5	7.6	NDT	--	0.16	3		NDT	NDT	0.0135	0.0054	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	25-Jul-11	C/276/11	7.21	0.72	75.8	AB	AB	6	32.9	0	AB	32	0.8	1	0.2	4.26	4	0.94	6.92	NDT	NDT	0.32	NDT		NDT	0.568	NDT	NDT	0.114											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	16-Aug-11	C/281/11	7.69	0.58	66.3	AB	AB	8	28.9	0	AB	27	0.7	0.8	0.1	3.55	4	1.84	0.664	NDT	NDT	NDT	2		NDT	0.046	0.0371	0.0831	0.149											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	15-Jul-10	C/370/10	7.53	0.58	93.8	AB	AB		59.5	0	AB	45.0	0.80	1.00	0.20			1.6	5.3	0.03	2.00				NDT	0.07	0.04	0.09	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	10-Aug-10	C/415/10	7.96	0.88	83.4	AB	P		38.0	0.0	AB	28.0	0.50	0.60	0.10	5.68	15.57	1.15	5.50	TR	NDT		NDT		0.013	NDT	0.0077	0.0437	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	23-Sep-10	C/505/10	7.28	0.21	86.4	AB	AB		50.0	0.0	AB	45.0	0.40	0.60	0.20	5.96	4.00	1.80	9.40	0.00	1.90	NDT			NDT	0.137	0.01	0.0229	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	21-Oct-10	C/549/10	7.46	0.42	61.7	AB	AB		53.7	0	AB	33.0	0.8	0.90	0.10	7.99	NDT	0.90	8.20	NDT	4.90	NDT	4.0	NDT	NDT	NDT	0.000	NDT	0.08		4.00									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	11-Jul-10	C/580/10	7.70	0.35	65.0	AB	AB		26.3	0	AB	40.0	0.70	0.80	0.10	6.39	6.0	1.09	8.5	0.013	NDT	0.42		NDT	0.017	0.026	0.007	0.095	0.067											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	12-Jun-10	C/633/10	7.80	0.22	77.5	UO	AB		48.0	0	AB	28.0	0.8	0.9	0.1	3.55	6.0	0.6	10.5	3.55	NDT	0.35		NDT	NDT	NDT	0.042	NDT	NDT											Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	21-Apr-09	C/175/09	7.58	0.3	69	AB			32	0	0	32	0.8	1	0.2	5.68	2.5	1.6	9.17	0.01	T			0.1		0.064	0.0106	7.9827			NDT	41.4								Odour=AB; Deposite =; Alka_Phe =0; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	06-Mar-10	C/107/10	7.40		120.8			6.0	16.0			40.0	0.20	0.40	0.20	23.90	30.80	4.3	10.0	0.01	6.00	0.43																		Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATIONS	249937	9858517	06-Sep-11	C/298/11	7.67	0.18	104.2	AB	AB	8	28.3	0	AB	41	0.4	0.6	0.2	2.84	4	1.9	9.5	NDT	NDT	0.15	NDT	NDT	NDT	0.117	0.002	0.0213	0.012											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=NDT; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	GATINA PUMPING STATION	249937	9858517	15-Feb-10	C/056/10	7.25	0.94	86.1			6.0	38.0			40.0				0.99	26.10	2.7	13.4	0.02	4.00				0.003	0.6	NDT	NDT	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	18-Mar-08	C/226/08/N	7.11	2.16	88.70				25.0	0	AB	25	0.10	0.20	0.10	6.39																								Odour=; Deposite =; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	23-Jan-11	C/46/11	7.22	0.71	84.6	AB	AB		26.7	0	AB	36	0.3	0.4	0.1	4.97	5	2.6	9	NDT	NDT	0.74	6		NDT	1.075	NDT	0.2112	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	15-Jan-08	C/05/08	7.74	0.52	72.0		AB			0			1.00	1.20	0.20	5.68	1.0	0.5	16.5	NDT	NDT																			Odour=; Deposite =AB; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	25-Jan-09	C/47/09	7	1.11	80	AB	AB		20	0	AB	30	0.2	0.3	0.1	6.39	4.5			NDT	NDT			NDT		0.08	0.103	0.012	NDT		NDT	60								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	02-Feb-11	C/61/11	7.5	0.02	83.3	AB	AB		30.4	0	AB	28	1	1.2	0.2	5.68	7	2.4	3	NDT	NDT	0.05	30		NDT	NDT	NDT	0.1284	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	03-Jul-11	C/117/11	7.79	0.25	80.6	AB	P		37.7	0	AB	31	1.2	1.4	0.2	5.68	14	13.1	62	NDT	NDT	--	9		3E-04	0.118	0.1855	0.2173	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	04-Dec-11	C/166/11	7.48	0.01	88.8	AB	AB		29.3	0	AB	60	0.6	0.8	0.2	3.55	NDT	0.8	1.8	NDT	NDT	--	10		NDT	0.303	0.0806	0.058	0.018											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	17-May-11		7.3	0.65	77.2	AB	P		28.2	0	AB	35	1	1.1	0.1	3.55	5	--	--	0.002	NDT	0.35	6		0.004	0.123	0.0203	0.0695	NDT											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	15-Feb-10	C/061/10	7.30	1.46	120.0			12.0	36.0			50.0				1.29	32.50	3.2	18.0	0.02	7.00				NDT	1.1	NDT	0.0	NDT											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	11-Jul-10	C/356/10	7.61	0.92	75.4	AB	AB		29.3	0	AB	45.0	1.50	1.80	0.30			2.5	8.3	0.03	1.00				NDT	0.07	0.03	0.06	NDT											Odour=AB ; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	17-Sep-10	C/501/10	7.86	0.02	76.2	AB	P		52.0	0.0	AB	33.0	0.80	1.00	0.20	5.96	16.10	2.20	9.20	0.02	2.00	0.69			NDT	0.093	0.006	0.2521	0.01		NDT									Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	11-May-10	C/572/10	7.87	0.49	101.0	AB	AB		25.2	0	AB	40.0	0.30	0.40	0.10	3.55	9.0	6.40	12.0	0.037	NDT	0.44		NDT	0.012	0.008	0.008	0.073	0.179											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	14-Mar-09	C/128/09	7.91	0.4	81.2	AB	AB		37	0	AB	35	1	1.2	0.2	4.97	5	1.6	8.2	TR	NDT			NDT		NDT	0.0045	0.0005				56.8								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =TR; NO3 =NDT; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	04-May-09	C/148/09	7.61	0.7	80.4	AB			30	0	0	31	0.8	0.9	0.1	4.97	3.5	1.77	7.05	NDT	NDT			0.1		NDT	0.0604	0.348			NDT	48.24								Odour=AB; Deposite =; Alka_Phe =; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LORESHO RESERVOIR	250233	9861475	21-Sep-08	C/686/08	8.2	0.39	86.1	AB	AB	12	26	0	AB	30	1	1.2	0.1	7.81	1.75	1.4	5	ND	ND			NDT		0.004	0.0135	0.092			NDT	51.4								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	02-Nov-08	C/806/08	7.89	0.02	75.3	AB	AB	10	18	0	AB	29	0.8	1.0.	0.2	5.68	6.95	1.4	7.3	NDT	NDT					0.087	0.0063	0.0505			NDT	56.4								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LORESHO RESERVIOR	250233	9861475	19-May-08	C/390/08	7.31	1.4	83.6	AB	AB		34	0	AB	29	0.1	0.2	0.1	4.97	14	2	10	NDT	NDT			NDT		0.206	NDT	0.0105				50.2								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVIOR	246443	9859967	18-Jan-11	C/28/11	7.02	0.34	88.7	AB	AB		27.2	0	AB	40	0.4	0.6	0.2	7.1	12	2.2	9.5	0.003	NDT	0.88	7		NDT	NDT	0.0755	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	30-Apr-11	C/181/11	7.5	0.02	68.1	AB	P		30.9	0	AB	44	0.2	0.3	0.1	7.1	11	4	10	0.001	NDT	--	6		NDT	0.199	0.1905	0.106	0.035											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVIOR	246443	9859967	29-Feb-08	C/168/08	7.67	1.01	255.0		AB		57.0	0	AB	27.0	AB	AB	AB	28.00	2.5	0.4	7.5	NDT	ABST			AB							NDT	170.0								Odour=; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC =AB; CC =AB; SO4=; NO2 =NDT; NO3 =AB; F=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	UTHIRU RESERVIOR	246443	9859967	02-May-11	C/67/11	7.34	0.23	80.4	AB	AB		32.9	0	AB	28	0.3	0.4	0.1	4.26	5	2.2	5	NDT	NDT	0.16	10		NDT	NDT	0.1777	NDT	0.031											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVIOR	246443	9859967	15-Nov-11	C/387/11	7.39	0.69	125.8	AB	AB	8	12.4	0	AB	23	0.25	0.35	0.1	3.55	2	1.4	7.3	NDT		0.06		NDT	NDT	NDT	NDT	NDT	NDT											Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =; F=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	15-Feb-10	C/060/10	7.20	0.58	99.6			6.0	36.0			40.0				7.99	30.70	2.7	11.9	0.09	5.00				NDT	0.9	NDT	NDT	0.405											Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	17-Mar-10	C/131/10	6.02		111.3			10.0	29.0			30.0	0.4	0.50	0.10	12.9	15.30	1.8	8.2	0.02	0.90	0.37																		Odour=; Deposite =; Alka_Phe =; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	17-Sep-10	C/500/10	7.80	0.03	51.2	AB	P		76.0	0.0	AB	44.0	0.40	0.45	0.05	7.95	4.50	1.20	5.00	0.01	1.00	0.55			NDT	0.126	0.010	0.5911	NDT		NDT									Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =; NO3 =; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	20-Oct-10	C/545/10	7.55	0.35	77.1	AB	AB		34.2	0	AB	35.0	0.5	0.70	0.20	7.99	NDT	0.80	7.90	NDT	5.10	NDT	8.0	NDT	NDT	0.01	0.003	0.000	NDT		NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	16-Dec-10	C/674/10	7.41	0.34	244.0	UO	AB		63.7	0	AB	35.0	TR	TR	TR	35.5	2.0	1.2	19.0	NDT	NDT	0.4		0.60	0.002	0.087	0.021	0.125	NDT											Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC =TR; CC =TR; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	MPN_Coliform	MPN_E_Coli	Remark
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	23-Apr-09	C/179/09	7.21	1.83	77	A			25	0	0	29	0.6	0.8	0.2	5.68	1.6	2.69	10.8	0.007	T			0.3		0.271	0.0449	3.9538			0.1	46.2								Odour=A; Deposite =; Alka_Phe =0; SO4=; NO2 =; NO3 =T; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	04-Jul-08	C/501/08	7.07	0.25	79.6	AB	AB	10.0	30.0	0	AB	56.0	0.40	0.50	0.10	37.60		1.7	13.9	NDT	NDT			1.30		0.1	0.2	0.2			NDT	47.8								Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	UTHIRU RESERVOIR	246443	9859967	17-May-11		7.1	0.91	63.6	AB	P		26.9	0	AB	17	0.2	0.3	0.1	2.84	7	--	--	NDT	NDT	0.54	6		NDT	0.067	0.0165	0.0406	0.043											Odour=AB; Deposite =P; Alka_Phe =AB; SO4=; NO2 =NDT; NO3 =NDT; F=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=

Key

FRC Free Residual Chlorine
TRC Total Residual Chlorine
CC Combined Chlorine
PV Permanaganate Value

Not Detected
Absent
Nill
Trace
Present
Not Treated
Presence of material is Un-Objectionable
Not chlorinated

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	BELLEVUE OILIBYA	258017	9855991	04-Oct-08	C/717/08	7.97	0.72			AB	8	22	0			0.8	0.9	0.1		8.7	1.2	2.1	NDT	NDT			NDT		NDT		0.0238				39.5						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	BELLEVUE OILIBYA	258017	9855991	04-Apr-08	C/253/08	7.52	0.22	78.6	AB	AB		36.0	0			1.00	1.20	0.20	5.68	9.6									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HOTEL BOULVARD	256700	9858944	18-Oct-08	C/756/08	7.44	0.19			P	20	40	0							24.1	0.8	7.5	NDT	NDT			NDT		0.1343		0.0108				44.5						Odour=; Deposite =P; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HOTEL BOULVARD	256700	9858944	15-Jan-08	C/17/08	7.58	0.42	76.1		AB			0			0.80	0.90	0.10	5.68	0.1	5.1	11.2	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HOTEL BOULVARD	256700	9858944	13-Jan-09	C/21/09	7.88	0.3	72.1	AB	AB		23	0	AB	27	0.4	0.5	0.1	7.81	2			NDT	NDT			NDT		NDT	0.1151	0.0295	NDT		NDT	54.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	CASINO HOSPITAL	258158	9858249	05-Aug-08	C/572/08	8	0.11	64.80	AB	AB	8.0	27.0	0	AB	30.0	0.60	0.80	0.20		1.75	1.0	9.0	NDT	NDT			NDT		NDT	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	CITY HALL	257519	9857994	20-Feb-09	C/9309	7.2	1.1	172	AB	AB		38	0	AB	50	N/C	N/C	N/C	5.68	5.7	3.4	22	NDT	NDT					NDT	0.0368	0.0412			0.1	103.2						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/C; TRC=N/C; CC=N/C; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	CITY HALL	257519	9857994	15-Jan-08	C/16/08	7.75	2.33	70.9		AB			0			0.45	0.55	0.10	5.68	0.1	0.6	10.9	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	CITY HALL	257519	9857994	19-Feb-08	C/133/08	7.26		70.50					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	CITY HALL	257519	9857994	06-Apr-08	C/263/08	7.61	0.31	65.7	AB	AB		42.0	0			0.90	1.00	0.10	4.97	6.2									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	CITY HALL	257519	9857994	10-Sep-08	C/670/08	7.17	0.2	62.9	AB	AB	7	29	0	AB	27	0.8	1	0.2	4.26	2.75	1.2	5.6	ND	ND			NDT		NDT	0.011	0.0449			NDT	37.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	CITY MARKET	257226	9858328	06-Apr-08	C/262/08	7.50	0.26	49.1	AB	AB		62.0	0			0.90	1.00	0.10	3.55	5.8									0.1					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	CRESCENT MEDICAL AID KENYA	257507	9858082	09-Jul-08	C/534/08	7.91	0.43	63.5	AB	AB	16.0	30.0	0	AB	23.0	0.70	0.80	0.10	5.68		1.3	11.7	NDT	NDT			1.7		0.0	NDT	0.2			NDT	47.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	CRESENT MEDICAL AID CENTER	258727	9859038	13-Jan-09	C/24/09	7.72	0.35	74.3	AB	AB		26	0	AB	32	0.7	0.8	0.1	8.52	2.5			NDT	NDT			NDT		0.0544	0.1041	0.1529	NDT		NDT	55.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	FIRE STATION ENTERPRISE ROAD	260109	9855256	13-May-08	C/355/08	7.26	0.3	65.5	AB	AB		45	0	AB	29	0.5	0.6	0.1	4.26	6.75	1.6	10	NDT	NDT			NDT		NDT	0.0182	0.0459			NDT	39.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SAMEER AFRICA LIMITED	262644	9853114	17-Mar-08	C/218/08	7.52	0.52	71.00				20.0	0	AB	31.0	0.60	0.80	0.20	4.97																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	FUATA NYAYO SLUM	259242	9855205	18-Jul-08	C/553/08	7.67	0.02	62.70	AB	AB	12.00	22.00	0	AB	28.00	0.90	1.00	0.10	8.52		1.7	10.0	NDT	NDT			1.60			NDT	NDT			NDT	44.20						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	GENERAL STORES	258642	9857674	06-Apr-08	C/266/08	7.59	0.21	64.70	AB	AB		45.0	0			1.00	1.20	0.20	4.97	7.2									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HIGHWAY SECONDARY SCHOOL	259296	9854270	17-May-08	C/372/08	7.03	2.58	64.4	AB	AB		27	0	AB	29	1	1.1	0.1	4.97	1.05	1.4	9.2	NDT	NDT			2.9		NDT	NDT	0.012			NDT	38.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HIGHWAY SECONDARY SCHOOL	259296	9854270	12-Jul-10	C/638/10	7.87	0.12	65.9	UO	AB		37.4	0	AB	30.0	0.7	0.9	0.2	2.13	5.0	0.2	9.0	2.13	NDT	0.05		NDT	0.02	0.278	0.046	0.071	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	HIGHWAY SECONDARY SCHOOL	259296	9854270	08-Oct-10	C/527/10	7.47	0.21	73.0	AB	AB		28.6	0	AB	35.0	-	-	-	13.99	NDT	2.90	10.70	NDT	8.60	NDT	22.0	-	0.0	0.05	NDT	0.110	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC=; CC=; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	HIGHWAY SECONDARY SCHOOL	259296	9854270	02-Jul-09	C/76/09	7.06	0.27	51	AB	AB		18	0	AB	25	1	1.2	0.2	5.68	2.2	1.3	7.9	NDT	NDT			NDT		NDT	NDT	0.246			NDT	30.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HIGHWAY SECONDARY SCHOOL	259296	9854270	13-Apr-10	C/170/10	6.80	0.02	67.8	AB	AB		22.0	0	AB	150.0	0.60	0.70	0.10	2.00		1.60	6.80	0.013	2.21	0.31		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	09-Jul-08	C/529/08	8.31	0.30	62	AB	AB	16.0	30.0	0	AB	26.0	0.80	0.90	0.10	4.26		2.2	12.5	NDT	NDT			1.6		0.1	0.01	NDT			NDT	46.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	11-Apr-08	C/284/08	7.61	0.43	72.30	AB	AB		34.0	0			0.60	0.80	0.20	4.26	5.4														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	17-Mar-08	C/219/08	7.25	0.58	70.80				24.0	0	AB	33.0	0.60	0.80	0.20	4.97																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	21-Jun-08	C/463/08	7.58	0.55	55.40		AB		27.0	0	AB	23.0	1.20	1.40		4.97		1	7.9	NDT	NDT			NDT		0.1	0.02	0.0	NDT		NDT	33.2						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	15-Oct-08	C/742/08	8.26	0.43			AB	16	30	0			1	1.2	0.2		18.6	0.9	0.8	NDT	NDT			NDT		0.1045		0.0192				43.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	16-May-11		7.02	0.81	65.6	AB	P		23	0	AB	30	0.8	0.9	0.1	4.26	9	--	--	NDT	NDT	NDT	8		NDT	NDT	NDT	0.019	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	13-Jul-11	C/267/11	7.53	1.59	62.5	AB	AB	8	22.8	0	AB	34	0.6	0.8	0.2	2.84	29	1.27	33.76	0.22	NDT	0.78	6		NDT	NDT	0.0925	NDT	0.2371									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	02-Sep-10	C/449/10	7.56	0.04	58.4	AB	AB		61.4	0.0	AB	32.0	0.40	0.60	0.20	7.95	8.50	1.10	6.00	0.02	3.00	NDT			NDT	0.0189	0.005	0.0504	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	09-Aug-10	C/406/10	7.53	53.00	69.9	AB	P		28.0	0.0	AB	53.0	0.70	0.90	0.20	2.13	55.07	0.55	3.8	NDT	TR		1.2		0.01	0.636	NDT	0.0352	0.085									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	15-Feb-10	C/054/10	7.65	0.79	79.7			6.0	42.0			45.0				7.99	16.80	2.0	11.3		9.00				0	0.5	NDT	0.0	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	HILLOCKS COUNTRY CLUB HOTEL	262556	9854086	15-Mar-10	C/120/10	7.20		86.2			6.0	38.0			30.0	0.50	0.60	0.10	21.90	19.50	1.5	6.5	0.05	11.00	0.5																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	IMARA DAIMA ESTATE	264201	9853577	23-Aug-10	C/446/10	7.91	0.68	60.8	AB	AB		28.0	0.0	AB	27.00	0.60	0.80	0.20	2.13	9.32	0.65	4.60	TR	TR		1.1		--	0.0358	0.0055	0.0438	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	IMARA DAIMA ESTATE	264201	9853577	11-Jun-10	C/576/10	7.79	0.02	75.6	AB	AB		23.3	0	AB	32.0	0.60	0.70	0.10	5.68	6.0	1.01	7.2	0.046	NDT	0.55		NDT	0.01	0.131	0.014	0.032	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	07-Sep-08	C/657/08	7.62	0.06	61.4	AB	AB	10	28	0	AB	30	1	1.2	0.2	7.1	1.75	1	9.2	ND	ND			NDT		0.1018	0.0014	0.0917			NDT	36.84						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	09-Jul-08	C/533/08	7.98	0.36	60.6	AB	AB	18.0	25.0	0	AB	21.0	0.80	0.90	0.10	5.68		1.8	11.7	NDT	NDT			NDT		0.1	0.00	NDT			NDT	45						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	10-Nov-08	C/862/08	7.38	0.33	69	AB	AB	12	20	0	AB	30	1	1.2	0.2	6.39	17.8	1.6	5.1	NDT	NDT					0.0608	0.0155	0.101			NDT	51.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	07-Sep-08	C/655/08	7.58	0.12	62.1	AB	AB	8	32	0	AB	28	1.2	1.3	0.1	7.81	1.75	1	8.3	ND	ND			NDT		0.0263	0.0088	0.0415			NDT	37.26						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	22-Jan-11	C/41/11	7.63	0.31	71.9	AB	AB		30.2	0	AB	32	0.5	0.6	0.1	3.55	NDT	1.6	7.5	NDT	0.1	1.47	5		0.01	NDT	NDT	NDT	0.0138									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	02-Mar-09	C/54/09	7.7	0.17	69.9	AB	AB		23	0	AB	28	1.2	1.5	0.3	5.68	1	1	8	NDT	NDT			NDT		NDT	0.0066	NDT			NDT	41.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	17-Mar-08	C/221/08/N	7.49	1.04	69.90				16.0	0	AB	30.0	1.00	1.20	0.20	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	11-Apr-08	C/282/08	7.63	1.10	72.50	AB	AB		30.0	0			0.80	1.00	0.20	2.84	5.4														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	13-May-08	C/361/08	7.69	0.84	65.7	AB	AB		40	0	AB	30	0.6	0.7	0.1	4.97	3.09	1.4	10.8	NDT	NDT			NDT		0.1191	NDT	NDT			NDT	39.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	INDUSTRIAL AREA PRISON	259405	9855962	04-Oct-08	C/715/08	7.98	0.56			AB	14	26	0			1	1.2	0.2		5.2	1.2	2.1	NDT	NDT			NDT		0.1567		0.0255				40.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	02-Feb-11	C/63/11	7.63	0.19	65.8	AB	AB		36.6	0	AB	27	0.6	0.8	0.2	4.26	3	1.6	3.6	NDT	0.008	0.1	9		NDT	0.0489	NDT	0.0191	0.0931									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	03-Jul-11	C/118/11	7.9	0.77	79.7	AB	P		28.4	0	AB	35	0.4	0.5	0.1	5.68	9	3.6	8.5	0.001	NDT	--	20		0.01	0.2056	0.0474	0.0929	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	24-Jun-11	CO/253/11	7.29	0.97	54.2	AB	AB	26.3	26.3	0	AB	28	0.8	1	0.2	5.68	44	3.4	7.6	NDT	--	0.45	3		NDT	NDT	0.0247	0.0247	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	21-Oct-11	C/348/11	7.45	0.96	83.5	AB	AB	12		0	AB	38	0.5	0.6	0.1	10	8	2.9	9.75	NDT		0.19			NDT	0.1093	NDT	0.0293	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	15-Feb-10	C/064/10	7.49		485.0			32.0	97.0			10.0				5.09	1.70	20.0	48.0	0.03	40.00				NDT	1.8	NDT	0.0	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	20-Oct-10	C/546/10	7.62	0.20	79.2	AB	AB		26.5	0	AB	38.0	0.5	0.60	0.10	5.99	NDT	0.60	7.90	0.01	3.90	0.09	4.0	NDT	NDT	0.01	0.016	0.000	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	11-Jun-10	C/577/10	7.80	0.25	76.0	AB	AB		34.1	0	AB	28.0	TR	0.10	0.10	5.68	5.0	1.23	8.4	0.033	NDT	0.45		NDT	0.01	0.118	0.0074	0.073	0.1339									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=0.1; CC=0.1; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	12-Mar-10	C/630/10	7.44	0.09	65.3	UO	AB		39.6	0	AB	30.0	N/T	N/T	N/T	4.97	5.0	0.2	9.0	4.97	NDT	0.02		NDT	0	0.035	NDT	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	09-Aug-08	C/589/08	7.85	0.21	67.7	AB	AB	10.0	18.0	0	AB	27.0	0.35	0.40	0.15		2	1.5	8.3	NDT	NDT			0.7		0.1	0.0	0.1										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	02-Jun-09	C/70/09	7.96	0.18	70.1	AB	AB		18	5	AB	30	0.5	0.6	0.1	5.68	2	1.8	11	NDT	NDT			NDT		0.0689	0.0371	0.0349			NDT	42.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	JAMHURI BOYS HIGH SCHOOL	257756	9859412	04-Nov-08	C/813/08	6.70	1.2	69.5	AB	AB	8	26	0	AB	30	0.8	1	0.2	6.39	17.8	1.6	8	NDT	NDT					NDT	0.0859	0.0405			NDT	52.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	JOMO KENYATTA FOUNDATION	259694	9855677	05-Jun-08	C/427/08	7.10	64.56	71.3		P		24.0	5	AB	32.0				7.10		1.0	8.6	TR	NDT			1.00		0.1	0.0	0.1	0.1		NDT	42.8						Odour=; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	JOMO KENYATTA FOUNDATION	259694	9855677	15-Oct-08	C/738/08	7.52	2.46			AB	12	27	0			0.7	0.8	0.1		16.3	1.2	0.8	TR	NDT			,,		NDT		0.0691				49.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =TR; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	JONATHAN NGENO ESTATE	254413	9854202	27-Apr-10	C/206/10	7.95	0.52	451.0	AB	AB		24.0	0	AB	75.0	N/C	N/C	N/C	4.00		12.00	40.00	0.02	73.49	0.95		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/C; TRC=N/C; CC=N/C; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	JOSEPH APUNDO PRIMARY SCHOOL	260716	9856714	12-Nov-08	C/870/08	7.66	0.01	69.4	AB	AB	10	23	0	AB	22	0.7	0.8	0.1	8.52	21.1	1.2	9.9	NDT	NDT					0.3039	0.0917	0.0157			NDT	52						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KPA STAFF HOUSES	258871	9854530	04-Apr-08	C/254/08	7.57	0.61	192.6	AB	AB		40.0	0			0.40	0.50	0.10	5.68	16.5									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KPA STAFF HOUSES	258871	9854530	07-May-08	C/338/08	7.36	0.93	66.1	AB	AB		31	0	AB	27	0.80	1.00	0.20	4.97	3.66	1.5	10	NDT	NDT			NDT		0..0573	0.0052	0.1845			NDT	40.92						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KALOLENI HEALTH CENTRE	260170	9856800	07-Mar-09	C/273/09	7.46	0.26	414	UO	AB	10	32	0	AB	26	0.9	1	0.1	6.39	2.8	8	116	0.248	NDT					NDT	0.0048	0.0403				276						Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KALOLENI ESTATE	260105	9856926	17-Apr-10	C/190/10	7.90	0.04	93.1	AB	AB		18.0	0	AB	26.0	0.10	0.20	0.10	4.00		3.20	10.40	0.02	4.43	0.21		1.20														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KALOLENI ESTATE	260105	9856926	01-Jun-09	C/07/09	7.2	0.88	69.9	AB	AB		26	0	AB	29	0.8	1	0.2	6.39	2			NDT	NDT			NDT		0.0448	0.0953	0.0194	NDT		NDT	52.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	11-Apr-08	C/283/08	7.58	0.52	73.30	AB	AB		30.0	0			0.80	1.00	0.20	5.68	5.2														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	13-May-08	C/353/08	6.93	0.9	50	AB	AB		45	0	AB	29	0.8	0.9	0.1	3.55	4.54	1.5	11.7	TR	NDT			NDT		NDT	0.0151	0.1615			NDT	30						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	21-Jun-08	C/464/08	7.88	0.38	72.00		AB		26.0	0	AB	21.0	1.20	1.40		5.68		1	7.9	NDT	NDT			NDT		0.1	0.03	0.0	NDT		NDT	43.2						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	08-Nov-11	C/376/11	7.37	0.16	75.1	AB	AB	8	17.8	0	AB	23	0.6	0.8	0.2	3.55	NDT	1.4	7.5	NDT		0.19		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	20-Mar-10	C/133/10	7.20		88.4			8.0	35.0			30.0	0.6	0.80	0.20	9.9	20.10	1.1	7.4	0.02	12.00	0.36																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	15-Apr-09	C/163/09	7.77	0.47	89	AB			25	0	0	30	0.8	1	0.2	4.97	4	0.8	9.58	NDT	NDT			NDT		NDT	0.0071	0.097			NDT	53.4						Odour=AB; Deposite =; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	15-Jan-08	C/24/08	7.57	0.44	68.2		AB			0			0.80	1.00	0.20	4.26	0.1	0.6	10.9	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	10-Sep-08	C/666/08	7.53	0.5	63.9	AB	AB	10	30	0	AB	27	0.8	1	0.2	5.68	5.75	1.1	5.9	ND	ND			NDT		0.0553	0.0117	0.0598			NDT	38.34						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	09-Aug-10	C/404/10	7.48	35.00	76.1	AB	P		26.0	0.0	AB	35.0	0.50	0.60	0.10	2.13	NDT	0.80	4.50	TR	TR		1.2		0.11	0.755	0.009	0.0492	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; SO4=NDT; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	12-Jul-10	C/640/10	7.89	0.41	65.4	UO	AB		39.6	0	AB	32.0	0.5	0.6	0.1	4.26	5.0	0.4	9.0	4.26	NDT	0.16		NDT	NDT	0.089	NDT	0.071	0.053									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	17-Mar-08	C/222/08/N	7.56	0.63	69.40				24.0	0	AB	25.0	0.80	1.00	0.20	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	07-Apr-10	C/140/10	7.00	0.05	98.0	AB	AB		30.0	0	AB	33.0	0.30	0.50	0.20	2.00		11.00	2.45	0.00	4.42	0.30		0.30														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	13-Jan-09	C/26/09	7.56	0.89	69.9	AB	AB		28	0	AB	29	1	1.2	0.2	8.52	2.5			NDT	NDT			NDT		0.0576	0.0975	0.0195	NDT		NDT	54.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	15-Feb-10	C/053/10	7.50	0.61	82.4			4.0	38.0			40.0				1.09	17.50	2.2	10.7		5.00				0	0.7	NDT	NDT	0.0456									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	02-Sep-10	C/450/10	7.60	0.02	65.5	AB	AB		34.9	0.0	AB	31.0	0.60	0.80	0.20	3.98	26.10	1.00	6.00	0.03	1.00	0.07			0.01	0.0095	0.008	0.0187	0.05		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	19-Oct-10	C/544/10	7.50	0.31	11.2	AB	AB		38.2	0	AB	30.0	0.9	1.00	0.10	7.99	NDT	0.75	8.00	NDT	6.70	NDT	6.0	NDT	0.0	0.06	0.023	NDT	0.12		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	03-Nov-09	C/123/09	8.23	0.08	83.2	AB	AB		40	0	AB	38	1	1.2	0.2	4.97	3	1.3	8.2	NDT	NDT			NDT		NDT	NDT	0.0103				58.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	07-Jul-10	C/337/10	7.35	0.84	78.4	AB	AB		16.60	0	AB	44.00	0.80	1.00	0.20			0.9	3.7	0.01	1.00				NDT	0.03	NDT	0.21	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	11-Nov-10	C/589/10	8.35	0.02	125.6	AB	AB		29.0	0	AB	40.0	0.80	1.00	0.20	5.68	9.0	0.80	23.0	0.044	NDT	0.64		NDT	NDT	NDT	NDT	0.047	0.116									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	08-Apr-09	C/305/09	7.65	0.2	73.6	UO	AB		38		AB	41	1	1.2	0.2	4.97	13.5	1.35	8.8	NDT	NDT					0.0146	NDT	0.0588										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	09-Jul-08	C/532/08	8.02	0.25	61.8	AB	AB	20.0	28.0	0	AB	22.0	0.70	0.80	0.10	5.68		1.4	11.2	NDT	NDT			2.9		0.0	0.00	NDT			NDT	45.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	15-Apr-08	C/290/08	7.17	0.16	83.40	AB	AB		30.0	0						4.26															NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	22-Jan-11	C/40/11	7.47	0.56	70.2	AB	AB		30	0	AB	30	0.5	0.6	0.1	3.55	4	1.6	7	NDT	0.5	NDT	5		0.11	1.0392	NDT	0.1013	0.1092									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	03-Jan-10	C/108/11	7.42	1.08	78.8	AB	AB		25	0	AB	29	0.8	1	0.2	2.84	10	5.8	43	0.047	NDT	--	13		0.01	NDT	0.017	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	04-Jun-10	C/165/11	7.36	0.51	87.3	AB	AB		30.6	0	AB	35	0.4	0.6	0.2	3.55	NDT	10	1.3	NDT	NDT	--	NDT		NDT	NDT	0.0166	0.1043	0.0528									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	16-May-11		7.05	0.94	72.5	AB	P		23.4	0	AB	30	0.8	0.9	0.1	4.26	14	--	--	NDT	NDT	NDT	4		NDT	0.074	0.1051	0.07	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	KAMPALA ROAD WATER OFFICE (HQ)	261117	9855572	15-Aug-11	C/279/11	7.71	0.36	74.2	AB	AB	10	30.2	0	AB	28	0.7	0.8	0.1	2.13	9	1.537	0.623	NDT	NDT	NDT	8		NDT	0.1052	NDT	0.1068	0.0299									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	KENYA LITERATURE BUREAU	258560	9853515	15-Feb-08	C/126/08	7.47	3.30	355.00					2	AB		AB	AB	AB																							Odour=; Deposite =; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KENYATTA NATIONAL HOSPITAL	256485	9856074	17-Aug-10	C/426/10	6.81	0.98	73.0	AB	AB		28.0	0.0	AB	26.0	0.30	0.40	0.10	2.84	NDT	1.09	4.80	TR	NDT		NDT		NDT	0.278	0.0284	0.1386	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	KHALSA PRIMARY SCHOOL SOUTH C	258643	9854503	08-Nov-09	C/332/09	7.78	1.2	79.1	UO	AB		36		AB	52	0.8	1	0.2	7.1	9.5	1.75	10.65	NDT	NDT					0.0537	NDT	0.1452										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KILELESHWA PRIMARY SCHOOL	254272	9858799	23-Oct-08	C/774/08	6.44	0.01			AB	12	26	0			0.6	0.7	0.1		21.7	0.8	0.8	NDT	NDT			NDT		0.0443		NDT				42.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	KILELESHWA PRIMARY SCHOOL	254272	9858799	01-Nov-08	C/794/08	6.36	0.01	72.1	AB	AB	8	22	0	AB	30	0.6	0.7	0.1	4.26	7.84	10.2	10.2	NDT	NDT					0.0023	0.0328	0.0581			0.1	54						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KILELESHWA PRIMARY SCHOOL	254272	9858799	15-Sep-08	C/674/08	7.37	0.44	65.8	AB	AB	13	27	0	AB	28	0.2	0.3	0.1	5.68	1.75	1.2	5.6	ND	ND			NDT		NDT	NDT	0.0693			NDT	39.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KILELESHWA PRIMARY SCHOOL	254272	9858799	19-Apr-08	C/316/08		2.93	82.10	AB	AB		28.0	0			0.50	0.70	0.20	5.68	4.8	1.5	14.2					25.20		0.1					NDT	49.3						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	KONGONI PRIMARY SCHOOL	258278	9854818	24-May-08	C/398/08	7.42	1.06	64.4	AB	AB		40	0	AB	22	0.7	0.8	0.1	4.97	2.31	1.9	9.2	NDT	NDT			NDT		NDT	NDT	0.0944				38.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	KONGONI PRIMARY SCHOOL	258278	9854818	10-Nov-10	C/378/11	7.37	0.12	80.9	AB	AB	6	13.7	0	AB	22	0.5	0.6	0.1	4.26	NDT	1.2	7.3	NDT		0.06		NDT	NDT	0.0058	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	LUNGA LUNGA DISPENSARY	262019	9855360	11-Apr-08	C/281/08	7.60	36.40	73.30	AB	AB		34.0	0			0.90	1.00	0.10	4.97	5.4														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	LUNGA LUNGA DISPENSARY	262019	9855360	21-Jun-08	C/462/08	7.57	0.92	50.20		AB		27.0	0	AB	22.0	0.80	1.00		4.97		1.1	9.6	NDT	NDT			NDT		0.2	0.02	0.0	NDT		NDT	30.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	LUNGA LUNGA DISPENSARY	262019	9855360	15-Oct-08	C/740/08	7.75	1.05			AB	8	20	0			0.6	0.7	0.1		21.3	0.9	0.8	NDT	NDT			NDT		NDT		0.0492				45.2						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	16-May-11		7.1	1.02	74.2	AB	P		22	0	AB	30	0.5	0.6	0.1	4.26	NDT	--	--	0.002	NDT	0.12	6		NDT	0.0599	0.1013	0.0164	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	07-Jul-10	C/336/10	7.09	0.86	80.1	AB	AB		71.80	0	AB	41.00	0.80	1.00	0.20			1.0	4.2	0.01	1.00				NDT	0.12	0.01	0.08	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	12-Mar-10	C/117/10	7.00		89.6			6.0	40.0			18.0	0.60	0.70	0.10	25.9	23.30	1.8	7.2	0.03	13.00	0.48																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	09-Aug-10	C/403/10	7.30	31.00	71.1	AB	P		24.0	0.0	AB	31.0	0.25	0.30	0.05	2.13	NDT	0.60	3.80	TR	TR		0.6		NDT	NDT	0.0077	0.0186	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	02-Sep-10	C/451/10	7.68	0.28	63.7	AB	AB		36.4	0.0	AB	34.0	0.80	1.00	0.20	3.98	6.20	1.10	6.80	0.03	2.00	0.24			NDT	0.0615	0.019	0.0719	NDT		1.0							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	02-Jul-09	C/78/09	7.57	0.3	54	AB	AB		18	0	AB	29	0.8	1	0.2	4.97	1.2	1.4	8.9	NDT	NDT			NDT		NDT	NDT	0.1098			NDT	32.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	04-Oct-08	C/713/08	8.1	1.62			AB	8	17	0			1	1.2	0.2		1	1.2	2.1	NDT	NDT			NDT		NDT		0.0289				39.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	11-Jun-10	C/575/10	7.79	0.08	93.7	AB	AB		22.2	0	AB	29.0	0.90	1.00	0.10	5.68	7.0	1.00	11.0	0.037	NDT	0.49		NDT	0.02	0.039	0.0025	0.070	0.112									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MAMA NGINA CHILDRENS' HOME	258075	9854822	04-Apr-08	C/252/08	7.47	0.49	62.2	AB	AB		45	0			0.40	0.60	0.20	4.97	10.0									0.1					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MARIAKANI PRIMARY SCHOOL	259121	9855152	18-Mar-08	C/228/08	7.36	0.33	70.00				18.0	0	AB	23	1.00	1.20	0.20	4.97																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MARIAKANI PRIMARY SCHOOL	259121	9855152	02-Mar-09	C/55/09	7.73	0.59	68.7	AB	AB		23	0	AB	32	1.2	1.5	0.2	4.97	1.2	1	8.3	NDT	NDT			NDT		NDT	0.004	0.0304			NDT	41.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	MARIAKANI PRIMARY SCHOOL	259121	9855152	04-Feb-08	C/72/08	7.54	0.43	63.8				15.0	0	AB	25.0				4.26	1.0	0.4	7.5	NDT	NDT			NDT								42.5						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MARIAKANI PRIMARY SCHOOL	259121	9855152	07-Sep-08	C/654/08	7.58	0.11	61.9	AB	AB	8	27	0	AB	29	0.8	0.9	0.1	6.39	1.5	1	9.2	ND	ND			NDT		0.2628	0.0095	0.1146			NDT	37.14						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MARIAKANI PRIMARY SCHOOL	259121	9855152	10-Nov-08	C/859/08	7.20	0.25	68.2	AB	AB	10	26	0	AB	20	1	1.1	0.1	5.68	28.2	1.1	8.6	NDT	NDT					NDT	0.0169	0.0917			NDT	51.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	10-Nov-08	C/860/08	6.75	0.19	67.9	AB	AB	10	30	0	AB	30	1	1.2	0.2	5.68	27.2	1.1	8.4	NDT	NDT					0.0127	NDT	0.0879			NDT	50.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	02-Mar-09	C/52/09	7.68	0.24	77.1	AB	AB		22	0	AB	19	0.5	0.6	0.1	5.68	1.5	1	8.3	NDT	NDT			NDT		0.1172	NDT	0.1792			NDT	46.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	04-Feb-08	C/71/08	7.57	0.21	65.3				15.0	0	AB	28.0	0.40	0.50	0.10	4.97	1.0	0.4	7.5	NDT	NDT			"								43.5						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	07-Sep-08	C/653/08	7.57	0.17	62.9	AB	AB	10	23	0	AB	30	1	1.2	0.2	7.1	1	1	9.2	ND	ND			NDT		0.1084	NDT	0.1199			0.2	37.74						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	09-Jul-08	C/531/08	8.05	0.69	64.1	AB	AB	14.0	30.0	0	AB	23.0	0.60	0.70	0.10	4.97		1.7	11.3	NDT	NDT			NDT		0.1	0.00	0.1			NDT	48						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	THE MATER HOSPITAL	259017	9855425	18-Mar-08	C/231/08	7.47	0.62	71.20				19.0	0	AB	24	0.50	0.50	AB	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MERALI CLINIC	260748	9854828	08-Oct-10	C/526/10	7.32	1.94	73.5	AB	AB		33.2	0	AB	34.0	-	-	-	7.99	NDT	2.80	10.50	0.04	7.80	NDT	15.0	-	NDT	1.29	0.004	0.044	0.00		6.00							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIIMARY SCHOOL	257428	9858393	15-Apr-09	C/160/09	7.46	1.16	93	AB			30	0	0	33	0.6	0.7	0.1	4.26	2.5	0.8	9.83	0.002	T			NDT		NDT	0.0154	0.077			NDT	55.8						Odour=AB; Deposite =; Alka_Phe =; NO2 =; NO3 =T; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIIMARY SCHOOL	257428	9858393	10-Sep-08	C/667/08	6.51	0.32	70.5	AB	AB	8	31	0	AB	26	0.8	1	0.2	5.68	1.75	1.2	5.8	ND	ND			NDT		0.0464	0.0037	0.0457			NDT	42.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIIMARY SCHOOL	257428	9858393	20-Oct-10	C/548/10	7.62	0.04	16.6	AB	AB		39.0	0	AB	35.0	0.6	0.80	0.20	5.99	NDT	0.60	7.90	NDT	4.80	0.24	6.0	NDT	NDT	0.01	NDT	NDT	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIIMARY SCHOOL	257428	9858393	18-Oct-08	C/758/08	7.52	0.78			AB	18	45	0			0.8	1	0.2		22.9	0.8	7.5	,,	,,			NDT		NDT		0.0306				39.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIIMARY SCHOOL	257428	9858393	16-Jan-11	C/23/11	7.05	0.25	88	AB	P		54.4	0	AB	30	0.4	0.5	0.1	4.26	2	2	8	0.003	NDT	1	6		NDT	NDT	0.0059	0.0142	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	07-Jul-10	C/335/10	6.86	0.92	88.6	AB	AB		59.60	0	AB	40.00	0.70	0.80	0.10			0.8	3.3	0.02	2.00				NDT	0.18	NDT	0.01	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	09-Aug-10	C/405/10	7.23	39.00	66.4	AB	P		26.0	0.0	AB	39.0	0.70	0.90	0.20	1.42	NDT	0.55	3.7	NDT	NDT		1.4		0.02	NDT	NDT	0.0321	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	02-Sep-10	C/448/10	7.43	0.33	56.3	AB	AB		37.1	0.0	AB	34.0	0.30	0.60	0.30	7.95	17.60	1.10	6.20	0.03	1.00	0.5			0.01	0.0246	0.015	0.1005	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	11-Jun-10	C/574/10	7.78	0.02	65.1	AB	AB		43.5	0	AB	31.0	0.50	0.60	0.10	2.84	6.0	1.23	13.0	0.036	NDT	0.12		NDT	NDT	0.0083	0.011	0.0329	0.0446									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	12-Oct-10	C/658/10	8.11	0.10	71.4	UO	AB		32.2	0	AB	28.0	0.7	0.8	0.1	3.55	2.0	0.8	9.0	0.001	NDT	0.14		NDT	NDT	NDT	0.035	0.006	0.033									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	19-Feb-08	C/135/08	7.13		62.90					0	AB		1.20	1.40	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	06-Apr-08	C/265/08	7.57	0.30	65.20	AB	AB		40.0	0			0.80	1	0.20	4.26	5.4									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	05-Aug-08	C/573/08	8.02	0.02	64.90	AB	AB	12.0	27.0	0	AB	28.0	0.80	1.00	0.20		2.75	1.0	8.3	NDT	NDT			NDT		0.0	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	05-Nov-08	C/815/08	7.00	0.41	67.9	AB	AB	8	26	0	AB	30	0.9	1	0.1	7.1	28.2	1.4	6.7	NDT	NDT					0.0933	0.0101	0.0391			NDT	50.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MOI AVENUE PRIMARY SCHOOL	257428	9858393	12-Nov-08	C/868/08	7.45	0.01	72.1	AB	AB	10	24	0	AB	27	0.8	1	0.2	5.68	23.6	1.2	10.2	NDT	NDT					NDT	0.0353	0.0391			NDT	54						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MUKURU KWA REUBEN SLUM	262773	9854575	17-May-08	C/374/08	7.31	1.48	63.1	AB	AB		30	0	AB	26	1	1.1	0.1	4.26	2.18	8.3	8.3	NDT	NDT			0.4		NDT	NDT	0.012			NDT	38						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MUKURU SLUMS	259632	9855263	07-Sep-08	C/651/08	7.61	0.22	63.4	AB	AB	7	26	0	AB	21	1	1.2	0.2	7.1	1.5	1	8.3	TR	ND			NDT		0.1298	0.0037	0.0731			NDT	38.04						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	MUKURU SLUMS	259632	9855263	10-Nov-08	C/861/08	7.35	0.48	68.5	AB	AB	12	16	0	AB	45	1	1.1	0.1	7.1	7.9	1.1	8.6	NDT	NDT					0.1342	0.0282	0.0738			NDT	51.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NCC GARAGE	259336	9855790	13-Jan-09	C/22/09	7.38	0.21	72.3	AB	AB		26	0	AB	30	1	1.2	0.2	5.68	4.5			NDT	NDT			NDT		0.0096	0.0866	0.0361	NDT		NDT	54.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	NCC GARAGE	259336	9855790	03-Jan-11	C/110/11	7.7	0.82	72.2	AB	AB		31	0	AB	33	0.7	0.8	0.1	7.1	9	5.3	27.5	0.007	46.2	--	7		NDT	0.3676	0.0094	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	NCC GARAGE	259336	9855790	15-Dec-11	C/413/11	7.75	0.03	77	AB	AB	8	28.4	0	AB	36	0.6	0.7	0.1	68		3.5	9				3	NDT	0	0.0718	0.019	0.0264	0.0354									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NCC GARAGE	259336	9855790	12-Jul-10	C/639/10	7.90	1.00	66.7	UO	AB		46.1	0	AB	30.0	0.8	1.0	0.2	3.55	5.0	0.4	9.0	3.55	NDT	0.16		NDT	NDT	NDT	0.009	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	NCC GARAGE	259336	9855790	04-Feb-08	C/70/08	7.57	1.09	69.5				15.0	0	AB	27.0	0.80	1.00	0.20	4.97	1.0	0.4	7.5	NDT	NDT			NDT								46.3						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NCC GARAGE	259336	9855790	13-May-08	C/360/08	7.7	0.59	49.9	AB	AB		30	0	AB	34	0.7	0.8	0.1	3.55	3.19	1.4	12.5	NDT	NDT			NDT		NDT	NDT	0.0499			NDT	29.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NCC GARAGE	259336	9855790	09-Jul-08	C/530//08	8.13	0.27	63.7	AB	AB	18.0	24.0	0	AB	26.0	0.70	0.80	0.10	4.26		2.2	10.0	NDT	NDT			1.3		NDT	NDT	0.0			NDT	47.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI PRIMARY SCHOOL	256386	9857953	16-May-08	C/371/08	6.78	1.17	75.5	AB	AB		31	0	AB	29	0.1	0.2	0.1	4.97	5.13	1.4	12.5	NDT	NDT			2.6		0.2692	NDT	0.0114			NDT	45.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	02-Jul-09	c/77/09	7.22	1.49	53	AB	AB		18	0	AB	29	0.8	1	0.2	5.68	0.8	1.3	8	NDT	NDT			NDT		0.0172	0.0278	0.1637			NDT	31.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	04-Feb-08	C/69/08	7.60	0.43	72.8				14.0	0	AB	27.0				4.26	1.0	0.4	7.5	NDT	NDT			AB								48.5						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	02-Sep-08	C/87/08	7.60	0.87	66.2				20.0	0	AB	24.0				4.97	1.0	0/4	5.9	NDT	NDT			AB							NDT	44.1						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	04-Oct-08	C/718/08	7.98	0.56			AB	8	22	0			1	1.2	0.2		1.8	1.2	1.5	NDT	NDT			AB		NDT		0.0453				40.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	03-Jan-11	C/109/11	7.51	0.94	70	AB	AB		20.3	0	AB	36	0.7	0.8	0.1	5.68	6	7.6	62	NDT	NDT	--	14		0.02	0.1471	0.0398	0.0349	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	10-Nov-08	C/858/08	7.30	0.02	69.9	AB	AB	10	20	0	AB	26	0.5	0.6	0.1	19.8	26.4	1.2	8.8	NDT	NDT					NDT	0.0336	0.2209			NDT	52.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI SOUTH PRIMARY SCHOOL	258879	9854875	07-Sep-08	C/656/08	7.57	0.12	66.8	AB	AB	7	28	0	AB	29	1.2	1.3	0.1	5.68	1.5	1.2	9.2	ND	ND			NDT		NDT	NDT	0.2878			NDT	40.08						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI WEST HOSPITAL	258058	9855458	08-Nov-09	C/330/09	7.38	0.32	79.1	UO	AB		30		AB	52	1	1.2	0.2	8.52	11	1.2	11	0.108	NDT					NDT	NDT	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	NAKUMATT HEAD QUARTER	261503	9852951	14-May-08	C/366/08	7.2	3.11	46.3	AB	AB		36	0	AB	27	0.7	0.9	0.2	4.26	0.36	2.5	9.2	NDT	NDT			0.9			NDT	0.1423			NDT	27.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NANYUKI ROAD DEPOT	263903	9856026	21-Jun-08	C/461/08	7.56	0.39	77.40		AB		26.0	0	AB	21.0	0.60	0.70		4.97		1.1	9.6	NDT	NDT			NDT		0.2	0.03	0.0	NDT		NDT	46.4						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	NGARA HEALTH CENTRE	258711	9859168	07-Nov-08	C/837/08	7.00	0.68	67.8	AB	AB	10	32	0	AB	20	0.8	0.9	0.1	7.1	26.4	1.7	5.5	NDT	NDT					NDT	0.0126	0.0729			NDT	50.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NGARA HEALTH CENTRE	258711	9859168	02-Nov-08	C/93/08	7.45	1.71	75.30				20.0	0	AB	30.0				5.68	0.3	0.5	7.5	NDT	NDT			AB							NDT	50.2						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NGARA HEALTH CENTRE	258711	9859168	09-Aug-08	C/590/08	7.84	0.02	63.4	AB	AB	6.0	22.0	0	AB	27.0	0.70	0.80	0.10		1.75	1.5	8.3	NDT	NDT			1.4		0.2	0.0	0.3										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NGARA HEALTH CENTRE	258711	9859168	25-Oct-08	C792/08	8.59	0.51			AB	8	20	0			0.45	0.6	0.15		24	0.5	7.5	,,	,,			NDT		NDT		NDT				41.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	NYAYO STADIUM	258021	9855659	17-Aug-10	C/425/10	7.67	1.14	63.9	AB	AB		26.0	0.0	AB	30.00	0.60	0.70	0.10	5.68	6.32	0.55	4.70	TR	NDT		NDT		0.0	NDT	0.0206	0.0512	0.1458									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	NYAYO STADIUM	258021	9855659	14-Mar-08	C/216/08	7.52	0.26	74.20				24.0	0	AB	30.0	1.00	1.20	0.10	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	PANAFRIC HOTEL	256353	9857293	15-Jan-08	C/13/08	7.54	0.31	82.4		AB			2			0.30	0.90	0.10	7.81	0.1	0.5	15.3	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	PLAINSVIEW PRIMARY SCHOOL	259821	9854437	18-Mar-08	C/230/08	7.39	0.35	70.30				20.0	0	AB	26	1.00	1.20	0.20	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	PLAINSVIEW PRIMARY SCHOOL	259821	9854437	07-Sep-08	C/650/08	7.56	0.39	64.4	AB	AB	8	18	0	AB	30	1	1.2	0.2	4.26	1.75	1	9.2	ND	ND			NDT		0.0558	0.0066	0.0348			NDT	38.64						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	POLICE WORKSHOP CANTEEN	261355	9854906	13-Jan-09	C/25/09	7.84	0.26	73.3	AB	AB		26	0	AB	29	0.6	0.7	0.1	7.1	3.5			NDT	NDT			NDT		NDT	0.1063	0.0141	NDT		NDT	54.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	POLICE WORKSHOP CANTEEN	261355	9854906	02-Mar-09	C/53/09	7.776	0.72	65.3	AB	AB		21	0	AB	30	1	1.2	0.2	4.97	1.6	1	8.3	NDT	NDT			NDT		NDT	NDT	0.007			NDT	39.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	POLICE WORKSHOP CANTEEN	261355	9854906	13-May-08	C/357/08	7.59	0.5	67	AB	AB		35	0	AB	30	0.6	0.7	0.1	3.55	2.29	1.6	9.2	NDT	NDT			0.7		NDT	0.0106	0.1082			NDT	40.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	CENTRAL	POLICE WORKSHOP CANTEEN	261355	9854906	21-Jun-08	C/466/08	7.53	0.23	55.10		AB		29.0	0	AB	22.0	0.90	1.00		4.26		1	8.6	NDT	NDT			NDT		0.2	0.02	0.0	NDT		NDT	33.1						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	CENTRAL	POLICE WORKSHOP CANTEEN	261355	9854906	11-Apr-08	C/285/08	7.55	0.31	71.10	AB	AB		30.0	0			1.00	1.20	0.20	3.55	5.0														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	RHODES HOSPITAL	257754	9857378	18-Oct-08	C/757/08	7.82	0.51			AB	20	45	0			0.45	0.5	0.05		22.5	0.8	7.5	NDT	NDT			NDT		0.2761		0.0985				44.9						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	SERENA HOTEL	256812	9857637	08-Aug-08	C/584/08	7.87	0.04	75.9	AB	AB	8.0	26.0	0	AB	26.0	0.80	1.00	0.20		3.32	1.4	8.3	NDT	NDT			NDT		0.1	0.0	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	15-Feb-08	C/116/08	7.39	1.55	83.50				15.0	0	AB	30.0	0.70	0.80	0.10	4.97	1.0							0.10							AB	55.6						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=AB
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	16-Apr-08	C/302/08	7.17	1.86	90.80	AB	AB		30.0	0			0.10	0.20	0.10	4.26	6.8	1.9	29.2					1.00		-					NDT	54.5						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	15-Sep-08	C/673/08	6.95	0.32	66	AB	AB	12	26	0	AB	29	1.1	1.2	0.1	7.1	1.75	1.2	6.4	NDT	NDT			NDT		NDT	0.0235	0.0263			NDT	39.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	16-May-08	C/370/08	6.68	1.2	57	AB	AB		36	0	AB	27	0.1	0.2	0.1	4.26	5.69	2	11.7	NDT	NDT			2		0.471	0.035	0.1342			NDT	34.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	23-Oct-08	C/778/08	6.7	0.01			AB	8	27	0			0.6	0.7	0.1		21.9	0.4	5.3	NDT	NDT			0.8		0.1885		NDT				40.4						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	SERENA PUMPING STATION	256698	9858013	01-Nov-08	C/797/08	7.41	0.01	69.8	AB	AB	12	24	0	AB	31	0.5	0.6	0.1	6.39	17.9	1.4	9.3	NDT	NDT					0.041	0.0164	0.0238			NDT	50.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SHELL PETROL STATION MOMBASA ROAD	259831	9853878	02-Jul-09	C/75/09	7.51	1.62	53	AB	AB		18	0	AB	33	0.8	1	0.2	5.68	1.9	1.8	10	NDT	NDT			NDT		NDT	0.0106	0.1777			NDT	31.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SHELL PETROL STATION MOMBASA ROAD	259831	9853878	07-Sep-08	C/658/08	7.77	0.74	78.5	AB	AB	7	27	0	AB	32	1	1.2	0.2	5.68	1.75	1.5	9.2	ND	ND			NDT		0.0584	NDT	0.2147			NDT	47.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SHELL PETROL STATION-LAVINGTON	251894	9858532	07-May-08	C/344/08	6.87	0.15	76.1	AB	AB		30	0	AB	27	TRE	0.10	0.10	4.26	13.08	2.5	15	NDT	NDT			1.9		0.0859	0.0261	0.2624			NDT	39.84						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TRE; TRC=0.1; CC=0.1; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	SILVER SPRINGS HOTEL	255537	9856795	08-Aug-08	C/581/08	7.86	0.23	68.8	AB	AB	8.0	26.0	0	AB	26.0	0.40	0.60	0.20		2.75	1.5	9.0	NDT	NDT			NDT		NDT	0.0	NDT										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	CENTRAL	SILVER SPRINGS HOTEL	255537	9856795	18-Oct-08	C/760/08	7.54	0.44			AB	16	34	0			0.4	0.45	0.05		24.7	0.8	7.5	NDT	NDT			NDT		0.0895		0.0441				42.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	UHURU PARK	256961	9857836	08-Aug-08	C/579/08	7.87	0.29	72.1	AB	AB	10.0	32.0	0	AB	25.0	0.60	0.80	0.20		4.75	1.5	8.3	NDT	NDT			2.50		0.1	0.0	0.1										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	UHURU PARK	256961	9857836	01-Nov-08	C/801/08	7.31	0.02	70.2	AB	AB	8	24	0	AB	32	0.6	0.7	0.1	4.97	21.9	1.4	8.9	NDT	NDT					NDT	0.0076	0.0086			NDT	52.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	UPPER HILL NURSERY SCHOOL	256657	9856160	17-Aug-10	C/424/10	7.89	1.21	71.8	AB	AB		22.0	0.0	AB	35.0	0.60	0.70	0.10	1.42	13.59	1.08	4.60	TR	NDT		1.3		NDT	0.719	0.1071	0.0211	0.0486									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	CENTRAL	UPPER HILL NURSERY SCHOOL	256657	9856160	10-Nov-11	C/379/11	7.39	0.1	97.3	AB	AB	8	18	0	AB	21	0.4	0.6	0.2	3.55	NDT	1.3	7.2	NDT		0.06		NDT	0	NDT	0.0002	0.0015	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	CENTRAL	UPPER HILL NURSERY SCHOOL	256657	9856160	03-Mar-11	C/114/11	8.48	6.15	572	AB	AB		92.8	0	AB	33	--	--	--	36.92	38.6	3.4	8.5	0.11	NDT	--	52		NDT	0.8676	0.9136	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F= --; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	CENTRAL	WATER STORES	257731	9858516	12-Nov-08	C/867/08	7.57	0.01	70.5	AB	AB	14	30	0	AB	34	0.8	1	0.2	4.97	24.6	1.1	9.1	NDT	NDT					NDT	0.0127	0.0521			NDT	52.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	WATER STORES	257731	9858516	19-Feb-08	C/136/08	7.39		64.10					0	AB		1.20	1.40	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	WATER STORES	257731	9858516	06-Apr-08	C/264/08	7.57	0.32	64.80	AB	AB		45.0	0			1.00	1.20	0.20	2.84	8.8									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	WATER STORES	257731	9858516	05-Aug-08	C/571/08	7.98	0.02	63.50	AB	AB	7.0	26.0	0	AB	30.0	0.80	1.00	0.20		1.5	1.0	8.3	NDT	NDT			NDT		0.1	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	CENTRAL	WATER STORES	257731	9858516	10-Sep-08	C/669/08	6.96	0.17	63.4	AB	AB	8	33	0	AB	30	1	1.1	0.1	5.68	1.75	1.2	5.7	ND	ND			NDT		NDT	0.0007	0.0384			NDT	38.04						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	BUSARA PRIMARY SCHOOL	265744	9858944	22-Jan-11	C/33/11	7.58	0.76	62.1	AB	AB		26.5	0	AB	30	0.6	0.8	0.2	4.26	1	1.6	8	NDT	NDT	0.05	7		NDT	0.205	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	BUSARA PRIMARY SCHOOL	265744	9858944	19-Apr-10	C/197/10	7.50	1.31	82.9	AB	AB		14.0	0	AB	44.0	0.20	0.30	0.10	2.00		3.90	12.00	0.01	3.98	NDT		2.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	BUSARA PRIMARY SCHOOL	265744	9858944	10-Sep-10	C/491/10	7.91	0.16	61.3	AB	AB		237.0	0.0	AB	40.0	0.40	0.60	0.20	3.98	4.00	0.90	9.00	0.07	2.00	0.47			NDT	0.0521	0.025	0.0238	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	EASTERN	BUSARA PRIMARY SCHOOL	265744	9858944	09-Nov-08	C/856/08	6.60	0.02	69.5	AB	AB	8	27	0	AB	30	0.3	0.4	0.1	5.68	23.7	1.2	9.1	NDT	NDT					NDT	0.0795	0.0689			NDT	52.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	EASTERN	BUSARA PRIMARY SCHOOL	265744	9858944	03-Mar-08	C/173/08	7.64	0.94	72.4		AB		26.0	0	AB	24.0	0.30	0.40	0.10	7.10	2.9	0.4	9.3	NDT	AB			AB							NDT	48.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	CALTEX -PETROL STATION KANGUNDO ROAD	264436	9858657	25-Nov-10	C/622/10	7.54	0.64	77.0	AB	AB		35.2	0	AB	29.0	0.80	1.00	0.20	2.84	1.0	1.05	8.4	0.008	NDT	0.20		NDT	NDT	0.0835	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	CALTEX -PETROL STATION KANGUNDO ROAD	264436	9858657	03-Sep-08	C/635/08	7.75	1.68	65.1	AB	AB	12	22	0	AB	27	1	1.2	0.2	5.68	NDT	1	8.3	ND	ND			NDT		0.0433	0.051	0.1142			NDT	39.6						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	CANNON APPOLO PRIMARY SCHOOL	261991	9856363	20-Feb-08	C/137/08	7.66		61.30					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	NJIRU CATHOLIC CHURCH	270343.5	9861436.4	23-May-08	C/397/08	7.41	0.8	62.7	AB	AB		38	0	AB	19	0.8	1	0.2	5.68	1.84	1.6	8.3	NDT	NDT			NDT		NDT	NDT	0.0035				37.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	RUAI TREATMENT PLANT OFFICE	278812	9861071	20-Jan-11	C/32/11	7.18	0.54	69.6	AB	AB		28.8	0	AB	30	0.8	1	0.2	4.97	1	1.8	8	NDT	NDT	0.43	8		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	RUAI TREATMENT PLANT OFFICE	278812	9861071	15-Jan-08	C/52/08		0.43	69.50		AB			0			0.90	1.00	0.10		0.2																					Odour=; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	RUAI TREATMENT PLANT OFFICE	278812	9861071	03-May-08	C/181/08	7.84	3.95	79.5		AB		20.0	0	AB	28.0				7.10	0.2	0.3	9.8	NDT	AB			AB							NDT	53.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	RUAI TREATMENT PLANT OFFICE	278812	9861071	09-Nov-08	C/851/08	6.50	0.2	73.9	AB	AB	8	31	0	AB	30	0.5	0.6	0.1	5.68	13.9	1.9	5	NDT	NDT					0.0203	0.0018	0.1732			NDT	55.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	RUAI TREATMENT PLANT OFFICE	278812	9861071	06-Jul-11	C/260/11	7.73	0.43	48	AB	AB	12	21.4	0	AB	35	1	1.2	0.2	2.84	10	0.77	3.34	NDT	NDT	NDT	3.2		NDT	NDT	0.0188	0.0224	0.211									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	EASTERN	DOHNHOLM PRIMARY SCHOOL	265225	9856508	14-Jul-10	C/365/10	7.62	0.03	409.0	AB	AB		20.8	0	AB	45.0	0.50	0.60	0.10			4.4	31.1	0.02	1.00				NDT	0.06	0.02	0.56	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	DOHNHOLM PRIMARY SCHOOL	265225	9856508	16-Dec-10	C/679/10	8.92	0.01	395.0	UO	AB		17.3	0	AB	140.0	AB	AB	AB	11.36	NDT	0.8	9.0	0.001	NDT	8.05		0.30	NDT	NDT	0.006	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; SO4=NDT; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	DOHNHOLM PRIMARY SCHOOL	265225	9856508	15-Apr-09	C/165/09	7.83	0.07	86.3	AB			30	0	0	29	0.8	1	0.2	5.68	3	0.6	10.83	NDT	NDT			NDT		NDT	0.0999	0.1037			NDT	51.78						Odour=AB; Deposite =; Alka_Phe =0; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	EMBAKASI VILLAGE	267941	9855471	16-Jan-11	C/20/11	7.46	0.99	78.9	AB	P		27.8	0	AB	30	0.7	0.9	0.2	3.55	2	1.9	10.5	NDT	NDT	0.9	9		0.01	NDT	0.0119	NDT	0.0107									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	EASTERN	EMBAKASI VILLAGE	267941	9855471	23-Aug-11	C/294/11	7.47	0.86	82.3	AB	AB	8	23.7	0	AB	40	0.6	0.7	0.1	3.55	6	0.351	8.951	NDT	NDT	NDT	3		NDT	NDT	0.0224	0.0021	0.0168									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	EASTERN	ZESTRA ACADEMY SCHOOL	265636	9854962	09-Jul-08	C/525/08	7.74	0.54	67.2	AB	AB	26.0	30.0	0	AB	28.0	0.70	0.75	0.05	5.68		1.6	12.5	NDT	NDT			1.6		0.0	NDT	NDT			NDT	50.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	EASTERN	ZETRA ACADEMY SCHOOL	265636	9854962	03-Mar-08	C/174/08	7.62	0.29	67.9		AB		28.0	0	AB	23.0	1.00	1.20	0.20	4.97	3.8	0.3	7.5	NDT	AB			AB							NDT	44.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KOMAROCK PRIMARY SCHOOL	267543	9859501	03-May-08	C/184/08	7.73	2.37	68.3		AB		26.0	0	AB	27.0	0.80	0.90	0.10	7.10	0.1	0.4	7.5	NDT	AB			AB							NDT	46.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KOMAROCK PRIMARY SCHOOL	267543	9859501	27-May-11		7.46	0.57	69.5	AB	AB		28.7	0	AB	34	0.8	1	0.2	4.28	6	--	--	NDT	NDT	--	NDT		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	KOMAROCK PRIMARY SCHOOL	267543	9859501	09-Nov-08	C/857/08	6.60	0.01	67	AB	AB	8	25	0	AB	20	0.5	0.6	0.1	5.68	9.6	1.1	8.6	NDT	NDT					0.0355	0.0159	0.1303			NDT	50.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	10-Sep-10	C/490/10	8.21	0.06	59.5	AB	AB		44.0	0.0	AB	46.0	0.60	0.80	0.20	3.98	4.00	4.90	9.10	0.01	1.00	0.68			NDT	0.0189	0.013	0.3042	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	11-Apr-08	C/279/08	7.59	0.27	60.50	AB	AB		33.0	0			0.20	0.30	0.10	4.97	4.0														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	22-Jan-11	C/34/11	7.72	0.18	62.2	AB	AB		29.3	0	AB	30	0.8	1	0.2	3.55	4	1.8	8	NDT	NDT	0.36	42		NDT	0.1273	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	20-May-11		7.15	0.29	65.2	AB	P		30.1	0	AB	30	0.8	1	0.2	4.28	6	--	--	NDT	NDT	NDT	4		0.01	0.3384	0.0292	0.2457	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	30-Jun-11	CO/256/11	7.28	0.84	63.9	AB	AB	8	20	0	AB	28	0.5	0.6	0.1	5.68	6	6	3.6	NDT	--	0.12	NDT		NDT	0.0201	0.0112	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	15-Feb-10	C/083/10	6.70	0.91	95.4			6.0	28.0			49.0				21.9	18.90	11.5		0.04					NDT	2.2	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	14-Jul-10	C/366/10	7.62	0.20	67.1	AB	AB		39.3	0	AB	45.0	0.60	0.70	0.10			0.9	4.5	0.01	0.00				NDT	NDT	0.02	0.02	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =0; F=; Fe=NDT; Mn=0.0193 ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	16-Dec-10	C/677/10	7.47	0.11	78.6	UO	AB		33.0	0	AB	35.0	0.8	0.9	0.1	4.26	6.0	0.4	9.5	0.001	NDT	0.34		0.30	NDT	NDT	0.0044	0.0106	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=0.0044 ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	20-Apr-09	C/170/09	7.8	0.18	83.3	AB			27	0	0	28	0.5	0.7	0.2	4.97	2.8	0.65	11.75	NDT	T			NDT		0.1062	NDT	0.0465			NDT	49.98						Odour=AB; Deposite =; Alka_Phe =; NO2 =NDT; NO3 =T; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	15-Jan-08	C/51/08	8.28	0.35	74.50		AB			0			1.20	1.30	0.10		0.1																					Odour=; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	09-Nov-08	C/853/08	6.80	4.43	67.7	AB	AB	8	16	0	AB	28	0.8	0.9	0.1	21.3	21.9	1.9	4.6	NDT	NDT					0.0633	0.03	0.0597			NDT	50.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KAYOLE 1 PRIMARY SCHOOL	268562	9860292	03-May-08	C/185/08	7.53	0.24	67.8		AB		25.0	0	AB	28.0	0.60	0.80	0.20	5.68	1.9	0.4	7.5	NDT	AB			AB							NDT	45.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	KENYA PIPELINE ESTATE	260525	9862481	18-Feb-11	C/96/11	7.75	14.2	76.3	AB	AB		31.3	2.5	AB	34	TR	0.1	0.1	5.68	11	4.2	3.5	NDT	NDT	0.12	15		0	0.776	0.0228	0.1572	0.3116									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=0.1; CC=0.1; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	KENYA PIPELINE ESTATE	260525	9862481	23-Aug-10	C/445/10	7.86	2.48	71.5	AB	AB		26.0	0.0	AB	33.00	0.20	0.30	0.10	2.13	5.90	5.00	3.50	NDT	TR		1.2		--	0.103	0.035	0.0761	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	EASTERN	KENYA PIPELINE ESTATE	260525	9862481	10-Apr-10	C/165/10	7.50	13.40	211.0	AB	AB			7.5	AB	170.0	AB	AB	AB	1.00		9.60	23.00	0.31	1.33	2.81		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	KWARE SLUMS EMBAKASI	264876	9855484	09-Jul-08	C/527/08	7.87	0.21	65.7	AB	AB	28.0	33.0	0	AB	26.0	0.80	0.85	0.05	5.68		1.7	8.3	NDT	NDT			1.2		NDT	0.17	NDT			NDT	48.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	EASTERN	KWARE SLUMS EMBAKASI	264876	9855484	22-Jan-11	C/38/11	7.88	0.53	69	AB	AB		27.2	0	AB	35	0.8	1	0.2	12.07	6	1.6	8	NDT	0.2	0.29	38		0.01	0.7352	NDT	NDT	0.0138									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	EASTERN	KWARE SLUMS EMBAKASI	264876	9855484	23-Aug-10	C/444/10	7.70	3.14	66.3	AB	AB		24.0	0.0	AB	28.00	0.60	0.80	0.20	2.13	5.78	1.05	4.5	TR	NDT		NDT		--	0.0985	0.024	0.0599	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	01-Jun-09	C/08/09	7.81	0.77	72.7	AB	AB		24	0	AB	29	0.8	1	0.2	7.1	2			NDT	NDT			NDT		0.0064	0.103	NDT	NDT		NDT	54.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	07-Mar-09	C/272/09	7.68	0.11	413	UO	AB	14	29	0	AB	24	1.2	1.4	0.2	7.1	3.5	2.25	50	0.321	NDT					NDT	0.0016	0.0031				275						Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	15-Jan-08	C/10/08	7.75	1.92	72.7		AB			0			0.90	1.00	0.10	9.23	0.1	0.4	11.2	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	09-Jul-08	C/540/08	8.00	0.27	62.8	AB	AB	8.0	29	0	AB	26.0	0.80	0.90	0.10	4.97		2.5	11	NDT	NDT			1.60		NDT	0.01	0.0			NDT	46.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	10-Sep-08	C/668/08	6.52	0.19	65.2	AB	AB	7	32	0	AB	28	1	1.1	0.1	4.97	1.75	1.2	5.7	ND	ND			NDT		0.0375	0.0257	0.0316			NDT	39.12						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	04-Oct-08	C/716/08	8.07	1.8			AB	12	20	0			1.3	1.5	0.2		0.8	1.2	2.1	TRA.	NDT			NDT		0.0522		0.0045				39.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =TRA.; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	MAKONGENI ESTATE BLK.B3	260836	9856478	12-Nov-08	C/869/08	7.54	0.01	69.8	AB	AB	16	32	0	AB	25	1	1.2	0.2	4.97	24.4	1.2	10.1	NDT	NDT					0.1114	0.4583	0.0179			NDT	52.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	MBOTELA ESTATE STANDPIPE	262291	9856487	16-Feb-11	C/93/11	7.15	0.04	61.9	AB	AB		26.7	0	AB	31	0.7	0.9	0.2	9.94	7	6	5.6	NDT	NDT	NDT	14		0.01	NDT	0.0114	NDT	0.0173									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=NDT; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	EASTERN	MBOTELA ESTATE STANDPIPE	262291	9856487	19-Oct-08	C/764//08	7.55	1.08			AB	12	32	0			0.7	0.7	0.05		25.1	0.8	24	NDT	NDT			NDT		NDT		0.0413				43.9						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	MBOTELA ESTATE STANDPIPE	262291	9856487	01-Jun-09	C/10/09	7.83	1.02	75.2	AB	AB		22	0	AB	31	0.8	1	0.2	8.52	2.8			NDT	NDT			NDT		0.0448	0.0888	NDT	NDT		NDT	56.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Distribution	EASTERN	MIDAX PETROL STATION	272961	9861472	15-Nov-11	C/386/11	7.37	1.83	76.5	AB	AB	6	18.6	0	AB	21	0.6	0.8	0.2	2.84	2	1.5	7.5	NDT		0.08		NDT	NDT	NDT	NDT	0.0514	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	RUAI PRIMARY SCHOOL	276496	9859934	27-May-11		7.53	0.55	59	AB	AB		25.8	0	AB	25	1	1.2	0.2	3.35	7	--	--	NDT	NDT	0.2	NDT		NDT	0.0232	NDT	0.0194	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	RUAI PRIMARY SCHOOL	276496	9859934	13-Dec-10	C/668/10	8.87	0.41	333.0	UO	AB		66.7	0	AB	180.0	0.6	0.7	0.1	2.13	1.0	0.4	75.0	0.002	NDT	3.5		NDT	NDT	0.128	0.006	0.018	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	RUAI PRIMARY SCHOOL	276496	9859934	20-Apr-09	C/168/09	7.87	0.12	83.5	AB			29	0	0	31	1	1.2	0.2	3.55	3.5	0.7	11.83	0.01	T			NDT		NDT	0.026	0.0502			NDT	50.1						Odour=AB; Deposite =; Alka_Phe =; NO2 =; NO3 =T; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	RUAI PRIMARY SCHOOL	276496	9859934	09-Nov-08	C/852/08	6.80	0.85	73.7	AB	AB	8	23	0	AB	40	0.3	0.4	0.1	7.1	18.3	2	4.8	NDT	NDT					NDT	NDT	0.3745			NDT	55.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	RUAI PRIMARY SCHOOL	276496	9859934	03-May-08	C/183/08	7.77	0.93	69.1		AB		20.0	0	AB	26.0	0.20	0.25	0.05	5.68	1.0	0.4	9.3	NDT	AB			AB							NDT	47.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	RUAI STAFF QUARTERS	278338	9860578	11-Apr-08	C/280/08	7.73	0.44	77.30	AB	AB		38.0	0			1.30	1.50	0.20	3.55	-														NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	SHELL PETROL STATION OUTER RING ROAD	263052	9862394	18-Oct-11	C/333/11	7.38	0.74	85.4	AB	AB	14		0	AB	33	0.1	0.2	0.1	8	8	3.1	9.75	NDT		0.31			NDT	0.0216	0.1429	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	EASTERN	TOTAL PETROL STATION OUTER RING ROAD	264285	9859349	25-Nov-10	C/621/10	7.48	0.63	79.0	AB	AB		30.0	0	AB	32.0	1.00	1.20	0.20	3.55	1.0	3.60	4.5	0.059	NDT	1.10		NDT	NDT	0.0176	0.0056	0.0056	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	11-Apr-08	C/278/08	7.66	0.38	115.00	AB	AB		15.0	0			1.00	1.20	0.20	4.97	5.0									0.0406					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	03-May-08	C/182/08	7.84	0.36	73.6		AB		26.0	0	AB	25.0	0.50	0.60	0.10	5.68	4.0	0.4	7.5	NDT	AB			AB							NDT	49.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	13-Dec-10	C/661/10	7.76	0.07	10.7	UO	AB		30.3	0	AB	30.0	0.8	1.0	0.2	3.55	4.0	0.4	9.0	0.001	NDT	NDT		NDT	NDT	NDT	0.021	0.005	0.052									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=NDT; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	11-Aug-10	C/584/10	7.44	0.41	72.5	AB	AB		23.4	0	AB	31.0	1.00	1.20	0.10	4.97	6.0	1.02	11.0	0.01	NDT	0.35		NDT	0.01	0.126	0.003	0.029	0.1789									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	09-Sep-10	C/481/10	7.79	0.02	69.1	AB	AB		31.0	0.0	AB	32.0	0.50	0.60	0.10	3.98	6.50	1.00	7.00	0.04	1.00	0.05			NDT	0.0379	0.023	0.3141	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	09-Nov-08	C/855/08	6.50	0.02	70.3	AB	AB	12	21	0	AB	30	0.5	0.6	0.1	5.68	9	1.2	9.2	NDT	NDT					NDT	0.0141	0.0201			NDT	52.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	24-Oct-08	C/786/08	7.88	0.26			AB	18	28	0			0.5	0.6	0.1		20.9	0.5	5.3	NDT	NDT			,,		NDT		0.0299				125						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ,,; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	ST MICHEALS HILL NJIRU SECONDARY SCHOOL	271631	9861802	23-May-08	C/396/08	7.42	0.7	61.3	AB	AB		44	0	AB	26	0.9	1	0.1	4.26	2.1	1.5	9.2	NDT	NDT			NDT		NDT	NDT	0.0056				36.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	TASSIA SCHOOL	265729	9854682	09-Jul-08	C/526/08	7.83	0.13	64.8	AB	AB	12.0	29.0	0	AB	25.0	0.90	1.00	0.10	5.68		1.7	12.5	NDT	NDT			1.9		0.0	NDT	NDT			NDT	48						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	EASTERN	TASSIA SCHOOL	265729	9854682	18-Apr-08	C/318/08	7.06	1.29	78.40	AB	AB		35.0	0			1.00	1.10	0.10	4.97	7.2	1.5	9.2					1.80		0.1					NDT	47.0						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	TASSIA SCHOOL	265729	9854682	03-Mar-08	C/172/08	7.35	0.20	78.8		AB		57.0	0	AB	25.0	0.80	1.00	0.20	5.68	2.5	0.4	9.3	NDT	AB			AB							NDT	53.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	TASSIA SLUMS	265396	9855286	18-Apr-08	C/311/08	7.04	0.63	73.30	AB	AB		32.0	0			1.00	1.10	0.10	3.55	6.2	7.5	15.0					NDT		0.1			0.1		NDT	43.9						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	UMOJA 1 HEALTH CENTRE	265091	9858143	13-Aug-08	C/604/08	7.81	0.24	62	AB	AB	7.0	26.0	0	AB	30.0	0.60	0.70	0.10		2.75	1.0	8.3	NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	UMOJA 1 PRIMARY SCHOOL	264906	9858342	16-Dec-10	C/678/10	7.52	0.23	77.7	UO	AB		25.1	0	AB	24.0	0.1	0.2	0.1	3.55	NDT	0.4	10.5	0.002	NDT	0.1		NDT	NDT	0.205	0.018	0.199	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	UMOJA I PRIMARY SCHOOL	264906	9858342	17-Sep-11	C/305/11	7.26	0.5	90.7	AB	AB	12	26.4	0	AB	35	0.5	0.6	0.1	3.55	4	1.4	7.5	NDT	NDT	0.11	NDT	NDT	0	0.0273	0.007	0.0585	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	EASTERN	UMOJA II CHIEF CAMP	266292	9858612	25-Nov-10	C/620/10	7.37	0.18	76.5	AB	AB		21.5	0	AB	33.0	1.00	1.20	0.20	3.55	3.0	1.35	4	0.017	NDT	0.39		NDT	NDT	0.0307	0.0071	0.0071	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	UMOJA MARKET STANDPIPE	264922	9858123	08-Jul-10	C/344/10	7.48	2.10	76.0	AB	AB		24.4	0	AB	40.0	0.80	1.00	0.20			0.8	3.9	0.01	1.00				NDT	0.62	0.02	0.09	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	UMOJA MARKET STANDPIPE	264922	9858123	13-Aug-08	C/603/08	7.78	0.10	62	AB	AB	7.0	27.0	0	AB	32.0	0.90	1.00	0.10		1.75	1.0	8.3	NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	EASTERN	UMOJA MARKET STANDPIPE	264922	9858123	06-Sep-08	C/641/08	7.51	0.21	69.1	AB	AB	8	26	0	AB	36	0.8	0.9	0.1	7.1	1.75	1	9.2	ND	ND			NDT		0.0847	0.0525	0.0876			NDT	41.46						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	EASTERN	UNITY PRIMARY SCHOOL	265576	9858054	14-Jul-10	C/364/10	8.95	0.06	116.8	AB	AB		79.7	0	AB	698.0	TR	TR	TR			15.3	55.8	0.01	3.00				NDT	NDT	0.01	0.05	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	EASTERN	UNITY PRIMARY SCHOOL	265576	9858054	15-Apr-09	C/164/09	7.81	0.83	83.2	AB			24	0	0	29	0.8	1	0.2	4.26	3	0.6	11	0.01				0.1		NDT	0.0209	0.1037			NDT	49.92						Odour=AB; Deposite =; Alka_Phe =0; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BABA DOGO PRIMARY SCHOOL	264842	9862473	12-May-08	C/350/08	7.51	0.54	70	AB	AB		50	0	AB	27	0.1	0.15	0.05	5.68	8.52	1.9	14.2	NDT	NDT			NDT		0.081	NDT	0.0204			NDT	41.76						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BABA DOGO PRIMARY SCHOOL	264842	9862473	04-Jun-08	C/443/08	7.14	0.43	31.0		AB		27.0	0	AB	28.0	1.20	1.30		4.97		0.9	8.6	NDT	NDT			0.3		NDT	NDT	0.1	NDT		NDT	18.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	BABA DOGO PRIMARY SCHOOL	264842	9862473	05-Oct-08	C/719/08	7.53	0.58			AB	8	25	0			0.8	1	0.2		1.3	0.8	2.1	NDT	NDT			NDT		0.1343		0.0323				39.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	02-May-08	C/333/08	6.80	0.42	56.2	AB	AB		27	0	AB	23	0.60	0.70	0.10	4.97	4.72	1.6	9.2	NDT	NDT			NDT		0.0286	0.0091	0.0464			NDT	43.02						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	03-Mar-11	C/112/11	7.8	0.12	75.7	AB	AB		24.6	0	AB	28	0.8	1	0.2	5.68	8	3.2	10	0.001	17.6	--	14		NDT	0.3088	0.0512	0.943	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	17-Apr-10	C/188/10	7.80	0.12	90.2	AB	AB		16.0	0	AB	31.0	0.40	0.50	0.10	1.00		31.10	10.20	0.03	2.21	0.2		0.70														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	06-Oct-10	C/512/10	7.40	0.02	67.9	AB	AB		33.7	0	AB	35.0	N/T	N/T	N/T	41.9	NDT	2.20	9.40	0.01	11.30	NDT	10.0	NDT	0.0	0.18	0.051	0.040	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; SO4=NDT; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	03-Dec-10	C/202/08	7.55	0.55	77.30				20.0	0	AB	30.0	1.00	1.20	0.20	4.97																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	05-Apr-08	C/261/08	7.56	0.24	71.2	AB	AB		70.0	0			0.60	0.80	0.20	4.26	4.8									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	03-Oct-08	C/7712/08	7.69	0.47			AB	10	20	0			0.4	0.5	0.1		1.7	0.9	2.1	NDT	NDT			NDT		0.5372		0.0934				40.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	24-Oct-08	C/783/08	8.71	0.11			P	18	42	0			0.4	0.5	0.1		18.2	0.5	7.5	NDT	NDT			NDT		0.1136		NDT				39.7						Odour=; Deposite =P; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	BAHATI HEALTH CENTRE	262200	9857409	19-Sep-08	C/681/08	8.06	1.84	70.3	AB	AB	8	32	0	AB	29	1	1.2	0.1	4.97	1	1.2	5.6	NDT	NDT			NDT		NDT	0.009	0.0583			NDT	42.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	08-Oct-08	C/735/08	6.73	0.92			AB	14	30	0			0.8	0.9	0.1		1.7	1.2	2.1	NDT	NDT			NDT		0.1194		0.0702				45.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	15-Jan-08	C/09/08	7.84	1.58	71.0		AB			0			0.90	1.00	0.10	7.81	0.1	0.5	11.2	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	09-Jul-08	C/537/08	7.97	0.27	66.7	AB	AB	12.0	26.0	0	AB	24.0	0.90	1.00	0.10	5.68		1.5	12.5	NDT	NDT			2.2		0.1	0.00	NDT			NDT	49.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	05-Nov-08	C/818/08	7.00	0.16	72.1	AB	AB	8	24	0	AB	26	1	1.2	0.2	4.97	20.5	1.4	6.7	NDT	NDT					0.0638	NDT	0.0067			NDT	54						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	02-May-08	C/332/08	7.15	0.34	56.4	AB	AB		30	0	AB	24	0.70	0.90	0.10	4.26	6.21	1.6	9.2	NDT	NDT			NDT		NDT	NDT	0.0275			NDT	42.84						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BAHATI PRIMARY SCHOOL	261927	9857470	18-Jul-08	C/554/08	7.75	0.02	62.70	AB	AB	16.00	26.00	0	AB	29.00	0.70	0.80	0.10	7.10		1.8	9.7	NDT	NDT			NDT			0.00	NDT			NDT	46.50						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	BIDII PRIMARY SCHOOL	264257	9857864	17-Jul-11	C/273/11	7.41	0.66	593.7	AB	AB	8	35.8	0	AB	27	0.8	1	0.2	2.84	4	0.6	6.26	NDT	NDT	0.33	NDT		NDT	NDT	NDT	0.0114	0.1135									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	BIDII PRIMARY SCHOOL	264257	9857864	02-Sep-08	C/88/08	7.55	0.99	66.3				25.0	0	AB	25.0				5.68	NDT	0.4	5.9	NDT	NDT			AB							NDT	44.2						Odour=; Deposite =; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BIDII PRIMARY SCHOOL	264257	9857864	25-Jun-08	C/495/08	7.62	0.23	48.10		AB		25.0	0	AB	28.0	1.00	1.20		2.84		1.0	9.6	NDT	NDT			NDT		NDT	0.02	0.0	NDT		NDT	11.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	BIDII PRIMARY SCHOOL	264257	9857864	19-Sep-08	C/679/08	7.72	0.52	70	AB	AB	13	28	0	AB	27	1	1.2	0.1	4.97	1.75	1.2	5.8	ND	ND			NDT		0.0787	0.0135	0.0275			NDT	42						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BIDII PRIMARY SCHOOL	264257	9857864	11-Nov-08	C/865/08	7.34	0.94	60.3	AB	AB	8	18	0	AB	18	0.8	1	0.2	7.1	15.7	1.8	9.5	NDT	NDT					NDT	0.0113	0.0494			NDT	45.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	02-Sep-10	C/456/10	7.52	0.14	58.2	AB	AB		32.0	0.0	AB	30.0	0.40	0.60	0.20	7.95	3.00	1.00	6.20	0.03	3.00	0.24			0.12	0.0047	0.016	0.1113	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	15-Feb-10	C/050/10	7.39	0.11	79.7			4.0	32.0			40.0				0.99	10.00	1.9	10.5		6.00				0	0.8	NDT	0.0	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	05-Apr-08	C/260/08	7.55	0.22	70.5	AB	AB		45.0	0			0.70	0.90	0.20	4.26	9.0									0.2					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	09-Jul-08	C539/08	7.99	0.19	63.6	AB	AB	6.0	28	0	AB	25.0	0.80	0.90	0.10	4.26		1.3	10	NDT	NDT			NDT		0.1	0.00	NDT			NDT	47.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	11-Apr-10	C/568/10	8.64	0.20	255.0	AB	AB		8.7	0	25	140.0	0.60	0.80	0.20	2.84	3.0	1.05	8.4	0.035	NDT	5.80		NDT	NDT	0.028	0.0282	0.0036	NDT									Odour=AB; Deposite =AB; Alka_Phe =25; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	15-Jan-09	C/28/09	7.44	0.67	81.1	AB	AB		28	0	AB	29	1	1.2	0.2	7.1	3			NDT	NDT			0.5		0.0416	0.103	0.0224	NDT		0.1	60.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	03-Nov-09	C/121/09	7.08	0.11	70	AB	AB		28	0	AB	25	0.7	0.8	0.1	4.97	3	1.3	7.5	NDT	NDT			NDT		NDT	0.0044	0.0132				49						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	15-Apr-09	C/162/09	7.76	0.54	98.2	AB			28	0	0	34	0.6	0.8	0.2	3.55	3	0.8	10.4	NDT	NDT			NDT		NDT	0.0192	0.2757			NDT	58.92						Odour=AB; Deposite =; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	17-Mar-10	C/125/10	7.18		89.2			6.0	18.0			40.0	1.0	1.20	0.20	21.9	24.40	1.7	7.6	0.01	0.60	0.28																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	14-Jul-10	C/367/10	7.32	1.10	76.9	AB	AB		52.7	0	2.00	35.0	1.00	1.20	0.20			1.18	4.7	0.01	3.00				NDT	0.00	NDT	0.04	NDT									Odour=AB ; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	23-Jun-11	CO/246/11	7.48	1.07	62.2	AB	AB	12	21.2	0	AB	29	0.7	0.8	0.1	4.26	7	16.5	58.9	NDT	--	0.6	2		NDT	NDT	0.0964	0.0256	0.1423									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	12-Oct-10	C/656/10	7.76	0.02	92.9	UO	AB		30.5	0	AB	30.0	0.6	0.7	0.1	4.97	NDT	0.8	5.0	0.001	NDT	0.02		1.00	NDT	0.073	0.019	0.041	0.053									Odour=UO; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	10-Aug-10	C/408/10	7.55	2.14	60.6	AB	P		32.0	1.0	AB	168.0	0.70	0.80	0.10	5.68	9.55	0.7	3.90	NDT	NDT		NDT		NDT	0.0199	0.0181	0.0261	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL	263636	9857716	20-Feb-08	C/139/08	7.57		71.40					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	BURUBURU GIRLS SECONDARY SCHOOL.	263636	9857716	22-Sep-11	C/325/11	7.23	0.19	75.8	AB	AB	6	26.8	0	AB	28	0.9	1.1	0.2	4.26	3.4	1.4	8	NDT	NDT	0.27	2	NDT	0.01	NDT	0.0258	0.0892	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	BURUBURU 1 PRIMARY SCHOOL	263952	9858850	21-Aug-10	C/434/10	7.61	2.16	76.2	AB	P		28.0	2.5	AB	30.00	0.35	0.40	0.05	4.26	7.37	0.75	1.10	TR	TR		0.1		--	0.1254	0.0295	0.0527	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	BURUBURU PHASE 2	264121	9858251	06-Sep-08	C/642/08	7.63	0.02	72.6	AB	AB	8	27	0	AB	29	1	1.2	0.2	7.1	1.75	1	10.1	ND	ND			NDT		0.0158	0.0688	0.0426			NDT	43.56						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	CALTEX - PETROL STATION OUTER RING ROAD	265015	9856006	08-Apr-08	C/272/08	7.69	0.22	67.80	AB	AB		40.0	0			0.70	0.80	0.10	4.97	6.2									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	CALTEX PETROL STATION OUTERING ROAD	263980	9860359	03-Mar-08	C/175/08	7.71	1.46	67.5		AB		30.0	0	AB	25.0	0.80	0.90	0.10	4.97	3.8	0.5	9.3	NDT	AB			AB							NDT	45.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	CITY STADIUM	259950	9856748	13-May-08	C/354/08	7.07	2.04	58.5	AB	AB		43	0	AB	31	0.6	0.7	0.1	3.55	5.63	1.5	10	NDT	NDT			NDT		NDT	0.0242	0.3446			NDT	35.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	COPTIC MEDICAL CENTRE	262221	9855274	15-Oct-08	C/737/08	8.26	0.39			AB	8	24	0			0.4	0.5	0.1		19.4	0.9	1.5	NDT	NDT			NDT		NDT		0.0594				45.2						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	DANDORA SECONDARY SCHOOL	266051	9861980	02-Jun-11	C/69/11	7.97	0.32	72.3	AB	AB		44.5	0	AB	26	0.8	1	0.2	5.68	2	1.6	5	NDT	0.007	0.08	9		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	DANDORA SECONDARY SCHOOL	266051	9861980	12-Sep-10	C/492/10	7.80	0.02	64.8	AB	AB		39.0	0.0	AB	38.0	0.20	0.30	0.10	5.96	6.00	0.90	9.10	0.08	2.00	0.73			NDT	0.0757	0.026	0.0574	NDT		2.0							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	DANDORA SECONDARY SCHOOL	266051	9861980	03-Nov-09	C/118/09	7.49	0.06	71	AB	AB		36	0	AB	30	1	1.2	0.2	5.68		1.2	7.4	NDT	NDT			NDT		NDT	NDT	0.054			NDT	49.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	DANIEL COMBONI PRIMARY SCHOOL	264861	9861509	04-Jun-08	C/445/08	7.18	0.58	70.1		AB		23.0	0	AB	28.0	1.20	1.40		4.26		1.0	8.6	NDT	NDT			2.50		0.0	NDT	0.1	NDT		NDT	42.1						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=0; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	DANIEL COMBONI PRIMARY SCHOOL	264739	9861756	02-Sep-08	C/89/08	7.59	0.61	68.6				19.0	0	AB	27.0				5.68	1.0	0.8	7.5	NDT	NDT			AB							NDT	45.7						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	EASTLAND PARK DEPARTMENT	262108	9856902	01-Jun-09	C/09/09	7.88	1.34	72.9	AB	AB		20	0	AB	28	0.6	0.9	0.3	7.1	2.2			NDT	NDT			NDT		0.1471	0.1041	0.0407	NDT		NDT	54.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	EASTLAND PARK DEPARTMENT	262108	9856902	24-Oct-08	C/784/08	8.08	0.01			AB	12	32	0			0.6	0.7	0.1		23.2	1.2	7.5	NDT	NDT			NDT		0.0249		NDT				39.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	EASTLAND PARK DEPARTMENT	262108	9856902	02-May-08	C/330/08	7.32	0.68	58.8	AB	AB		26	0	AB	24	0.80	1.00	0.20	5.68	6.5	1.6	9.2	NDT	NDT			NDT		NDT	0.0078	0.0905			NDT	39.06						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	EASTLEIGH WATER OFFICE	261113	9857677	17-Oct-11	C/337/11	7.33	0.87	91	AB	AB	16		0	AB	30				8	9	3.3	11	NDT		0.26			NDT	NDT	NDT	0.1978	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	EASTLEIGH WATER OFFICE	261113	9857677	22-Jun-08	C/469/08	7.30	0.47	54.90		AB		27.0	0	AB	20.0	0.80	1.00		4.97		1.0	8.6	NDT	NDT			NDT		NDT	0.02	0.0	NDT		NDT	49.4						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	EASTLEIGH WATER OFFICE	261113	9857677	20-Sep-08	C/693/08	7.67	0.42	69.2	AB	AB	16	37	0	AB	29	1	1.2	0.2	5.68	NDT	1.1	4.4	ND	ND			NDT		NDT	0.0108	0.0632			NDT	41.5						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	EASTLEIGH WATER OFFICE	261113	9857677	11-Apr-10	C/565/10	7.63	0.07	65.1	AB	AB		22.9	0	AB	34.0	0.60	0.80	0.20	3.55	7.0	1.02	9.0	0.047	NDT	0.44		NDT	NDT	0.0131	0.013	0.0158	0.156									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	EASTLEIGH WATER OFFICE	261113	9857677	19-Oct-08	C/765/08	7.5	0.4			AB	14	30	0			0.7	0.8	0.1		12.8	0.8	22.5	NDT	NDT			NDT		0.1418		0.0889				39.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	15-Oct-08	C/739/08	8.03	1.8			AB	10	20	0			0.9	1	0.1		15.2	1.2	0.8	NDT	NDT			NDT		0.0597		0..1217				44.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	21-Jun-08	C/467/08	7.50	0.29	55.60		AB		26.0	0	AB	18.0	1.00	1.20		4.26		1	8.6	NDT	NDT			NDT		0.2	0.01	0.1	NDT		NDT	33.4						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	17-Nov-08	C/893/08	7.89	0.11	65.4	AB	AB	10	22	0	AB	26	0.8	1	0.2	4.97	17.5	1.8	5.2	NDT	NDT					0.4053	0.0099	0.0206			0.1	49						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	05-Aug-08	C/575/08	8.04	0.02	62.40	AB	AB	7.0	32.0	0	AB	25.0	0.80	1.00	0.20		1.75	1.0	8.3	NDT	NDT			NDT		NDT	0.0	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	10-Sep-08	C/665/08	7.65	0.06	62.5	AB	AB	8	29	0	AB	27	0.8	1	0.2	5.68	1.75	2.6	5.9	ND	ND			NDT		NDT	0.0059	0.0567			NDT	37.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	05-Nov-08	C/820/08	6.90	0.42	71.7	AB	AB	10	24	0	AB	30	1	1.1	0.1	4.97	27.3	1.4	6.3	NDT	NDT					0.041	NDT	0.0152			NDT	53.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	HIGHWAY ENGINEERING OFFICE	259324	9857669	02-Sep-10	C/452/10	7.60	0.08	57.6	AB	AB		44.8	0.0	AB	33.0	0.70	0.80	0.10	3.98	5.60	1.10	7.00	0.02	1.00	0.13			NDT	0.0237	0.018	0.2196	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	15-Jan-08	C/06/08	7.81	1.40	71.3		AB			0			0.90	1.00	0.10	5.68	0.1	0.6	9.8	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	19-Sep-08	C/678/08	7.99	0.54	71.1	AB	AB	12	28	0	AB	28	0.8	1	0.2	7.81	2.75	1.5	5.2	ND	ND			NDT		NDT	0.0469	0.1137			NDT	42.66						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	20-Feb-08	C/143/08	7.73		73.20					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	21-Aug-10	C/435/10	7.41	1.78	74.3	AB	P		24.0	0.0	AB	28.00	0.40	0.50	0.10	4.97	7.11	0.75	3.50	TR	TR		0.2		--	0.358	0.0221	0.0557	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	02-Sep-10	C/453/10	7.67	0.26	59.8	AB	AB		29.7	0.0	AB	32.0	--	--	--	7.95	7.30	1.60	8.20	0.03	1.00	0.25			0.01	0.0379	NDT	0.1964	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=; TRC=; CC=; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	03-Sep-08	C/632/08	7.83	0.46	74	AB	AB	8	28	0	AB	33	1	1.2	0.2	4.26	NDT	1	7.3	NDT	NDT			NDT		0.0591	0.074	0.1077			0.5	39.96						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=0.5
Distribution	N.EASTERN	HARAMBEE PRIMARY SCHOOL	266178	9857170	06-Nov-08	C/827/08	7.10	0.2	72.5	AB	AB	12	28	0	AB	25	0.8	1	0.2	5.68	27.9	4.3	6	NDT	NDT					0.0524	NDT	0.1138			NDT	54.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	HESHIMA ROAD PRIMARY SCHOOL	260959	9857077	24-Oct-08	C/788/08	7.65	0.56			AB	8	26	0			0.8	1	0.2		25.5	0.5	5.3	NDT	NDT			NDT		0.0582		NDT				40.4						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	HESHIMA ROAD PRIMARY SCHOOL	260959	9857077	13-May-08	C/358/08	7.67	0.59	67.5	AB	AB		30	0	AB	32	0.5	0.6	0.1	4.26	4.11	1.5	8.3	NDT	NDT			0.1		0.0477	0.0106	0.0878			NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	JERICHO MARKET	263436	9857572	25-Dec-11	C/429/11	7.72	0.05	98.8	AB	AB	8	20.2	0	AB	27	0.8	0.9	0.1	7		3	3.8				3	NDT	NDT	0.1229	NDT	0.0469	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	JUJA ROAD PRIAMRY SCHOOL	259527	9859198	07-Apr-08	C/269/08	7.33	0.37	68.20	AB	AB		43.0	0			0.80	0.90	0.10	5.68	5.4									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	JUJA ROAD PRIMARY SCHOOL	259527	9859198	07-Nov-08	C/834/08	7.00	1.37	67.5	AB	AB	8	25	0	AB	21	0.6	0.7	0.1	5.68	24.4	1.9	5.5	NDT	NDT					0.0319	0.0038	0.051			NDT	50.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	04-Jun-08	C/441/08	7.09	0.61	68.4		AB		26.0	0	AB	31.0	0.80	0.90		4.26		1.0	9.6	TR	TR			20.0		0.0	NDT	0.5	NDT		NDT	41.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	11-Dec-11	C/385/11	7.32	1.68	80.2	AB	AB	6	32.9	0	AB	23	0.8	1	0.2	3.55	3	1.4	6.5	NDT		0.1		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	20-Dec-11	C/414/11	7.79	0.54	95.5	AB	P	8	26.3	0	AB	29	0.4	0.5	0.1	6		9.1	11				3	NDT	NDT	0.2373	NDT	NDT	0.0827									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =0.0827; COD=
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	13-Sep-10	C/494/10	7.96	0.01	62.1	AB	AB		74.0	0.0	AB	30.0	0.60	0.80	0.20	5.96	5.60	1.10	9.10	0.09	NDT	0.32			0.01	0.2224	0.007	0.0632	NDT		5.0							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	02-Sep-08	C/86/08	7.62	0.47	67.9				30.0	0	AB	24.0				4.26	1.3	0.4	7.5	NDT	NDT			AB							NDT	45.2						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KARIOBANGI WATER AND SEWERAGE OFFICE	264521	9860892	08-Apr-09	C/306/09	7.79	0.22	71.6	UO	AB		40		AB	46	0.8	1	0.2	5.68	10	1.45	9.6	0.002	NDT					NDT	0.0063	0.0435										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KARIOKOR DEOS OFFICE	259210	9858702	07-Nov-08	C/840/08	6.90	0.01	69	AB	AB	8	20	0	AB	20	0.8	0.85	0.05	6.39	17.3	2	5.3	NDT	NDT					0.0433	NDT	0.0491			NDT	51.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KARIOKOR DEOS OFFICE	259210	9858702	02-Nov-08	C/91/08	7.55	0.71	61.4				20.0	0	AB	24.0				4.97	1.0	0.4	7.5	NDT	NDT			AB							NDT	40.9						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KCITT-EASTLEIGH	261039	9859530	19-Oct-08	C/763/08	7.6	0.3			AB	16	30	0			0.65	0.7	0.05		25.7	0.8	7.5	NDT	AB			,,		0.0075		0.0106				43.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	09-Jul-08	C/536/08	7.95	0.39	66.5	AB	AB	8.0	31.0	0	AB	25.0	0.80	1.00	0.20	5.68		1.8	12.5	NDT	NDT			3.3		NDT	NDT	NDT			NDT	49.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	27-Jan-11	C/56/11	7.22	0.33	77.2	AB	AB		41	0	AB	25	0.6	0.7	0.1	4.97	7	1.6	7	NDT	8.4	0.91	--		0.02	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	02-Feb-11	C/62/11	7.42	0.03	67.8	AB	AB		30.1	0	AB	--	--	--	--	5.68	6	1.4	3.5	NDT	NDT	0.07	43		NDT	0.0684	0.0182	NDT	0.0155									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	15-Feb-10	C/052/10	7.59	0.10	79.2			4.0	30.0			40.0				1.39	9.40	1.9	10.3		6.00				0	0.4	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	17-Mar-10	C/126/10	7.15		82.1			6.0	18.0			35.0	1.0	1.20	0.20	22.9	2.40	1.3	7.4	0.27	3.00	0.43																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	19-Apr-10	C/198/10	5.30	0.07	68.8	AB	AB		24.0	0	AB	40.0	0.70	0.60	0.10	2.00		2.80	10.30	0.01	4.43	NDT		2.20														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	13-Aug-10	C/419/10	7.86	2.03	58.9	AB	P		30.0	0.0	AB	35.6	0.80	1.00	0.20	7.10	NDT	0.5	4.80	TR	NDT		1.4		NDT	NDT	0.0013	0.0577	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; SO4=NDT; NO2 =TR; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	13-Sep-10	C/493/10	7.95	0.01	61.8	AB	AB		241.0	0.0	AB	36.0	0.60	0.80	0.20	7.95	4.00	1.10	9.20	0.07	3.00	0.54			NDT	0.0189	0.013	0.1663	NDT		7.0							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =0.066; NO3 =3; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	03-Nov-09	C/119/09	7.55	0.13	69.3	AB	AB		40	0	AB	32	1	1.2	0.2	4.97		1.4	7.4	NDT	NDT			NDT		0.0246	NDT	0.0418			NDT	48.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	03-Sep-08	C/636/08	7.46	1.14	66	AB	AB	10	26	0	AB	31	1.2	1.4	0.2	5.68	NDT	0.9	8.3	ND	ND			0.2		NDT	0.0599	0.1146			0.1	39.6						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	03-Oct-08	C/711/8	7.67	0.62			AB	12	20	0			1	1.2	0.2		1.7	0.9	4	,,	,,			,,		NDT		0.0328				40.2						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	22-Jul-10	C/380/10	7.66	0.49	88.0	AB	AB		71.2	0	AB	35.0	0.80	1.00	0.20			0.9	3.5	--	--				NDT	0.10	0.01	0.03	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	11-Jul-10	C/582/10	7.65	0.06	78.2	AB	AB		27.2	0	AB	35.0	1.10	1.30	0.20	4.26	5.0	1.03	12.0	0.017	NDT	0.07		NDT	NDT	0.066	0.001	0.041	0.0669									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIAMBIU SLUM	263457	9859542	02-Dec-09	C/90/09	7.1	0.19	49	AB	AB		28	0	AB	26	0.6	0.7	0.1	7.1	1.7	0.9	10.5	NDT	NDT					0.1103	0.0224	0.1028			NDT	29.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KIMATHI PRIMARY SCHOOL	262346	9857642	06-Oct-10	C/515/10	7.41	0.02	52.8	AB	AB		33.50	0	AB	35.00	N/T	N/T	N/T	7.99	NDT	2.25	9.60	0.04	4.60	0.1	13.0	NDT	NDT	NDT	NDT	0.040	0.02		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; SO4=NDT; NO2 =; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KIMATHI PRIMARY SCHOOL	262346	9857642	03-Mar-11	C/113/11	7.84	0.39	64.6	AB	AB		27.3	0	18	210	0.6	0.7	0.1	4.26	4	3.2	10	0.001	3.7	--	16		NDT	0.1471	NDT	0.0579	0.0938									Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIMATHI PRIMARY SCHOOL	262346	9857642	20-Feb-08	C/144/08	7.56		68.30					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	KIMATHI PRIMARY SCHOOL	262346	9857642	05-Apr-08	C/258/08	7.57	0.22	72.7	AB	AB		33.0	0			1.00	1.20	0.20	4.97	9.2									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	KIMATHI PRIMARY SCHOOL	262346	9857642	03-Oct-08	C/710/08	7.78	2.5			AB	8	20	0			0.5	0.6	0.1		NDT	1.2	6.44.	NDT	NDT			NDT		0.8954		0.107				41.9						Odour=; Deposite =AB; Alka_Phe =; SO4=NDT; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAJENGO SLUMS	260137	9858330	25-Oct-08	C/791/08	8.63	0.02			AB	12	20	0			0.6	0.7	0.1		23.4	0.5	7.5	,,	,,			NDT		NDT		NDT				45.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	MAJENGO SLUMS	260137	9858330	20-Sep-08	C/694/08	7.92	0.39	69.1	AB	AB	12	28	0	AB	25	1	1.2	0.2	8.52	NDT	2.9	4.3	ND	ND			NDT		NDT	0.0063	0.0476			NDT	29.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MAJENGO SLUMS	260137	9858330	07-Nov-08	C/839/08	6.90	1.11	68.9	AB	AB	8	26	0	AB	45	1	1.2	0.2	4.97	23.6	1.9	5.3	NDT	NDT					0.0478	0.0114	0.0767			NDT	51.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	15-Feb-10	C/051/10	7.53	0.10	81.4			6.0	31.0			45.0				0.99	12.30	1.8	10.6		7.00				0	0.8	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	15-Mar-10	C/121/10	7.20		97.7			6.0	27.0			39.0	0.50	0.60	0.10	29.90	37.20	2.0	9.2	0.05	14.00	0.34																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	14-Jul-10	C/368/10	7.74	0.38	72.8	AB	AB		51.6	0	AB	40.0	0.60	0.70	0.10			0.9	4.5	0.02	2.00				NDT	0.07	0.02	0.07	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	21-Aug-10	C/436/10	7.36	0.68	92.5	AB	P		34.0	0.0	AB	33.00	0.65	0.75	0.10	28.84	6.06	0.65	3.10	NDT	TR		NDT		--	0.1029	0.0184	0.0563	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu= -- ; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	03-Nov-09	C/122/09	8.02	0.3	541	AB	AB		22	0	AB	27	TR	TR	TR	17.7	5	9	140	NDT	NDT			NDT		0.0369	NDT	0.1735				378.7						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	15-Apr-09	C/161/09	7.5	1.26	86.4	AB			28	0	0	33	0.6	0.8	0.2	4.97	2.5	0.65	10.5	NDT	T			NDT		NDT	0.0123	0.2423			NDT	51.84						Odour=AB; Deposite =; Alka_Phe =; NO2 =NDT; NO3 =T; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	04-Jun-08	C/424/08	7.38	0.21	73.3		AB		23.0	0	AB	29.0	1.00	1.20		4.97		1.0	8.6	NDT	NDT			8.20		0.1	0.0	0.1	NDT		NDT	44.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	13-Aug-08	C/608/08	7.85	0.02	215	AB	AB	10.0	27.0	0	3.00	97.0	0.60	0.65	0.05		3.5	1.1	58.75	NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	06-Nov-08	C/825/08	7.60	0.15	194.5	AB	AB	8	12	0	AB	65	0.5	0.6	0.1	37.6	14	1.4	17.5	NDT	NDT					0.1116	0.0114	0.0181			0.1	146.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	07-Mar-09	C/271/09	7.62	0.39	411	UO	AB	8	14	0	AB	26	0.2	0.3	0.1	6.39	3	24	116	0.065	NDT					NDT	0.0145	0.044				274						Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MAKADARA HEALTH CENTRE	263307	9856565	24-Oct-08	C/785/08	8.85	0.01			AB	8	30	0			0.5	0.6	0.1		18.7	0.5	6.8	NDT	NDT			,,		0.0083		NDT				40.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	MARIE STOPES HOSPITAL	260543	9859560	06-Sep-08	C/643/08	7.45	0.59	67.4	AB	AB	8	33	0	AB	33	0.8	0.9	0.1	7.1	1.75	1	9.2	ND	TR.			NDT		0.0157	0.0674	0.0731			NDT	40.44						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =TR.; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MARTIN LUTHER PRIMARY SCHOOL	263599	9856993	20-Feb-08	C/140/08	8.30		191.0					0	AB		0.30	0.40	0.10																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MARTIN LUTHER PRIMARY SCHOOL	263599	9856993	01-Jun-09	C/12/09	7.81	0.68	72.6	AB	P		22	0	AB	23	0.6	0.8	0.2	5.68	4.7			NDT	NDT			NDT		0.0768	0.103	0.1795	NDT		NDT	54.5						Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	MARTIN LUTHER PRIMARY SCHOOL	263599	9856993	06-Nov-08	C/823/08	7.60	1.53	220	AB	AB	8	30	2	AB	93	0.5	0.6	0.1	6.39	20.4	9.4	0.7	NDT	NDT					0.0023	NDT	0.0243			0.1	165						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MARTIN LUTHER PRIMARY SCHOOL	263599	9856993	04-Jun-08	C/426/08	7.32	0.82	72.7		AB		23.0	0	AB	28.0	0.80	0.90		4.26		1.1	8.6	NDT	NDT			8.00		0.1	0.0	0.1	NDT		NDT	43.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	METROPOLITAN HOSPITAL	263553	9857532	01-Jun-09	C/06/09	7.97	0.72	76.7	AB	AB		24	0	AB	33	0.6	0.8	0.2	7.1	2.5			NDT	NDT			NDT		0.016	0.1107	0.0357	NDT		NDT	57.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	METROPOLITAN HOSPITAL	263553	9857532	15-Jan-08	C/11/08	7.80	1.56	71.8		AB			0			0.80	0.90	0.10	7.81	NDT	0.6	10.5	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	METROPOLITAN HOSPITAL	263553	9857532	20-Feb-08	C/138/08	7.71		65.70					0	AB		0.50	0.60	0.10																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	METROPOLITAN HOSPITAL	263553	9857532	03-Dec-08	C/203/08	7.55	0.33	71.30				20.0	0	AB	29.0	1.00	1.20	0.20	4.26																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	METROPOLITAN HOSPITAL	263553	9857532	06-Nov-08	C/828/08	7.50	0.1	193.4	AB	AB	8	22	0	7	84	0.4	0.5	0.1	6.39	26.7	1.4	18.2	NDT	NDT					NDT	NDT	0.0457			NDT	145						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	05-Nov-08	C/817/08	7.00	0.72	72.6	AB	AB	8	28	0	AB	20	1	1.2	0.2	4.26	20.7	1.4	6.8	NDT	NDT					0.0638	0.0063	0.0143			NDT	54.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	02-May-08	C/331/08	7.21	0.64	58.3	AB	AB		35	0	AB	23	0.80	1.00	0.20	4.26	5.16	1.5	9.2	NDT	NDT			NDT		NDT	0.0026	0.0304			NDT	42.12						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	08-May-09	C/308/09	7.73	0.08	75.6	UO	AB		36		AB	45	0.8	1	0.2	4.97	12.4	1.18	9	0.014	118			NDT		0.0098	NDT	0.0515										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	08-Oct-08	C/733/08	6.58	0.96			AB	14	28	0			1.3	1.4	0.1		1.9	1.2	1.5	NDT	NDT			NDT		0.1493		0.0277				45.3						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	24-Oct-08	C/787/08	7.37	0.73			AB	16	30	0			0.8	1	0.2		14.5	0.5	5.3	NDT	NDT			NDT		NDT		NDT				42.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	16-Feb-11	C/91/11	7.53	0.02	58.9	AB	AB		47	0	AB	32	0.8	1	0.2	4.26	7	2.7	3.2	3.8	NDT	0.09	12		0.01	0.0522	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	16-Apr-10	C/185/10	7.80	0.20	88.0	AB	AB		32.0	0	AB	29.0	0.60	0.70	0.10	1.00		3.10	10.00	0.00	4.43	0.31		0.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	02-Sep-10	C/458/10	7.48	1.26	60.5	AB	AB		38.0	0.0	AB	80.0	AB	TR	TR	7.95	3.00	2.00	7.00	0.03	3.00	0.27			0.02	0.5821	0.038	0.419	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	06-Oct-10	C/516/10	7.39	0.02	42.8	AB	AB		39.30	0	AB	37.00	N/T	N/T	N/T	11.99	NDT	2.25	10.00	NDT	5.00	0.03	7.0	NDT	NDT	0.18	NDT	0.021	0.04		6.00							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	05-Apr-08	C/259/08	7.50	0.30	71.3	AB	AB		50.0	0			1.00	1.20	0.20	3.55	10.0									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	09-Jul-08	C538/08	7.97	0.27	64.3	AB	AB	8.0	31.0	0	AB	24.0	0.90	1.00	0.10	5.68		7.2	8.3	NDT	NDT			1.20		0.1	0.00	NDT			NDT	48						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	03-Dec-08	C/204/08	7.58	0.35	73.50				23.0	0	AB	33.0	1.10	1.20	0.10	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MORRISON PRIMARY SCHOOL	261756	9857321	19-Sep-08	C/680/08	7.63	0.31	70.2	AB	AB	8	28	0	AB	26	1	1.2	0.1	5.68	1.75	1.2	5.6	ND	ND			NDT		0.0468	0.0108	0.016			NDT	42.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MOTHERLAND SLUMS	261541	9857728	20-Sep-08	C/688/08	7.91	1.41	69.8	AB	AB	13	32	0	AB	35	0.6	0.8	0.2	5.68	1.75	1.2	5.8	ND	ND			0.2		NDT	0.0018	0.0312			NDT	43.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MUOROTO NCC OFFICE	259204	9857712	19-Feb-08	C/132/08	7.30		71.20					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	19-Aug-09	C/340/09	7.75	0.42	61.7	UO	AB		36		AB	49	0.6	0.7	0.1	7.1	11	1.3	10.65	NDT	NDT					0.0146	NDT	0.0233										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	24-Oct-08	C/789/08	7.62	0.01			AB	8	28	0			0.8	0.9	0.1		19.2	0.5	6	NDT	NDT			NDT		0.0139		NDT				40.9						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	15-Jan-08	C/08/08	7.81	1.55	72.7		AB			0			0.55	0.65	0.10	5.57	1.0	0.6	11.2	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	05-Aug-08	C/574/08	8.03	0.23	54.60	AB	AB	6.0	31.0	0	AB	28.0	0.80	1.00	0.20		1.75	1.0	8.3	NDT	NDT			NDT		0.0	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	10-Sep-08	C/671/08	7.44	0.16	63.8	AB	AB	7	28	0	AB	27	0.7	0.8	0.1	3.55	1.75	1.2	5.4	ND	ND			NDT		0.0196	NDT	0.0442			NDT	38.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	MUTHURWA PRIMARY SCHOOL	259717	9857539	05-Nov-08	C/816/08	6.90	0.64	72.5	AB	AB	14	28	0	AB	27	0.8	1	0.2	7.1	22.5	1.4	6.5	NDT	NDT					NDT	NDT	0.0467			NDT	54.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	NPC BURUBURU ACADEMY PRIMARY SCHOOL	2642265	9856715	11-Nov-08	C/866/08	7.24	8.45	67.7	AB	AB	12	20	0	AB	30	0.4	0.5	0.1	7.1	15.9	1.2	7.8	NDT	NDT					0.0861	0.0127	0.3583			NDT	50.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	NPC BURUBURU ACADEMY PRIMARY SCHOOL	2642265	9856715	06-Oct-10	C/514/10	7.41	0.02	69.9	AB	AB		29.90	0	AB	40.00	N/T	N/T	N/T	9.99	NDT	2.40	9.60	NDT	9.50	0.47	2.0	NDT	0.0	0.02	0.038	0.036	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	NPC BURUBURU ACADEMY PRIMARY SCHOOL	2642265	9856715	19-Sep-08	C/682/08	7.69	0.35	71.5	AB	AB	10	28	0	AB	29	0.1	0.2	0.1	4.97	1.75	7.4	5.6	ND	ND			NDT		0.1022	0.0144	0.2952			NDT	15.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	NPC BURUBURU ACADEMY PRIMARY SCHOOL	2642265	9856715	15-Jan-08	C/07/08	7.80	0.34	73.7		AB			0			1.00	1.20	0.20	7.10	0.1	0.5	10.5	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	NAIROBI RIVER PRIMARY SCHOOL	263821	9859556	03-Sep-08	C/634/08	7.64	0.56	66.6	AB	AB	8	27	0	AB	29	1.2	1.4	0.2	4.97	NDT	1	8.3	ND	ND			NDT		0.0256	0.0688	0.134			NDT	39.06						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	NAIROBI RIVER PRIMARY SCHOOL	263821	9859556	03-Oct-08	C/708/08	7.67	1.56			AB	10	24	0			0.2	0.3	0.1		9.4	1.4	7.5	TRA.	NDT			NDT		1.1491		0.1873				41.9						Odour=; Deposite =AB; Alka_Phe =; NO2 =TRA.; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	NAIROBI RIVER PRIMARY SCHOOL	263821	9859556	04-Jun-08	C423/08	7.32	0.94	72.6		AB		27.0	0	AB	28.0	0.70	0.80		2.84		1.1	7.9	NDT	NDT			3.30		0.0	NDT	0.1	NDT		NDT	43.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	NDURURUNO PRIMARY SCHOOL	263631	9860455	06-Sep-08	C/644/08	7.41	0.73	68.6	AB	AB	12	32	0	AB	28	1	1.2	0.2	7.1	1	1	10	NDT	NDT			NDT		0.1714	0.0369	0.0666			NDT	41.16						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	NILE ROAD PRIMARY SCHOOL	262789	9856899	07-Nov-08	C/838/08	6.80	1.05	68.8	AB	AB	12	30	0	AB	25	0.5	0.6	0.1	7.81	24.2	1.7	5.3	NDT	NDT					0.2846	0.0076	0.09			NDT	51.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	NILE ROAD PRIMARY SCHOOL	262789	9856899	16-Aug-11	C/280/11	6.68	0.7	71	AB	AB	10	23.9	0	AB	25	0.5	0.7	0.2	3.55	6	1.784	0.568	NDT	NDT	0.05	6		NDT	0.0855	0.0132	0.4448	0.2988									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	NJORO NURSERY SCHOOL	262984	9857549	11-Apr-10	C/564/10	7.5	0.14	69.6	AB	AB		25.8	0	AB	35.0	0.80	1.00	0.20	2.13	7.0	0.80	3.0	0.033	NDT	0.78		NDT	0.02	0.0026	0.003	0.012	0.1116									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	OUR LADY OF MERCY PRIMARY SCHOOL SHAURI MOYO	260627	9857116	05-Nov-08	C/819/08	7.00	0.13	72.2	AB	AB	8	22	0	AB	32	1	1.2	0.2	5.68	27	1.4	6.8	NDT	NDT					NDT	0.0038	0.0224			NDT	54.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	OUR LADY OF MERCY PRIMARY SCHOOL SHAURI MOYO	260627	9857116	13-May-08	C/359/08	7.66	0.36	46.6	AB	AB		35	0	AB	29	0.6	0.7	0.1	4.26	2.6	1.5	16.7	NDT	NDT			NDT		NDT	0.0212	0.0278			NDT	27.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	OUR LADY OF MERCY PRIMARY SCHOOL SHAURI MOYO	260627	9857116	17-May-08	C/373/08	7.24	1.98	64	AB	AB		28	0	AB	27	0.9	0.9	0.1	4.97	1.53	8.3	8.3	NDT	NDT			0.6		0.1285	0.012	0.0982			NDT	38.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	PARKS SECTION EASTLANDS	262108	9856902	18-Oct-08	C/761/08	7.52	0.37			AB	16	34	0			0.6	0.65	0.05		24.5	0.8	7.5	NDT	NDT			NDT		NDT		0.0696				43.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	PUMWANI SECONDARY SCHOOL	259817	9858357	20-Sep-08	C/692/08	7.98	0.13	68	AB	AB	14	36	0	AB	27	0.8	1	0.2	7.81	NDT	1.2	11.1	ND	ND			NDT		NDT	0.0009	0.0702			NDT	41.5						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	PUMWANI SECONDARY SCHOOL	259817	9858357	02-Nov-08	C/92/08	7.50	1.19	69.00				15.0	0	AB	20.0				4.26	1.0	0.4	9.8	NDT	NDT			AB							NDT	46.0						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	PUMWANI SECONDARY SCHOOL	259817	9858357	07-Nov-08	C/831/08	6.30	0.01	68.9	AB	AB	16	25	0	AB	24	0.8	0.9	0.1	4.97	14.4	1.4	5.5	NDT	NDT					0.041	0.0051	0.0381			NDT	51.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	RABAI ROAD PRIMARY SCHOOL	263423	9857483	06-Oct-10	C/513/10	7.47	0.05	68.9	AB	AB		31.3	0	AB	35.0	N/T	N/T	N/T	10.0	NDT	2.30	9.40	0.02	8.10	0.14	10.0	NDT	0.0	0.11	NDT	0.028	0.06		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	RABAI ROAD PRIMARY SCHOOL	263423	9857483	11-Apr-10	C/567/10	7.68	0.58	68.4	AB	AB		29.1	0	AB	36.0	1.00	1.20	0.20	4.26	7.0	1.03	8.5	0.011	NDT	8.25		NDT	0.01	0.013	0.013	0.0208	0.1339									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	RABAI ROAD PRIMARY SCHOOL	263423	9857483	21-Jul-11	C/275/11	7.28	0.98	155	AB	AB	12	30.5	0	AB	28	0.8	1	0.2	28.4	6	0.64	2.18	NDT	NDT	0.25	NDT		NDT	0.4626	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	09-Jul-08	C/541/08	7.98	0.24	65.8	AB	AB	10.0	24	0	AB	26.0	0.50	0.60	0.10	4.97		1.7	11.9	NDT	NDT			3.00		0.1	0.01	NDT			NDT	48.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	20-Feb-08	C/142/08	7.57		69.80					0	AB		1.00	1.20	0.20																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	01-Jun-09	C/11/09	7.94	2.33	73.6	AB	P		20	0	AB	24	0.8	1	0.2	6.39	1.5			NDT	NDT			NDT		NDT	0.0888	0.2214	NDT		NDT	55.2						Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	02-May-08	C/329/08	7.18	13	48.2	AB	AB		25	2	AB	24	0.80	1.00	0.20	4.26	NDT	1.6	8.3	NDT				NDT		NDT	0.0196	0.1999			NDT	38.64						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	06-Nov-08	C/829/08	6.90	2.3	71.9	AB	AB	8	26	0	AB	30	1	1.2	0.2	4.97	14.8	1.4	5.6	NDT	NDT					0.0956	NDT	0.1248			NDT	53.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	ST ANNS PRIMARY SCHOOL JOGOO ROAD	261636	9856881	25-Jun-08	C/496/08	7.74	0.15	56.40		AB		26.0	0	AB	27.0	0.10	0.75		5.68		1.0	9.6	NDT	NDT			NDT		0.0	0.02	1.0	NDT		NDT	32.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	ST DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	22-Jan-11	C/43/11	7.4	0.42	78.8	AB	AB		27.6	0	AB	30	0.6	0.7	0.1	3.55	7	1.5	8	NDT	1	0.65	9		NDT	0.205	0.107	0.2663	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	ST DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	17-May-11		7.2	0.89	74.4	AB	P		24	0	AB	30	0.1	0.15	0.05	3.35	9	--	--	NDT	NDT	0.64	8		NDT	0.0211	0.0063	0.0423	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	ST. DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	11-Aug-10	C/583/10	7.36	0.02	76.6	AB	AB		27.4	0	AB	30.0	0.30	0.40	0.10	5.68	6.0	1.04	10.2	0.011	NDT	0.59		NDT	NDT	0.484	0.192	0.0831	0.067									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	N.EASTERN	ST. DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	20-Apr-09	C/171/09	7.91	1.06	82	AB			28	0	0	27	0.8	1	0.2	3.55	3	0.73	11.75	NDT	NDT			0.2		NDT	NDT	0.0331			NDT	49.2						Odour=AB; Deposite =; Alka_Phe =0; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	ST. DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	09-Sep-10	C/480/10	8.01	0.02	70.7	AB	AB		34.0	0.0	AB	34.0	0.40	0.60	0.20	3.98	5.10	1.00	7.00	0.02	2.00	0.21			NDT	0.0899	0.025	0.0829	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	N.EASTERN	ST. DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	16-Mar-10	C/124/10	7.15		88.2			8.0	40.0			20.0	.0.5	0.60	0.10	21.9	17.80	1.7	7.3	0.06	0.90	0.12																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	ST. DOMINIC MWIKI PRIMARY SCHOOL	270512	9863043	15-Feb-10	C/047/10	7.08	0.43	90.2			6.0	50.0			41.0				0.99	11.60	1.6	11.2		17.00				NDT	0.6	NDT	0.0	0.0281									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	N.EASTERN	ST. JOHNS MAJENGO SLUMS	260226	9857980	08-Nov-09	C/331/09	7.58	0.07	81.5	UO	AB		36		AB	52	1	1.2	0.2	8.52	11	1.2	10.85	0.114	NDT					NDT	0.0079	0.0251										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	TOM MBOYA HALL-MAKANDARA	263785	9856621	11-Apr-10	C/566/10	7.64	0.09	66.9	AB	AB		30.0	0	AB	38.0	1.00	1.20	0.20	4.26	7.0	1.01	9.0	0.069	NDT	7.05		NDT	0.01	0.158	0.0158	0.0272	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	N.EASTERN	UHURU PRIMARY SCHOOL	262962	9858246	17-Apr-10	C/189/10	7.80	0.21	86.5	AB	AB		22.0	0	AB	21.0	0.50	0.60	0.10	1.00		3.10	9.40	0.06	1.33	0.24		1.40														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	UHURU PRIMARY SCHOOL	262962	9858246	05-Apr-08	C/257/08	7.47	0.37	73.9	AB	AB		47.0	0			0.60	0.80	0.20	5.68	7.8									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	N.EASTERN	UHURU PRIMARY SCHOOL	262962	9858246	03-Sep-08	C/633/08	7.76	0.95	66.6	AB	AB	12	32	0	AB	30	1	1.2	0.2	4.26	NDT	1	8.3	ND	ND			NDT		0.0473	0.0674	0.1485			0.1	39.96						Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	N.EASTERN	UHURU PRIMARY SCHOOL	262962	9858246	06-Nov-08	C/826/08	7.20	0.56	72.2	AB	AB	12	24	0	AB	30	0.8	1	0.2	5.68	21.9	1.4	6	NDT	NDT					0.0751	0.0063	0.0348			NDT	54.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	CITY PARK	258278	9860626	18-Apr-10	C/194/10	7.40	0.05	102.3	AB	AB		24.0	0	AB	33.0	0.10	0.50	0.05	5.00		4.50	14.80	0.01	NDT	NDT		1.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	CITY PARK	258278	9860626	12-Mar-10	C/629/10	7.56	0.02	70.3	UO	AB		36.7	0	AB	31.0	N/T	N/T	N/T	5.68	5.0	0.4	10.0	5.68	NDT	0.04		NDT	0.03	NDT	0.015	NDT	0.009									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=N/T; TRC=N/T; CC=N/T; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	CITY PARK	258278	9860626	02-Jun-09	C/73/09	7.68	0.88	68.6	AB	AB		18	0	AB	30	0.5	0.6	0.1	5.68	1.6	1.5	8.2	NDT	NDT			NDT		0.0345	0.045	0.022			NDT	41.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	CITY PARK	258278	9860626	04-Nov-08	C/812/08	6.80	0.28	75.2	AB	AB	8	23	0	AB	30	0.5	0.6	0.1	5.68	17.85	1.7	9.2	NDT	NDT					0.0114	0.0328	0.0467			NDT	56.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	DOG POUND	258900	9860005	07-Aug-09	C/594/08	7.37	0.09	63.3	AB	AB	7.0	27.0	0	AB	31.0	1.00	1.20	0.20		1.75	1.0	7.5	NDT	NDT			NDT		NDT	0.00	0.1										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	DOG POUND	258900	9860005	21-Oct-11	C/349/11	7.49	0.66	88	AB	AB	20		0	AB	37	0.6	0.7	0.1	12	9	2.8	9.5	NDT		0.17			NDT	0.1093	0.05	0.0258	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	DOG POUND	258900	9860005	20-Aug-10	C/429/10	7.90	1.98	79.9	AB	P		28.0	0.0	AB	35.0	0.60	0.70	0.10	5.68	8.14	0.65	4.00	NDT	TR		NDT		--	0.0269	0.0129	0.0432	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	DOG POUND	258900	9860005	02-Aug-09	C/83/09	7.84	0.11	80	AB	AB		18	0	AB	30	0.8	1	0.2	5.68	1.6	1.5	8	NDT	NDT			NDT		0.0448	0.004	0.0579			NDT	38.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	DOG POUND	258900	9860005	04-Jun-08	C/446/08	7.18	0.88	71.80		AB		31.0	0	AB	29.0	0.80	1.00		4.26		1.0	10.5	NDT	NDT			1.80		0.9	0.01	0.1	NDT		NDT	43.1						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	DOG POUND	258900	9860005	06-Jul-08	C/508/08	7.24	1.07	55.7	AB	AB	20.0	21.0	0	AB	25.0	0.80	0.90	0.10	5.68		2.2	8.3	NDT	NDT			NDT		0.1	0.3	0.3			NDT	33.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	DOG POUND	258900	9860005	08-Sep-08	C/660/08	7.32	0.27	60.8	AB	AB	8	27	0	AB	35	1	1.2	0.2	5.68	1	1.1	5.6	ND	ND			NDT		0.1478	0.0015	0.1603			NDT	36.48						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	DOG POUND	258900	9860005	24-Jan-09	C/45/09	6.3	0.68	66	AB	AB		20	0	AB	30	0.5	0.6	0.1	7.1	2			NDT	NDT			NDT		NDT	0.0953	0.012	NDT		NDT	49.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	04-Feb-08	C/73/08	7.62	0.78	60.1				17.0	0	AB	25.0				5.68	1.0	0.4	5.9	NDT	NDT			NDT								40.0						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	13-Nov-08	C/879/08	7.50	0.02	68.9	AB	AB	14	37	0	AB	28	0.7	0.8	0.1	6.39	23.5	1.1	9.6	NDT	NDT					0.3039	NDT	0.0586			NDT	51.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	18-Apr-10	C/193/10	7.60	0.11	78.8	AB	AB		20.0	0	AB	34.0	0.50	0.60	0.10	2.00		3.20	10.10	0.11	1.33	0.1		1.20														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	12-Oct-10	C/529/10	7.45	0.53	75.9	AB	AB		45.2	0	AB	30.0	1.0	1.20	0.20	5.99	NDT	2.90	9.90	0.01	7.70	0.01	3.0	NDT	0.0	0.04	NDT	0.047	0.04		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	06-Jul-08	C/510/08	7.33	0.80	54.7	AB	AB	4.0	20	0	AB	25.0	0.90	0.95	0.50	4.97		1.1	8.3	NDT	NDT			0.10		0.1	NDT	NDT			NDT	32.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	06-Oct-08	C/727/08	6.55	3.26			AB	14	30	0			0.9	1	0.1		3.3	1.2	NDT	NDT	NDT			NDT		NDT		0.0758				46.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	22-Jun-08	C/471/08	7.12	3.19	53.50		AB		29.0	0	AB	21.0	1.00	1.20		4.97		1.0	8.6	NDT	NDT			NDT		0.0	0.02	0.4	NDT		NDT	32.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	02-Aug-09	C/80/09	7.92	0.09	65.6	AB	AB		20	0	AB	25	0.8	1	0.2	5.68	0.4	1.2	10	NDT	NDT			NDT		0.0758	0.0066	0.0115			NDT	39.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GARDEN ESTATE PRIMARY SCHOOL	262415	9863781	07-Aug-09	C/592/08	7.85	0.01	62.4	AB	AB	8.0	34.0	0	AB	30.0	1.00	1.20	0.20		1.75	1.0	10.0	NDT	NDT			0.8		NDT	0.00	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GETRUDE CHILDRENS HOSPITAL	258737	9861107.3	20-Sep-08	C/691/08	8.37	0.14	151.6	AB	AB	13	34	0	AB	26	0.4	0.5	0.1	7.1	1.75	1.2	4.5	ND	ND			NDT		0.0468	0.0036	0.1384			NDT	40.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GETRUDE CHILDRENS HOSPITAL	258737	9861107.3	19-May-08	C/392/08	7.32	1.58	140.6	AB	AB		36	0	AB	30	0.6	0.8	0.2	6.39	8.1	6.4	26	NDT	NDT			NDT		NDT	0.0018	0.0308				78.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	NORTHERN	GETRUDE CHILDRENS HOSPITAL	258737	9861107.3	01-May-09	C/04/09	7.83	1.16	70.3	AB	P		18	0	AB	29	0.6	0.7	0.1	9.23	2			NDT	NDT			NDT		0.0064	0.0942	0.091	NDT		NDT	52.7						Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	GETRUDE CHILDRENS HOSPITAL	258737	9861107.3	22-Jan-09	C/40/09	7	14.4	72	AB	AB		23	0	AB	32	AB	AB	AB	7.1	1.8			NDT	NDT			NDT		2.5136	0.1502	0.1404	NDT		NDT	54						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	GETRUDE CHILDRENS HOSPITAL	258737	9861107.3	18-Apr-10	C/192/10	7.60	0.23	75.5	AB	AB		16.0	0	AB	22.0	0.80	1.00	0.10	0.99		3.10	10.10	0.01	4.43	0.12		2.20														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =0.009; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GITHURAI PRIMARY SCHOOL	267750	9867126	16-Feb-08	C/122/08	7.70	1.80	75.60				21.0	0	AB		1.00	1.20	0.20	4.97	0.3							AB								50.4						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	GITHURAI PRIMARY SCHOOL	267750	9867126	12-Oct-10	C/530/10	7.48	0.04	72.6	AB	AB		54.0	0	AB	30.0	1.1	1.30	0.20	7.99	NDT	2.90	9.70	0.00	5.60	NDT	2.0	NDT	NDT	NDT	NDT	0.157	0.01		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =0.002; NO3 =; F=NDT; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	GITHURAI PRIMARY SCHOOL	267750	9867126	09-Sep-10	C/478/10	7.55	0.36	69.3	AB	AB		27.0	0.0	AB	35.0	0.60	0.80	0.20	5.96	1.00	1.10	7.20	0.03	2.00	0.43			NDT	0.0095	0.026	0.0226	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =0.031; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	HOME DEPO SUPER MARKET	265623	9866034	06-Oct-08	C/726/08	6.54	2.87			AB	12	26	0			1	1.2	0.2		3.3	0.9	0.1	NDT	NDT			NDT		0.194		0.0226				45.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	HOME DEPO SUPER MARKET	265623	9866034	13-Nov-08	C/878/08	7.63	1.26	69.5	AB	AB	10	22	0	AB	21	0.8	0.9	0.1	5.68	22.2	1.1	9.8	NDT	NDT					0.1114	NDT	0.0364			NDT	52.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	HURUMA CHIEFS CAMP	262372	9860475	07-Nov-08	C/836/08	7.00	1.18	68.8	AB	AB	16	28	0	AB	25	0.6	0.7	0.1	6.39	25.6	1.9	5.5	NDT	NDT					NDT	0.0013	0.1753			NDT	51.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	HURUMA CHIEFS CAMP	262372	9860475	06-Sep-08	C/647/08	7.49	0.16	68.5	AB	AB	10	28	0	AB	32	1	1.2	0.2	4.26	1.75	1	9.2	ND	ND			NDT		0.1232	0.0081	0.059			NDT	41.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	HURUMA PRIMARY SCHOOL	263501	9860493	07-Apr-08	C/268/08	7.25	0.30	68.10	AB	AB		42.0	0			1.00	1.20	0.20	4.26	9.2									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	HURUMA PRIMARY SCHOOL	263501	9860493	06-Sep-08	C/646/08	7.3	0.81	66.5	AB	AB	7	28	0	AB	30	0.7	0.8	0.1	5.68	1.75	1	10	ND	ND			NDT		NDT	0.0439	0.2509			NDT	39.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	23-Feb-11	C/103/11	8.05	0.29	98.1	AB	P		32.3	0	AB	40	0.6	0.8	0.2	5.68	6	5.8	5	NDT	0.009	0.32	6		NDT	0.0406	0.0114	0.0095	0.2078									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	21-Mar-10	C/134/10	7.10		91.5			8.0	36.0			35.0	0.6	0.80	0.20	9.9	12.20	1.2	7.5	0.03	0.70	0.51																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	18-Apr-10	C/195/10	7.70	0.63	81.6	AB	AB		20.0	0	AB	30.0	0.20	0.30	0.10	5.00		3.20	11.00	0.01	1.33	NDT		0.70														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	07-Jul-10	C/342/10	7.32	2.71	69.3	AB	AB		22.8	0	AB	45.0	0.20	0.25	0.05			0.9	4.5	0.02	0.00				NDT	0.20	0.07	0.14	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	09-Sep-10	C/477/10	8.65	0.24	69.1	AB	AB		24.0	0.0	AB	45.0	0.20	0.30	0.10	7.95	1.00	1.40	9.40	0.04	NDT	0.41			0.02	NDT	0.018	0.0464	0.03		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	12-Aug-10	C/643/10	8.27	0.81	74.7	UO	P		94.3	0	AB	43.0	0.9	1.0	0.1	4.26	5.0	0.6	10.0	4.26	NDT	0.1		NDT	NDT	0.010	0.037	0.012	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	18-Mar-09	C/132/09	8.08	0.51	85.6	AB	AB		20	0	AB	29	1	1.2	0.2	4.97	5	2.3	10.8	NDT	NDT			NDT		0.0548	0.0076	NDT				59.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	20-Apr-09	C/167/09	7.84	0.18	80	AB			30	0	0	30	1	1.2	0.2	4.97	4	0.7	11.58	NDT	NDT			NDT		NDT	0.0312	0.0459			NDT	48						Odour=AB; Deposite =; Alka_Phe =0; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	10-Aug-11	C/278/11	7.73	0.54	78.2	AB	AB	12	24.7	0	AB	35	0.6	0.8	0.2	3.55	5	1.597	0.647	NDT	NDT	0.27	7		NDT	0.0855	NDT	0.0443	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	15-Feb-10	C/094/10	7.27									42.0				99.9	16.40	11.2							NDT	3.0	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	04-Feb-08	C/77/08	7.62	0.32	70.1				17.0	0	AB	30.0				5.68	1.0	0.4	9.3	NDT	NDT			NDT								46.7						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	19-Apr-08	C/312/08	7.15	0.53	76.00	AB	AB		30.0	0			0.80	1.00	0.20	4.26	7.2	7.3	15.0					1.90		0.1					NDT	45.6						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	19-May-08	C/388/08	7.69	0.59	65.5	AB	AB		40	0	AB	30	0.7	0.9	0.2	4.26	2.34	1.4	7.5	NDT	NDT			NDT		NDT	NDT	0.0126				39.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	22-Jun-08	C/468/08	7.44	0.27	59.40		AB		25.0	0	AB	22.0	0.90	1.00		4.97		1.0	9.6	NDT	NDT			NDT		0.0	0.02	0.0	NDT		NDT	37.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	06-Jul-08	C/515/08	7.59	0.34	58.8	AB	AB	14.0	27.0	0	AB	27.0	0.70	0.75	0.05	4.97		1.3	8.3	NDT	NDT			1.40		0.1	NDT	0.1			NDT	32.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	10-Aug-08	C/600/08	7.91	0.34	64	AB	AB	8.0	26.0	0	AB	28.0	0.70	0.75	0.05		3.25	1.0	9.0	NDT	NDT			AB		0.1	NDT	NDT										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = AB; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	KAMITI MAXIMUM SECURITY PRISON	265723	9869816	13-Nov-08	C/882/08	7.68	0.02	83.5	AB	AB	12	32	0	AB	27	0.7	0.8	0.1	7.81	25.4	1.4	8.6	NDT	NDT					NDT	NDT	0.0461			NDT	62.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	27-Jan-11	C/59/11	7.42	0.92	60.5	AB	AB		36.7	0	AB	37	0.6	0.8	0.2	7.1	6	1.8	7.5	0.008	NDT	0.49	--		0.01	0.0698	NDT	0.1732	0.0147									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	23-Feb-11	C/105/11	8.01	0.15	70	AB	AB		21.4	0	AB	30	0.7	0.8	0.1	7.1	4	1.4	0.9	1.3	0.009	0.1	3		NDT	0.0637	0.0228	0.0218	0.0693									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	20-May-11		7.41	0.81	70.8	AB	P		26.8	0	AB	28	0.6	0.7	0.1	4.28	9	--	--	NDT	NDT	0.13	8		0.01	0.1551	0.0051	0.1952	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	15-Feb-10	C/049/10	7.28	0.26	76.5			4.0	31.0			45.0				4.99	12.20	1.8	10.5		16.00				0.01	0.8	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	19-Nov-10	C/610/10	7.11	0.42	54.6	AB	AB		30.2	0	AB	30.0	0.60	0.90	0.30	5.68	9.0	1.25	10.1	0.048	NDT	0.50		NDT	NDT	0.112	NDT	0.322	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	14-Mar-09	C/131/09	8.08	0.2	77	AB	AB		40	0	AB	30	1	1.2	0.2	5.68	4	9.5	82	0.001	NDT			NDT		0.1139	0.003	0.1451				53.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	20-Apr-09	C/169/09	7.88	0.81	80.2	AB			28	0	0	30	0.6	0.8	0.2	4.26	3.5	0.6	11.7	0.007	T			NDT		0.0391	0.0137	0.0218			NDT	48.12						Odour=AB; Deposite =; Alka_Phe =; NO2 =; NO3 =T; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	06-Jul-08	C/513/08	7.40	0.69	55.1	AB	AB	8.0	25.0	0	AB	27.0	0.65	0.75	0.10	4.97		1.3	9.7	NDT	NDT			6.80		0.1	0.0	0.0			NDT	33.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	13-Nov-08	C/877/08	7.58	1.5	68.3	AB	AB	20	44	0	AB	26	1	1.2	0.2	7.1	23.8	1.1	9.5	NDT	NDT					NDT	0.0127	0.0711			NDT	51.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KENYA BREWERIES LTD	264339	9863131	12-May-10	C/631/10	7.13	0.11	64.1	UO	AB		55.7	0	AB	29.0	0.8	1.0	0.2	8.52	5.0	0.4	8.0	8.52	NDT	NDT		NDT	NDT	0.124	0.024	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY	270306	9869558	10-Aug-08	C/597/08	7.83	0.13	64.5	AB	AB	12.0	30.0	0	AB	29.0	0.55	0.60	0.05		2.5	1..0	9.0	NDT	NDT			AB		0.0	0.00	0.1										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY	270306	9869558	23-Feb-11	C/104/11	8.07	0.3	64.3	AB	AB		38.3	0	AB	34	0.6	0.7	0.1	7.1	5	1	0.8	NDT	NDT	0.25	NDT		NDT	0.0637	0.0038	NDT	0.1558									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY	270306	9869558	20-May-11		7.36	0.58	65.7	AB	P		24.3	0	AB	30	0.6	0.7	0.1	2.84	11	--	--	NDT	NDT	0.9	6		0.01	0.0564	NDT	0.0553	0.0142									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY	270306	9869558	24-Jun-11	CO/252/11	7.18	0.58	53	AB	AB	25.4	25.4	0	AB	30	0.8	1	0.2	5.68	11	3.5	7.5	NDT	--	0.5	2		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	KENYATTA UNIVERSITY	270306	9869558	12-Aug-10	C/645/10	7.28	0.66	67.7	UO	P		26.0	0	AB	21.0	0.5	0.6	0.1	5.68	3.0	0.8	10.0	5.68	NDT	0.04		NDT	0.01	0.282	0.288	0.047	NDT									Odour=UO; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KIBORO PRIMARY SCHOOL	260866	9860014	18-Sep-11	C/309/11	8.7	1.19	450	AB	AB	28	35.8	0	AB	178	N/C	N/C	N/C	17.04	12	11	48.5	NDT	NDT	2.6	27	0.2	NDT	0.0546	NDT	0.0166	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/C; TRC=N/C; CC=N/C; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	KIBORO PRIMARY SCHOOL	260866	9860014	19-Oct-08	C//762/08	7.6	0.34			AB	14	28	0			0.65	0.75	0.1		26.2	0.8	8.3	NDT	NDT			NDT		NDT		0.1466				43.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KIBORO PRIMARY SCHOOL	260866	9860014	07-Apr-08	C/267/08	7.55	0.31	67.90	AB	AB		50.0	0			1.00	1.20	0.20	3.55	7.0									NDT					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KIBORO PRIMARY SCHOOL	260866	9860014	07-Nov-08	C/832/08	7.00	1.52	69.3	AB	AB	16	26	0	AB	25	0.6	0.7	0.1	6.39	13.2	9.2	5.5	NDT	NDT					0.0911	0.0051	0.0634			NDT	51.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	KOBIL LIMURU ROAD	256487	9862915	09-Aug-08	C/587/08	7.78	0.02	66.3	AB	AB	8.0	27.0	0	AB	27.0	0.50	0.65	0.15		2	1.4	9.0	NDT	NDT			NDT		0.0	NDT	0.2										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	KOBIL LIMURU ROAD	256487	9862915	02-Jun-09	C/74/09	7.8	0.9	66.8	AB	AB		20	0	AB	30	0.5	0.6	0.1	6.39	2	1.5	11	NDT	NDT			NDT		0.0758	0.0265	0.1178			NDT	40.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	MAHIGA PRIMARY SCHOOL	266043	9869342	22-Mar-10	C/136/10	7.10		53.3			36.0	14.2			60.0	N/C	N/C	N/C	39.9	14.10	20	82.5	0.00	3.00	1.56																Odour=; Deposite =; Alka_Phe =; FRC=N/C; TRC=N/C; CC=N/C; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MAHIGA PRIMARY SCHOOL	266043	9869342	06-Oct-08	C/728/08	7.61	1.38			AB	14	28	0			1	1.2	0.2		2	1.2	0.8	,,	,			NDT		NDT		0.0634				47.3						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MATHARI MENTAL HOSPITAL	260103	9860886	20-Sep-08	C/690/08	7.69	0.08	70.4	AB	AB	8	26	0	AB	28	0.6	0.7	0.1	7.1	1.75	5.5	5.1	ND	ND			NDT		0.017	0.0054	0.0435			NDT	90.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	MATHARI MENTAL HOSPITAL	260103	9860886	15-Jan-08	C/29/08	7.33	0.31	71.7		AB			0			0.80	0.90	0.10	4.26	0.1	0.5	9.3	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MATHARI MENTAL HOSPITAL	260103	9860886	09-Sep-10	C/476/10	8.76	0.02	171.6	AB	AB		30.0	0.0	AB	100.0	0.10	0.20	0.10	5.96	4.00	4.80	30.90	0.02	1.00	1.45			NDT	0.0899	0.258	0.095	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	MATHARI MENTAL HOSPITAL	260103	9860886	05-Oct-08	C/723/08	7.56	0.39			AB	20	30	0			0.6	0.8	0.2		0.7	0.8	NDT	NDT	NDT			NDT		0.1343		0.0521				42.5						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MATHARI MENTAL HOSPITAL	260103	9860886	16-Jan-11	C/18/11	7.51	0.02	103.6	AB	P		22.2	0	AB	56	0.7	0.8	0.1	4.97	1	3.6	19	0.004	NDT	1.03	15		NDT	NDT	0.0015	0.0011	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	12-Mar-10	C/628/10	7.65	0.02	62.5	UO	AB		38.0	0	AB	32.0	0.6	0.8	0.2	4.26	15.0	0.2	5.7	4.26	NDT	0.1		NDT	NDT	NDT	0.037	0.053	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	12-May-08	C/345/08	7.52	1.64	66.8	AB	AB		26	0	AB	28	0.80	1.00	0.20	4.97	6.94	1.5	9.2	NDT	NDT			NDT		ND	ND	0.0238			NDT	38.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=ND; Mn=ND ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	05-Oct-08	C/724/08	7.85	1.6			AB	10	20	0			1.2	1.4	0.2		3.5	0.8	NDT	NDT	NDT			NDT		NDT		0.0221				40.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	09-Apr-10	C/161/10	7.10	0.02	67.2	AB	AB		18.0	0	AB	35.0	0.70	0.80	0.10	1.00		2.30	9.40	0.01	0.43	1.31		2.70														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	01-May-09	C/03/09	7.76	0.44	68.9	AB	AB		22	0	AB	28	0.7	0.8	0.1	7.81	3.8			NDT	NDT			NDT		NDT	0.1052	0.0897	NDT		NDT	51.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	24-Jan-09	C/43/09	6.9	0.44	52	AB	AB		24	0	AB	30	1	1.2	0.2	4.97	1.6			NDT	NDT			NDT		0.0416	0.1041	0.0993	NDT		NDT	39						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	15-Jan-08	C/28/08	7.29	2.01	70.3		AB			0			0.80	0.90	0.10	7.10	0.1	0.4		NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	16-Feb-08	C/125/08	7.73	1.29	73.70				23.0	0	AB		1.00	1.20	0.20		1.0							AB								49.1						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	10-Aug-08	C/601/08	7.85	0.45	66.2	AB	AB	7.0	27.0	0	AB	30.0	1.20	1.20	0.10		2.25	1.0	9.0	NDT	NDT			0.3		0.1	0.00	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	08-Sep-08	C/663/08	7.31	0.31	69.9	AB	AB	7	28	0	AB	27	1	1.2	0.2	4.97	2.75	1.1	5.6	ND	ND			NDT		0.0446	0.0037	0.0815			NDT	37.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	02-Nov-08	C/808/08	7.72	0.02	76.2	AB	AB	12	24	0	AB	30	1	1.2	0.2	7.1	26.8	1.3	7.3	NDT	NDT					NDT	0.0227	0.0481			NDT	57.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	14-Mar-08	C/215/07	7.50	0.41	81.30				20.0	0	AB	32.0	0.50	0.60	0.10	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MUTHAIGA PRIMARY SCHOOL	260339	9860891	07-Jul-10	C/343/10	7.30	2.07	60.1	AB	AB		31.9	0	AB	45.0	0.80	1.00	0.20			0.8	3.9	0.04	3.00				NDT	0.54	0.02	0.07	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	MWIKI PRIMARY SCHOOL	268372	9865842	16-Feb-08	C/121/08	7.72	0.70	84.30				12.0	0	AB		0.60	0.80	0.20	7.10	1.0							AB								56.2						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	MWIKI PRIMARY SCHOOL	268372	9865842	15-Feb-10	C/048/10	6.85	1.93	704.0			20.0	47.0			223.0				5.99	21.00	25.0	110.0		11.00				0	0.7	NDT	0.0	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	MWIKI PRIMARY SCHOOL	268372	9865842	19-Nov-10	C/612/10	7.29	0.72	560.0	AB	AB		78.7	0	5	2.7	N/C	N/C	N/C	28.4	5.0	3.80	15.2	0.014	NDT	1.90		NDT	NDT	0.116	0.263	0.573	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=N/C; TRC=N/C; CC=N/C; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	NORTHERN	N.Y.S ENGINEERING	262359	9861250	04-Jun-08	C/444/08	7.09	0.77	67.6		AB		22.0	0	AB	28.0	1.20	1.40		4.97		0.9	9.6	0.05	0.05			2.5		0.1	0.00	0.0	NDT		NDT	40.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	N.Y.S ENGINEERING	262359	9861250	25-Oct-08	C/793/08	8.38	0.68			AB	8	17	0			0.45	0.6	0.15		23.4	0.5	6.8	NDT	NDT			NDT		0.158		NDT				43.1						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	N.Y.S ENGINEERING	262359	9861250	25-Jan-09	C/46/09	7	0.68	49	AB	AB		20	0	AB	35	0.8	1	0.2	4.26	1.5			NDT	NDT			NDT		0.2303	0.103	0.0407	NDT		NDT	36.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	N.Y.S ENGINEERING	262359	9861250	08-Sep-08	C/661/08	7.32	0.38	67.4	AB	AB	8	30	0	AB	28	1	1.2	0.2	5.68	1.75	1.1	5.8	ND	ND			NDT		0.0125	0.0015	0.1298			NDT	37.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	NYARI POLICE POST	253786	9864349	20-Aug-10	C/427/10	7.84	1.04	89.1	AB	AB		30.0	0.0	AB	31.0	0.70	0.80	0.10	5.68	24.27	1.07	5.05	NDT	TR		1.0		--	0.0761	NDT	0.0767	0.0107									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu= --; Zn=; Pb =; COD=
Distribution	NORTHERN	NYARI POLICE POST	253786	9864349	11-May-10	C/573/10	7.74	0.17	81.7	AB	AB		29.9	0	AB	30.0	0.40	0.50	0.10	5.68	8.0	1.25	7.9	0.067	NDT	0.26		NDT	NDT	0.029	0.009	0.197	0.0669									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	NORTHERN	NYARI POLICE POST	253786	9864349	12-Mar-10	C/627/10	7.7	0.02	78.4	UO	AB		28.4	0	AB	30.0	0.8	1.0	0.2	4.97	7.0	0.6	11.0	4.97	NDT	0.1		NDT	0.01	NDT	0.004	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	PANGANI GIRLS HIGH SCHOOL	259367	9859640	06-Sep-08	C/648/08	7.54	0.52	68.5	AB	AB	10	27	0	AB	31	0.8	0.9	0.1	5.68	1.75	1	10	ND	TR			NDT		0.1527	0.0205	0.0578			NDT	41.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	PARKROAD PRIMARY SCHOOL	258976	9859494	15-Jan-08	C/30/08	6.66	0.45	72.5		AB			0			0.80	0.90	0.10	4.26	0.2	0.5	9.8	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	ROYSAMBU PRIMARY SCHOOL	266040	9866538	06-Oct-08	C/725/08	7.35	0.65			AB	10	20	0			1	1.2	0.2		1.9	0.9	NDT	NDT	NDT			NDT		NDT		0.0243				43.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	ROYSAMBU PRIMARY SCHOOL	266040	9866538	10-Aug-08	C/598/08	7.76	0.02	65	AB	AB	10.0	32.0	0	AB	31.0	0.80	0.90	0.10		1.75	1.0	9.0	NDT	NDT			AB		0.0	0.01	0.2										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	RUARAKA HIGH SCHOOL	263323	9861800	04-Jun-08	C/442/08	7.19	0.48	69.0		AB		28.0	0	AB	29.0	1.20	1.30		4.26		1.4	9.6	NDT	NDT			0.3		0.1	NDT	0.1	NDT		NDT	41.4						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	RUARAKA HIGH SCHOOL	263323	9861800	05-Oct-08	C/722/08	7.79	1			AB	12	20	0			1	1.2	0.1		2.2	0.8	NDT	NDT	NDT			,,		0.0821		0.1455				40						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	RUARAKA HIGH SCHOOL	263323	9861800	12-May-08	C/349/08	7.6	1.42	64.7	AB	AB		40	0	AB	26	0.6	0.8	0.2	5.68	5.4	1.6	11.7	NDT	NDT			1		0.1096	0.0061	0.0051			NDT	41.76						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	NORTHERN	STADIUM RESTAURANT KASARANI	264988	9864153	06-Jul-08	C/511/08	7.36	0.73	60.1	AB	AB	12.0	22	0	AB	24.0	AB	AB	AB	5.68		1.3	8.3	NDT	NDT			5.80		0.0	0.1	0.1			NDT	36.1						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	06-Jul-08	C/509/08	7.29	0.18	49.3	AB	AB	14.0	22.0	0	AB	28.0	0.80	0.85	0.05	4.97		1.3	8.3	NDT	NDT			0.90		0.1	0.1	0.1			NDT	29.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	25-Oct-08	C/790/08	8.51	0.02			AB	10	18	0			0.6	0.65	0.05		27.8	0.4	6.8	NDT	NDT			,,		NDT		0.1768				39.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	01-May-09	C/01/09	7.82	0.48	69.7	AB	AB		20	0	AB	30	0.6	0.7	0.1	6.39	3			NDT	NDT			NDT		NDT	0.0822	0.0793	NDT		NDT	52.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	10-Aug-08	C/602/08	7.81	0.07	66.5	AB	AB	8.0	28.0	0	AB	29.0	0.65	0.70	0.05		2	1.0	8.3	NDT	NDT			0.1		0.0	0.00	NDT										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	02-Nov-08	C/804/08	7.96	0.01	70	AB	AB	18	20	0	AB	30	0.8	1	0.2	6.39	20.7	1.5	7.6	NDT	NDT					0.041	0.0025	0.0486			NDT	52.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	THIKA ROAD PRIMARY SCHOOL	261704	9861711	15-Jan-08	C/31/08	7.44	0.36	71.30		AB			0			0.80	0.90	0.10	2.84	0.1	0.5	9.8	NDT	NDT																	Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	UTALII HOTEL	261177	9860826	12-May-08	C/348/08	7.67	1.64	65.1	AB	AB		26	0	AB	17				4.97	6.11	1.5	10.8	NDT	NDT			NDT		0.0715	0.0197	NDT			NDT	38.34						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	NORTHERN	UTALII HOTEL	261177	9860826	22-Jun-08	C/470/08	7.50	1.10	72.70		AB		25.0	0	AB	22.0	1.00	1.20		4.26		1.0	9.6	NDT	NDT			NDT		NDT	0.01	0.1	NDT		NDT	44.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	NORTHERN	UTALII HOTEL	261177	9860826	12-May-10	C/632/10	7.53	0.07	63.5	UO	AB		50.7	0	AB	30.0	0.8	1.0	0.2	3.55	6.0	0.4	8.0	3.55	NDT	0.05		NDT	0.01	0.248	NDT	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=
Distribution	NORTHERN	UTALII HOTEL	261177	9860826	06-Jul-08	C/514/08	7.39	1.24	53.7	AB	AB	8.0	20.0	0	AB	24.0	0.30	0.90	0.60	4.97		1.3	8.3	NDT	NDT			3.20		0.2	NDT	1.0			NDT	32.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	NORTHERN	UTALII HOTEL	261177	9860826	05-Oct-08	C/721/08	7.82	1.65			AB	10	22	0			0.7	0.8	0.1		1	0.8	NDT	NDT	NDT			NDT		0.2164		0.7403				41						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	WINDSOR HOTEL	260769	9866059	15-Jan-08	C/47/08	7.67	0.56	75.00		AB			0			N/T	N/T	N/T		0.1																					Odour=; Deposite =AB; Alka_Phe =; FRC=N/T; TRC=N/T; CC=N/T; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	NORTHERN	WINDSOR HOTEL	260769	9866059	06-Oct-08	C/730/08	7.57	1.26			AB	18	35	0			0.9	1	0.1		2	1.2	0.8	NDT	NDT			NDT		0.0597		0.0894				45.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	AYANG PRIMARY SCHOOL	252612	9855317	15-Feb-08	C/117/08	7.81	0.53	81.60				15.0	0	AB	35.0	1.00	0.20	0.10	5.68	1.0							AB							0.60	54.4						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	14-Jun-08	C/449/08	7.01	0.68	78.50		AB		27.0	0	AB	26.0	0.65	0.75		4.97		1.5	11.4	NDT	NDT			NDT		0.1	0.00	0.1	NDT		NDT	47.1						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	23-Oct-08	C/772/08	6.24	0.01			AB	16	28	0			0.5	0.6	0.1		21.6	0.7	0.8	NDT	NDT			NDT		NDT		0.0045				40.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	15-Mar-11	C/141/11	7.73	0.83	68.7	AB	AB		21.7	0	AB	25	0.6	0.7	0.1	7.1	8	4.4	5.5	NDT	NDT	--	9		--	--	--	--	--									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	10-Aug-10	C/418/10	7.61	1.14	84.5	AB	P		32.0	0.0	AB	29.0	0.65	0.70	0.05	5.68	17.26	1.1	4.70	TR	NDT		1.5		0.02	0.0993	0.0052	0.0437	0.1822									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	09-Jul-08	C/519/08	7.91	0.02	78.7	AB	AB	14.0	25.0	0	AB	30.0	0.40	0.50	0.10	5.68		1.7	12.5	NDT	NDT			3.3		0.1	NDT	0.0			NDT	47.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	AYANY PRIMARY SCHOOL	252612	9855317	19-Apr-08	C/315/08		1.36	84.40	AB	AB		30.0	0			0.40	0.50	0.10	4.97	6.2	2.1	10.8					12.10		0.1					NDT	50.6						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	JOSEPH KANGETHE NCC DEPOT	253516	9855855	23-Oct-08	C/777/08	6.27	0.01			AB	12	26	0			0.3	0.4	0.1		22.7	0.7	0.8	NDT	NDT			1.3		0.1164		NDT				41.8						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	SOUTHERN	JOSEPH KANGETHE NCC DEPOT	253516	9855855	01-Nov-08	C/795/08	6.89	0.01	69.9	AB	AB	10	20	0	AB	30	0.6	0.7	0.1	6.39	18.1	1.4	9.6	NDT	NDT					0.0387	0.0051	0.041			0.1	52.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	JOSEPH KANGETHE NCC DEPOT	253516	9855855	25-Nov-10	C/619/10	7.13	0.56	82.5	AB	AB		22.0	0	AB	35.0	0.10	0.15	0.05	5.68	8.0	2.40	12.8	0.004	NDT	0.15		NDT	0.01	0.3997	0.0085	0.0085	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	JOSEPH KANGETHE NCC DEPOT	253516	9855855	07-May-08	C/341/08	7.08	3.27	76.4	AB	AB		37	0	AB	28	0.20	0.25	0.05	4.97	23.79	1.4	13.3	NDT	NDT			NDT		0.0609	0.0026	0.0143			NDT	46.44						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	JOSEPH KANGETHE NCC DEPOT	253516	9855855	30-Apr-11	C/186/11	7.64	0.02	72.1	AB	P		23.3	0	AB	34	0.1	0.2	0.1	5.68	8	4.6	9.5	NDT	NDT	--	NDT		0.01	0.2242	0.0652	0.776	0.1056									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KAREN COMMUNITY CENTRE	245167	9853459	14-Aug-09	C/338/09	7.3	0.32	161.4	UO	P		38		AB	50				12.78	7.5	2.1	9.35	NDT	NDT					NDT	0.0063	0.0221										Odour=UO; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	22-Aug-10	C/437/10	7.29	0.79	302.0	AB	AB		26.0	0.0	AB	30.00	0.10	0.15	0.05	5.68	NDT	0.75	3.30	NDT	TR		NDT		--	0.1522	0.0277	0.1115	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	21-Feb-08	C/152/08									AB		0.6	0.8	0.2																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	04-Jul-08	C/507/08	7.12	0.51	81.4	AB	AB	18.0	21.0	0	AB	27.0	0.60	0.70	0.10	4.97		2.2	8.3	NDT	TR			NDT		0.0	0.1	0.1			NDT	48.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	15-Jul-10	C/369/10	7.67	0.49	103.5	AB	AB		45.8	0	AB	37.0	0.40	0.50	0.10			1.35	5.3	0.01	3.00				NDT	0.02	0.01	0.08	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	25-Dec-11	C/427/11	7.69	0.03	119.9	AB	AB	10	21.3	0	AB	22	0.6	0.8	0.2	56		4.1	9.15				2	NDT	NDT	0.105	0.001	0.044	0.0248									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	15-Feb-10	C/087/10	7.74		96.1			4.0				35.0				129.9	18.10	11.7							NDT	2.0	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	19-Mar-10	C/132/10	7.20		261.0			10.0	40.0			45.0	0.1	0.20	0.10	49.9	1.10	5.6	20.8	0.02	14.00	0.34																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	22-Oct-10	C/557/10	6.69	0.14	27.0	AB	AB		58.5	0	AB	45.0	TR	0.10	0.10	7.99	NDT	3.90	28.00	NDT	9.20	NDT	8.0	NDT	0.0	0.03	0.015	0.001	0.06		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=0.1; CC=0.1; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	30-Apr-11	C/184/11	7.49	0.01	214	AB	P		24.3	0	AB	34	0.4	0.5	0.1	8.52	4	17	25.3	NDT	NDT	--	4		0	0.1317	0.0026	0.2012	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICE	244726	9853643	23-Sep-10	C/506/10	7.29	0.17	70.0	AB	AB		45.0	0.0	AB	40.00	0.20	0.30	0.10	5.96	4.00	1.60	9.00	0.00	2.00	NDT			NDT	0.0328	NDT	0.0342	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=NDT; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KAREN NAIROBI WATER OFFICES	244614	9853942	16-Dec-10	C/669/10	8.24	0.12	67.7	UO	AB		44.2	0	AB	32.0	0.3	0.4	0.1	4.97	2.0	0.4	10.0	0.006	NDT	0.03		0.70	0.005	0.009	0.018	0.019	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KAREN POLICE STATION	244762	9853764	18-Aug-08	C/624/08	7.95	0.33	197.6	AB	AB	8.0	27.0	0	AB	44.0	0.2	0.30	0.10		1	7	37.5	NDT	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KENYA SCIENCE COLLEGE	251134	9856432	30-Apr-11	C/185/11	7.52	0.07	69.2	AB	P		22.8	0	AB	28	0.2	0.3	0.1	28.82	5	4.6	9.5	NDT	NDT	--	NDT		NDT	0.0427	0.0486	0.0244	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KENYA SCIENCE COLLEGE	251134	9856432	10-Aug-10	C/41710	7.83	1.71	94.2	AB	P		26.0	0.0	AB	28.0	0.60	0.70	0.10	7.10	NDT	1.28	4.70	0.00	0.01		2.2		NDT	0.0874	0.0168	0.0889	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KENYA SCIENCE COLLEGE	251134	9856432	07-May-08	C/340/08	7.27	2.02	75.7	AB	AB		30	0	AB	32	0.40	0.50	0.10	4.97	23.38	2.9	15.8	NDT	NDT			NDT		0.1934	0.0105	0.0401			NDT	51.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KENYA SCIENCE COLLEGE	251134	9856432	14-Jun-08	C/452/08	7.10	0.50	81.40		AB		26.0	0	AB	42.0	0.70	0.80		4.26		2.9	21.8	NDT	NDT			4.1		0.1	0.01	0.2	NDT		NDT	48.8						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253845	9855808	27-Jan-11	C/55/11	7	0.12	67.6	AB	AB		32.2	0	AB	26	0.4	0.6	0.2	4.26	NDT	2.2	8	0.004	NDT	0.95	--		0	NDT	NDT	0.2323	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253845	9855808	22-Jan-09	C/34/09	6.4	0.28	78.9	AB	AB		22	0	AB	33	0.4	0.6	0.2	7.81	3.5			NDT	NDT			NDT		0.0256	0.1337	0.1379	NDT		NDT	59.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253845	9855808	24-Oct-11	C/356/11	7.63	0.5	83	AB	AB	12		0	AB	38				11	8	3.4	10.5	NDT		0.31			NDT	0.0341	0.0342	0.121	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253845	9855808	14-Mar-09	C/129/09	8	0.21	75.8	AB	AB		40	0	AB	32	0.5	0.6	0.1	5.68	3.5	1.4	8.2	NDT	NDT			NDT		NDT	0.0277	0.0456				53						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	23-Oct-08	C/776/08	6.36	0.01			AB	10	24	0			0.5	0.6	0.1		22.9	0.7	0.8	,,	,,			1.2		0.1358		0.0435				40.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	21-Oct-10	C/551/10	7.28	0.13	68.8	AB	AB		37.7	0	AB	35.0	0.6	0.70	0.10	6.99	NDT	0.90	8.20	NDT	3.90	NDT	7.0	NDT	0.0	0.01	0.010	NDT	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	15-Feb-10	C/058/10	7.12		96.2			8.0	43.0			42.0				1.19	10.60	2.2	13.8	0.01	2.00				NDT	1.9	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	07-Apr-10	C/141/10	7.10	0.60	109.0	AB	AB		20.0	0	AB	35.0	0.40	0.60	0.20	1.00		13.30	3.20	0.01	13.28	0.12		0.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	13-Jul-10	C/361/10	7.10	0.80	98.4	AB	AB		35.0	0	AB	46.0	0.50	0.70	0.20			1.4	6.0	0.01	0.00				NDT	0.38	0.04	0.31	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	09-Sep-10	C/482/10	7.89	0.10	81.9	AB	AB		42.0	0.0	AB	31.0	0.10	0.20	0.10	1.99	6.60	1.50	9.60	0.04	1.00	0.21			NDT	0.04	0.003	0.0661	NDT		2.0							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	15-Jul-11	C/271/11	7.57	0.63	60.6	AB	AB	8	32..8	0	AB	28	0.4	0.5	0.1	2.84	43	0.66	5.54	NDT	NDT	0.82	1		NDT	NDT	0.0203	0.0247	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	15-Feb-08	C/118/08	7.32	0.29	74.30				14.0	0	AB	28.0	0.50	0.60	0.10	5.68	4.0							AB							0.90	49.5						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	16-May-11		7.1	0.64	68.2	AB	P		22.4	0	AB	30	0.2	0.3	0.1	2.84	5	--	--	NDT	NDT	0.41	6		NDT	NDT	0.0444	0.044	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	19-Apr-08	C/314/08		1.95	95.10	AB	AB		30.0	0			0.30	0.40	0.10	4.26	6.2	1.9	11.7					0.90		0.2					NDT	57.1						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	09-Jul-08	C/517/08	7.86	0.07	77.1	AB	AB	20.0	26.0	0	AB	26.0	0.40	0.50	0.10	4.26		1.7	12.5	NDT	NDT			1.5		0.0	0.0	0.0			NDT	46.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	10-Aug-10	C/414/10	7.70	0.78	84.1	AB	P		30.0	0.0	AB	30.0	0.60	0.70	0.10	7.10	16.01	1.09	4.50	TR	NDT		1.4		NDT	0.1073	0.009	0.0562	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	16-Dec-10	C/670/10	7.81	0.12	71.4	UO	AB		40.2	0	AB	39.0	0.8	0.9	0.1	7.81	4.0	0.6	9.5	0.004	NDT	0.02		0.90	0.002	NDT	0.004	0.090	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	13-Apr-09	C/149/09	7.69	0.25	82.7	AB			30	0	0	30	0.8	1	0.2	5.68	5	1.7	5.9	NDT	NDT			0.1		NDT	0.0209	0.0629			NDT	49.62						Odour=AB; Deposite =; Alka_Phe =0; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	15-Sep-08	C/677/08	7.33	0.02	67.5	AB	AB	11	36	0	AB	30	1	1.2	0.1	7.1	2.75	1.4	5.7	ND	ND			NDT		NDT	NDT	0.2097			NDT	40.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	01-Nov-08	C/802/08	7.04	0.02	68.8	AB	AB	8	22	0	AB	31	0.4	0.5	0.1	6.39	8	1.4	8.8	NDT	NDT					0.0524	NDT	NDT			NDT	51						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA DEO'S OFFICE	253856	9855776	30-Apr-11	C/188/11	7.38	0.02	69.2	AB	P		21.8	0	AB	35	TR	0.21	0.1	5.68	14	4.6	9.5	NDT	NDT	--	5		0	0.3025	0.0371	0.1323	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA 42 STANDPIPE	252101	9855343	10-Aug-10	C/410/10	7.52	0.98	88.2	AB	P		28.0	0.0	AB	31.0	0.70	0.80	0.10	7.10	16.31	1.1	4.80	TR	NDT		NDT		NDT	0.636	NDT	0.0954	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=NDT; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA LINE SABA	254706	9854965	09-Jul-08	C/516/08	7.88	0.22	74.0	AB	AB	18.0	22.0	0	AB	29.0	0.30	0.40	0.10	4.26		1.7	11.7	NDT	NDT			2.30		0.1	NDT	0.1			NDT	44.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA PRIMARY SCHOOL	253375	9855076	23-Oct-08	C/771/08	6.36	0.01			AB	16	28	0			0.5	0.6	0.1		27.6	0.7	0.8	NDT	NDT			NDT		0.0804		NDT				40.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	14-Jun-08	C/448/08	7.00	0.31	65.00		AB		25.0	0	AB	27.0	0.50	0.60		4.97		1.5	11.4	NDT	NDT			2.7		0.1	0.02	0.1	NDT		NDT	39.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	13-Aug-08	C/619/08	7.92	0.03	72.8	AB	AB	8.0	30.0	0	AB	32.0	0.40	0.50	0.10		1.75			NDT	NDT			AB		1.0												Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	01-Nov-08	C/800/08	6.97	0.36	70.1	AB	AB	12	20	0	AB	30	0.5	0.6	0.1	7.1	1.95	1.4	9	NDT	NDT					0.059	0.0002	0.031			NDT	52.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	15-Sep-08	C/676/08	7.22	0.32	69.1	AB	AB	12	27	0	AB	28	0.4	0.5	0.1	7.1	1.75	1.5	6.2	ND	ND			NDT		0.0446	NDT	0.1167			NDT	41.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	22-Feb-08	C/163/08	7.71	0.29	78.8		AB		15.0	0	AB	25.00	0.60	0.70	0.10	7.1	4.1				AB			AB							NDT	55.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	03-Apr-08	C/176/08	7.68	0.86	76.3		AB		25.0	0	AB	24.0	0.30	0.40	0.10	5.68	5.5	6.8	9.8	NDT	AB			AB							NDT	59.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	07-May-08	C/337/08	7.22	0.71	76.9	AB	AB		35	0	AB	17	0.40	0.50	0.10	5.68	10.11	2	14.2	NDT	NDT			NDT		0.1038	0.0144	0.0247			NDT	47.34						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	02-Dec-08	C/114/08	7.20	0.27	80.90				12.0	0	AB	28.0	0.50	0.60	0.10	4.26	1.0		0.5					AB							AB	53.9						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=AB
Distribution	SOUTHERN	KILIMANI PRIMARY SCHOOL	253263	9856977	02-Dec-08	C/113/08	7.20	1.39	78.00				15.0	0	AB	25.0	0.50	0.60	0.10	4.97	1.0		0.6					AB							AB	52.0						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=AB
Distribution	SOUTHERN	KIBERA LAINI SABA	253682	9855410	02-Sep-09	C/87/09	7.67	0.26	64.2	AB	AB		20	0	AB	27	0.4	0.6	0.2	5.68	2.6	1.1	10.5	NDT	NDT					NDT	NDT	0.018			NDT	145.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA LAINI SABA	253682	9855410	09-Jul-08	C/521/08	7.95	0.19	78.5	AB	AB	14.0	23.0	0	AB	29.0	0.40	0.50	0.10	5.68		1.8	12.5	NDT	NDT			1.8		0.1	0.04	0.1			NDT	47.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA LAINI SABA	253682	9855410	22-Jan-09	C/37/09	7.4	0.3	77.6	AB	AB		24	0	AB	32	0.2	0.3	0.1	5.68	2.6			NDT	NDT			NDT		0.1055	0.1293	0.0116	NDT		NDT	58.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	LANGATA BARRACKS	254090	9852155	02-Aug-08	C/84/08	7.49	0.76	79.3				21.0	0	AB	26.0				3.55	1.0	0.7	9.8	NDT	NDT			AB							NDT	52.8						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	LANGATA BARRACKS	254090	9852155	13-Aug-08	C/623/08	8.05	0.01	71.5	AB	AB	7.0	26.0	0	AB	21.0					1.75	1	10	NDT	NDT			NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA ROAD PRIMARY SCHOOL	256318	9854197	02-Aug-08	C/82/08	7.45	0.83	81.7				20.0	0	AB	27.0				4.97	23.0	0.5	10.5	NDT	NDT			AB							NDT	54.4						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	LANGATA ROAD PRIMARY SCHOOL	256318	9854197	13-Aug-08	C/620/08	7.80	0.25	71.5	AB	AB	8.0	32	0	AB	18.0	0.40	0.50	0.10		1.75			NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	14-Mar-09	C/125/09	7.22	0.26	83.3	AB	AB		30	0	AB	30	0.4	0.5	0.1	5.68	2	1.6	10	0.001	NDT			NDT		0.0337	0.0404	0.0618				58.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	25-Jan-11	C/49/11	7.21	0.4	75.6	AB	AB		30.5	0	AB	30	0.7	0.8	0.1	7.1	9	2.4	9	NDT	NDT	0.44	7		NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	16-Aug-11	C/282/11	7.74	0.95	76.3	AB	AB	6	30.2	0	AB	32	0.5	0.6	0.1	4.26	11	11.46	3.211	NDT	NDT	0.07	5		NDT	0.0132	0.0106	0.0601	0.0598									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	11-Mar-10	C/116/10	7.00		106.5			6.0	18.0			17.0	0.40	0.50	0.10		44.00	2.4	10.0	0.03	0.70	0.5																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	13-Jul-10	C/363/10	8.08	0.85	97.8	AB	AB		43.5	0	AB	45.0	0.70	0.80	0.10			1.6	5.8	0.17	1.00				NDT	0.11	0.03	0.07	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	19-Nov-10	C/614/10	9.45	0.52	76.8	AB	AB		28.7	0	AB	30.0	0.80	1.00	0.20	5.68	9.0	1.25	--	0.026	NDT	0.11		NDT	NDT	0.0208	0.0227	0.0142	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	16-Dec-10	C/673/10	7.36	0.36	72.0	UO	AB		22.2	0	AB	54.0	0.4	0.5	0.1	5.68	4.0	0.8	10.0	NDT	NDT	0.03		NDT	NDT	0.073	0.006	NDT	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	02-Aug-08	C/85/08	7.57	0.80	82.2				24.0	0	AB	26.0				3./55	5.0	0.6	10.9	NDT	NDT			AB							NDT	54.8						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	13-Aug-08	C/1022/08	8.00	0.02	71.00	AB	AB	8.0	27	0	AB	29.0					1	1.2	9.2	NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	15-Apr-10	C/181/10	7.80	1.07	123.7	AB	AB		16.0	0	AB	39.0	0.10	0.20	0.10	3.00		5.20	19.00	0.01	NDT	0.5		1.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	21-Aug-09	C/343/09	8.42	0.16	94	UO	AB		38		AB	41	0.8	1	0.2	9.94	0.5	1.15	11.6	NDT	NDT					0.0684	0.011	NDT										Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	SOUTHERN	LANGATA WOMEN PRISON	252675	9854036	21-Oct-10	C/554/10	7.51	0.14	66.8	AB	AB		41.8	0	AB	38.0	0.7	0.80	0.10	7.99	NDT	0.90	8.20	NDT	8.30	0.22	7.0	NDT	NDT	0.01	0.009	NDT	NDT		5.00							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	LANGATA WEST PRIMARY SCHOOL	253000	9853771	15-Apr-10	C/180/10	7.20	0.02	134.7	AB	AB		12.0	0	AB	45.0	0.10	0.20	0.10	2.00		4.90	18.00	0.01	NDT	0.45		1.30														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	LANGATA WEST PRIMARY SCHOOL	253000	9853771	21-Oct-10	C/550/10	7.20	0.36	78.5	AB	AB		40.2	0	AB	31.0	0.6	0.87	0.10	7.99	NDT	0.90	8.20	NDT	5.70	NDT	NDT	NDT	0.0	0.05	0.006	NDT	0.12		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn= ; Si=NDT; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	SOUTHERN	KIBERA LINDI SLUM	254177	9854589	09-Jul-08	C/518/08	7.92	0.06	76.5	AB	AB	14.0	24.0	0	AB	29.0	0.40	0.50	0.10	4.97		1.7	12.5	NDT	NDT			3.1		NDT	0.1	0.0			NDT	45.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	10-Sep-10	C/488/10	8.14	0.07	80.7	AB	AB		36.0	0.0	AB	35.0	0.30	0.40	0.10	5.96	5.00	1.6	9.40	0.01	2.00	0.49			NDT	NDT	0.016	0.1234	0.04		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	16-May-08	C/368/08	6.23	1.67	57.4	AB	AB		30	0	AB	31	0.1	0.2	0.1	4.26	9.99	2	11.7	NDT	NDT			2.4		0.0367	NDT	0.0828			NDT	34.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	02-Sep-09	C/84/09	7.7	0.37	69.4	AB	AB		19	0	AB	27	0.2	0.4	0.2	4.97	2	1.5	8	NDT	NDT			NDT		0.1172	0.0132	0.0579			NDT	41.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	16-May-11		7.01	0.51	73.3	AB	P		21.4	0	AB	30	0.2	0.3	0.1	4.26	4	--	--	0.001	NDT	0.36	4		NDT	0.1445	0.0622	0.1304	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	21-Oct-10	C/552/10	7.41	0.25	70.5	AB	AB		34.0	0	AB	40.0	0.5	0.60	0.10	7.99	NDT	1.00	8.60	NDT	6.60	NDT	6.0	NDT	NDT	0.02	NDT	NDT	NDT		2.00							Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=NDT; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	19-Nov-10	C/615/10	7.43	0.48	69.0	AB	AB		26.6	0	AB	32.0	0.70	0.80	0.10	4.2	4.0	1.24	5.46	0.025	NDT	0.30		NDT	NDT	0.1495	0.0241	0.2787	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	16-Dec-10	C/672/10	7.25	0.28	71.8	UO	AB		24.2	0	AB	35.0	0.2	0.3	0.1	4.97	2.0	0.8	10.0	NDT	NDT	1.11		0.50	NDT	0.114	0.010	0.232	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = 0.5; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	14-Mar-09	C/126/09	7.33	0.47	66.7	AB	AB		35	0	AB	30	0.6	0.7	0.1	4.97	3	1.6	10	0.001	NDT			NDT		0.0717	0.0212	0.1348				46.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	01-Nov-08	C/796/08	7.19	0.02	72.2	AB	AB	10	22	0	AB	31	0.5	0.6	0.1	7.1	22.6	1.4	9.5	NDT	NDT					0.0569	0.0025	0.0191			NDT	54.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	14-Mar-10	C/119/10	7.40		110.3			4.0	35.0			35.0				27.9	27.70	2.6	9.0	0.02	0.70	0.42																Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	13-Jul-10	C/362/10	7.10	1.27	95.6	AB	AB		49.8	0	AB	42.0	0.60	0.70	0.10			1.4	5.5	0.02	1.00				NDT	0.16	0.02	0.09	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	05-Sep-11	C/296/11	7.79	0.49	85.8	AB	AB	12	26.5	0	20	42	0.1	0.2	0.1	2.84	3	1.8	9.5	NDT	NDT	0.29	NDT	NDT	NDT	0.072	NDT	0.0134	NDT									Odour=AB; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=NDT; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	09-Jul-08	C/522/08	7.91	0.04	70.8	AB	AB	16.0	30.0	0	AB	24.0	0.40	O.5	0.10	4.97		1.7	10.8	NDT	NDT			0.90		0.2	0.03	0.1			NDT	42.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	22-Feb-08	C/162/08	7.72	0.61	82.2		AB		18.0	0	AB	29.00	1.00	0.70	0.10	4.26	7.0				AB			AB							NDT	53.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MBAGATHI ROAD PRIMARY SCHOOL	255693	9856156	14-Mar-08	C/214/08	7.25	0.40	76.10				24.0	0	AB	31.00	0.70	0.50	0.10	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	MILIMANI SECONDARY SCHOOL	256006	9857994	07-May-08	C/343/08	7.23	1.25	77.9	AB	AB		34	0	AB	27	0.40	0.60	0.20	4.26	13.83	2.4	11.7	NDT	NDT			NDT		NDT	0.0118	0.0882			NDT	47.34						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	23-Oct-08	C/773/08	6.36	0.01			AB	8	22	0			0.6	0.7	0.1		23.4	0.7	0.8	NDT	NDT			NDT		0.1192		NDT				40.7						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	02-Sep-09	C/85/09	7.65	0.24	64	AB	AB		20	0	AB	28	0.2	0.4	0.2	4.97	3.8	1.5	11	NDT	NDT			NDT		0.1034	0.0425	0.0314			NDT	38.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	15-Feb-08	C/120/08	8.18	0.94	194.0				15.0	0	AB	36.0	0.10			5.68	1.3							AB							0.10	129.3						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	07-May-08	C/336/08	7.00	1.39	56.8	AB	AB		30	0	AB	26	TRE	0.10	0.10	5.68	7.88	2.3	12.5	NDT	NDT			NDT		NDT	NDT	0.1003			NDT	52.9						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TRE; TRC=0.1; CC=0.1; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	08-Aug-08	C/586/08	7.82	0.23	66.8	AB	AB	10.0	32.0	0	AB	26.0	0.40	0.60	0.20		1.7	1.4	9.0	NDT	NDT			NDT		0.4	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	01-Nov-08	C/803/08	7.18	0.04	71.1	AB	AB	6	20	0	AB	31	0.4	0.5	0.1	5.68	20.7	1.2	4.7	NDT	NDT					0.0455	0.0177	0.0067			NDT	53.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	22-Jan-09	C/39/09	6.4	0.45	73.4	AB	AB		22	0	AB	32	0.2	0.3	0.1	4.97	2			NDT	NDT			NDT		0.0096	0.137	0.575	NDT		NDT	55.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	MOI GIRLS HIGH SCHOOL	253413	9855644	03-Apr-08	C/178/08	7.94	0.81	97.7		AB		23	0	AB	28.0	0.60	0.80	0.20	7.81	4.0	0.4	10.5	NDT	AB			AB							NDT	65.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	CENTRAL	NAIROBI DAM WATER OFFICE	252764	9855486	03-Apr-08	C/179/08	7.82	0.63	79.9		AB		25	0	AB	27.0	0.40	0.30	0.10	7.10	4.0	0.4	10.5	NDT	AB			1.00							NDT	53.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	16-May-11		7.1	0.68	74.2	AB	P		21.6	0	AB	35	0.1	0.15	0.05	4.26	7	--	--	NDT	NDT	0.05	10		NDT	NDT	NDT	0.0328	0.0142									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	25-Dec-11	C/428/11	7.65	0.02	93.5	AB	AB	12	20.9	0	AB	20	TR	TR(-)	TR	6		4.3	8.5				2	NDT	NDT	0.114	0.0144	0.2144	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR(-); CC=TR; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	10-Aug-10	C/416/10	7.88	0.70	83.0	AB	P		30.0	0.0	AB	30.0	0.10	0.15	0.05	5.68	13.93	1.1	3.60	TR	NDT		NDT		0.02	0.2741	0.0271	0.3003	0.0121									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	02-Sep-09	C/86/09	7.61	0.32	69.4	AB	AB		20	0	AB	28	0.2	0.4	0.2	4.97	1.9	1	7.5	NDT	NDT			NDT		0.1964	0.0259	0.4656			NDT	39.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	13-Apr-09	C/150/09	7.71	0.51	81.3	AB			40	0	0	27	0.1	0.2	0.1	4.97	3	1.43	8.2	0.005	NDT			0.2		NDT	0.0071	0.2168			NDT	48.78						Odour=AB; Deposite =; Alka_Phe =; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	07-May-08	C/342/08	7.19	0.95	73.6	AB	AB		33	0	AB	26	0.20	0.40	0.20	5.68	11.28	2.4	12.5	NDT	NDT			NDT		0.025	0.0091	0.1524			NDT	44.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	08-Aug-08	C/583/08	7.76	0.34	66.0	AB	AB	10.0	27	0	AB	21.0	0.40	0.60	0.20		2.75	1.4	10.0	NDT	NDT			NDT		0.3	0.0	0.1										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	13-Jul-10	C/360/10	7.24	2.08	95.1	AB	AB		36.0	0	AB	45.0	0.20	0.30	0.10			1.4	5.5	0.02	1.00				NDT	0.05	NDT	0.05	NDT									Odour=AB ; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	16-Dec-10	C/675/10	7.58	0.33	73.8	UO	AB		27.6	0	AB	40.0	0.8	1.0	0.2	4.97	1.0	0.8	12.0	0.009	NDT	0.78		NDT	NDT	0.059	0.031	0.141	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	16-Apr-08	C/305/08	7.22	1.12	102.90	AB	AB		30.0	0			0.10	0.20	0.10	3.55	4.8	1.9						NDT		NDT					NDT	61.7						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	30-Apr-11	C/187/11	7.29	0.02	70.5	AB	P		20.9	0	AB	38	TR	0.21	0.1	5.68	10	4.5	9.5	NDT	NDT	--	7		0.01	0.1922	0.1573	0.051	0.088									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	27-Jun-11	CO/254/11	7.33	0.98	68.2	AB	AB	28.2	28.2	0	AB	30	AB	TR	TR	4.26	6	4.5	8.5	NDT	--	0.78	2		NDT	0.3015	0.0348	0.5349	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC=TR; CC=TR; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	15-Feb-10	C/057/10	7.06		95.4			6.0	35.0			44.0				1.19	36.80	2.8	13.3	0.01	NDT				NDT	1.2	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	09-Sep-10	C/483/10	8.15	0.42	158.7	AB	AB		39.5	0.0	AB	65.0	TR	TR	TR	7.95	7.20	3.80	7.00	0.02	3.00	0.91			NDT	0.0663	0.010	0.1559	NDT		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	21-Oct-10	C/553/10	7.56	0.37	89.9	AB	AB		44.2	0	AB	44.0	TR	0.10	0.10	5.99	NDT	1.30	12.50	NDT	7.90	0.02	6.0	NDT	NDT	0.04	0.013	NDT	0.02		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	19-Nov-10	C/616/10	7.48	0.2	73.0	AB	AB		25.3	0	AB	31.0	0.80	0.90	0.10	4.26	7.0	1.29	5.8	0.043	NDT	0.30		NDT	NDT	0.1537	NDT	0.1742	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	22-Jan-09	C/36/09	6.4	0.31	77.1	AB	AB		24	0	AB	30	0.2	0.4	0.2	8.52	2.5			NDT	NDT			NDT		NDT	0.1392	0.3809	NDT		NDT	57.8						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	NAIROBI DAM WATER OFFICE	252764	9855486	14-Jun-08	C/451/08	7.15	0.79	116.0		AB		17.0	0	AB	27.0	0.30	0.45		4.26		1.5	13.1	NDT	NDT			8.6		0.2	0.01	0.1	NDT		NDT	69.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	NGUMO ESTATE	255210	9855245	22-Jan-09	C/38/09	7.4	1.33	73.5	AB	AB		20	0	AB	30	0.2	0.3	0.1	5.68	2.1			NDT	NDT			NDT		0.048	0.1271	0.0694	NDT		NDT	54.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	NGUMO ESTATE	255210	9855245	30-Jan-09	c/51/09	7.32	0.33	78.5	AB	AB		24	0	AB	31	0.4	0.5	0.1	5.68	3.5	1.2	8.2		NDT			NDT		0.0414	0.0093	0.0121			NDT	47.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	NYAYO HIGH RISE	255652	9854792	09-Jul-08	C/520/08	7.89	0.16	73.3	AB	AB	16.0	22.0	0	AB	25.0	0.40	0.50	0.10	4.26		1.7	10.8	NDT	NDT			1.6		0.4	0.07	0.1			NDT	44.0						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	OLYMPIC PRYIMARY SCHOOL	253044	9854729	15-Feb-08	C/115/08	7.50	0.34	82.70				15.0	0	AB	30.0	1.00	1.20	0.20	4.26	1.3							AB							AB	55.1						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=AB

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	SOUTHERN	OLYMPIC PRYIMARY SCHOOL	253044	9854729	19-Apr-08	C/313/08	7.26	1.45	87.30	AB	AB		31.0	0			0.20	0.30	0.10	4.97	7.4	1.9	14.2					0.30		0.1					NDT	52.4						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	OLYMPIC SECONDARY SCHOOL	253236	9854739	19-Sep-11	C/310/11	8.79	1.92	326	AB	AB	8	20	0	AB	166	N/C	N/C	N/C	8.52	2	8.6	44.1	NDT	NDT	5.8	9	0.1	NDT	0.3477	0.1938	1.4543	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=N/C; TRC=N/C; CC=N/C; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	SOUTHERN	KIBERA SILANGA SLUMS	254763	9854269	22-Jan-09	C/33/09	6.3	0.34	80.6	AB	AB		20	0	AB	34	0.2	0.3	0.1	7.1	2			NDT	NDT			NDT		0.0991	0.1096	0.3776	NDT		NDT	60.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	SOUTHERN	KIBERA SOWETO SLUMS	254904	9854800	02-Sep-09	C/88/09	7.78	0.33	65.6	AB	AB		18	0	AB	30	0.4	0.6	0.2	5.68	1	1.2	11	NDT	NDT					0.1137	0.0115	0.1113			NDT	39.4						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	ST. GEORGES PRIMARY SCHOOL	254605	9858018	13-Aug-08	C/1021/08	7.93	0.47	74.2	AB	AB	8.0	26	0	AB	33.0	0.40	0.50	0.10		1.5	1.2	10	NDT	NDT			AB														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	ST. GEORGES PRIMARY SCHOOL	254605	9858018	01-Nov-08	C/798/08	6.78	0.02	73	AB	AB	10	24	0	AB	30	0.7	0.8	0.1	4.26	17.3	1.5	9.3	NDT	NDT					0.0091	0.0177	0.0286			NDT	54.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	ST.GEORGES SECONDARY SCHOOL	254723	9857949	15-Sep-08	C/675/08	7.37	0.57	66.6	AB	AB	10	28	0	AB	29	0.3	0.4	0.1	4.97	2.75	1.5	5.8	NDT	NDT			NDT		0.0268	0.0169	0.0955			NDT	40.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	UHURU GARDENS ESTATE PRIMARY SCHOOL	253880	9853187	02-Aug-08	C/83/08	7.48	0.44	76.7				20.0	0	AB	26.0				4.26	1.0	0.5	9.8	NDT	NDT			AB							NDT	51.1						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	SOUTHERN	UHURU GARDENS ESTATE PRIMARY SCHOOL	253880	9853187	03-Dec-08	C/201/08	7.46	0.74	70.90				25.0	0	AB	30.0	1.00	1.20	0.20	4.97																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	UHURU GARDENS ESTATE PRIMARY SCHOOL	253880	9853187	14-Mar-08	C/214/08	7.40	0.31	80.00				20.0	0	AB	33.0	0.70	0.80	0.10	6.39																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	JAMHURI PRIMARY SCHOOL	251473	9855946	10-Aug-10	C/413/10	8.05	2.03	82.0	AB	P		28.0	0.0	AB	29.0	0.40	0.50	0.10	6.39	14.65	1.25	4.80	TR	TR		2.1		NDT	0.139	0.009	0.0693	0.0364									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	SOUTHERN	JAMHURI PRIMARY SCHOOL	251473	9855946	08-Aug-08	C/580/08	7.73	0.69	71.4	AB	AB	10.0	27.0	0	AB	26.0	0.20	0.30	0.10		3.32	1.5	9.0	NDT	NDT			NDT		0.1	0.0	1.2										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	SOUTHERN	JAMHURI PRIMARY SCHOOL	251473	9855946	07-May-08	C/339/08	7.23	7.9	78	AB	AB		32	0	AB	28	0.60	0.70	0.10	5.68	9.9	2.3	13.3	NDT	NDT			0.5		0.1934	0.0183	0.0699			NDT	47.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	CALTEX PETROL STATION WAIYAKI WAY	253008	9861050	02-Jun-09	C/71/09	7.59	1.16	72.1	AB	AB		20	0	AB	30	0.9	1	0.1	5.68	1.6	1.5	8.8	NDT	NDT			NDT		0.0793	0.0225	0.0334			NDT	43.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	CALTEX PETROLSTATION WAIYAKI WAY	253008	9861050	15-Jun-08	C/455/08	7.15	1.06	71.90		AB		26.0	0	AB	25.0	TR	0.10		4.26		1.4	10.5	NDT	NDT			NDT		0.0	0.02	0.0	NDT		NDT	43.1						Odour=; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=0.1; CC=; SO4=; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	CHADARIA HELATH CENTRE	242976	9858105	21-Feb-08	C/151/08									AB		0.2	0.3	0.1																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	CHANDARIA HEALTH CENTER	242976	9858105	18-May-08	C/377/08	6.87	2.15	181	AB	AB		95	10	AB	57	0.3	0.35	0.05	36.9	4.63	30.8	30.8	NDT	NDT			4.7		0.4221	0.0756	1.2149			NDT	108						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	15-Apr-10	C/175/10	6.00	1.40	269.0	AB	AB		50.0	0	AB	55.0	1.80	2.00	0.10	1.00		10.00	31.00	0.04	1.32	0.3		NDT														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	22-Aug-10	C/440/10	7.31	2.84	299.0	AB	AB		30.0	0.0	AB	50.00	0.80	0.90	0.10	7.10	NDT	0.75	4.60	NDT	TR		1.2		--	0.1164	0.0037	0.6671	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	14-Sep-10	C/499/10	7.73	0.02	268.0	AB	P		50.0	2.5	AB	69.0	>4	>4	>4	17.89	4.00	1.80	1.40	0.01	3.00	0.28			NDT	0.0656	0.008	0.0406	NDT		NDT							Odour=AB; Deposite =P; Alka_Phe =AB; FRC=>4; TRC=>4; CC=>4; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	11-Jul-10	C/579/10	7.48	0.53	226.0	AB	AB		61.5	0	AB	32.0	0.10	0.20	0.10	35.5	1.0	6.05	13.0	0.038	NDT	0.78		NDT	0	0.050	0.016	0.568	0.0893									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	04-Jul-08	C/505/08	6.88	0.67	68.9	AB	AB	20.0	25.0	0	AB	29.0	0.60	0.65	0.05	8.52		8.0	12.8	NDT	NDT			2.50		0.0	1.2	1.2			NDT	41.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	CHANDARIA HEALTH CENTRE	242976	9858105	21-Oct-08	C/770/08	8.8	0.04			AB	20	42	0			0.2	0.25	0.05		21.7	4.2	0.8	NDT	NDT			NDT		0.1026		0.0553				129.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	CHARDARIA HEALTH CENTRE	242976	9858105	15-Jan-08	C/56/08			506.0		AB			0			AB	AB	AB		NDT																					Odour=; Deposite =AB; Alka_Phe =; FRC=AB; TRC=AB; CC=AB; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	CHARDARIA HEALTH CENTRE	242976	9858105	15-Jan-08	C/57/08			82.70		AB			0			1.00	1.20	0.20																							Odour=; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	DAGORETI HEATH CENTRE	242988	9858111	30-Apr-11	C/179/11	7.68	0.31	221	AB	P		28.4	0	AB	32	AB	AB	AB	28.4	4	16.7	25	NDT	12.9	--	4		NDT	0.3025	0.0793	0.8661	0.0352									Odour=AB; Deposite =P; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	DAGORETTI HEALTH CENTRE	242988	9858111	16-Dec-10	C/671/10	6.73	0.10	234.0	UO	AB		66.7	0	AB	32.0	TR	TR	TR	35.5	6.0	1.2	24.0	0.001	NDT	NDT		0.80	NDT	0.055	0.013	0.206	NDT									Odour=UO; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	GATINA SLUM	249994	9858705	10-Aug-10	C/411/10	7.89	1.48	90.2	AB	P		42.0	0.0	AB	151.0	0.60	0.80	0.20	7.10	NDT	1.15	5.60	TR	TR		NDT		0	0.238	0.0219	0.2641	0.085									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =TR; NO3 =TR; F=; Fe=; Mn= ; Si=NDT; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	HOSPITAL HILL PRIMARY SCHOOL	256893	9859812	05-Aug-08	C/570/08	7.75	1.29	70.70	AB	AB	8.0	32.0	0	AB	32.0	0.80	1.00	0.20		1	1.5	9.0	NDT	NDT			NDT		NDT	NDT	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	WESTERN	KANGEMI HEALTH CENTRE	249552	9859838	22-Aug-10	C/439/10	7.26	1.29	69.3	AB	AB		28.0	0.0	AB	36.00	0.50	0.60	0.10	28.11	NDT	1.00	4.00	NDT	TR		1.3		--	0.1254	0.0111	0.0539	0.032									Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =NDT; NO3 =TR; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	KANGEMI HEALTH CENTRE	249552	9859838	21-Feb-08	C/145/08									AB		TR	0.05	0.05																							Odour=; Deposite =; Alka_Phe =AB; FRC=TR; TRC=0.05; CC=0.05; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	KANGEMI HEALTH CENTRE	249552	9859838	04-Jul-08	C/500/08	7.45	0.27	73.3	AB	AB	10.0	21.0	0	AB	27.0	0.50	0.60	0.10	22.70		1.7	11.9	NDT	NDT			3.20		0.1	NDT	NDT			NDT	43.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	KANGEMI PRIMARY SCHOOL	249489	9859440	04-Apr-08	C/255/08	7.46	0.38	62.5	AB	AB		42.0	0			1.00	1.10	0.10	6.39	7.0									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	KANGEMI PRIMARY SCHOOL	249489	9859440	08-Nov-08	C/845/08	6.20	0.01	72.4	AB	AB	12	28	0	AB	25	0.4	0.5	0.1	5.68	12.99	9.9	13	NDT	NDT					0.0684	0.0291	0.1381			NDT	54.3						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	KANGEMI BOYS DAY & BOARDING SECONDARY SCHOOL	249263	9859755	08-Nov-08	C/847/08	6.80	0.02	265	AB	AB	16	23	0	AB	140	TR	TR	TR	7.1	12.9	2.2	5.4	NDT	NDT					0.0583	0.0106	0.1659			NDT	198.7						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	KAWANGWARE PRIMARY SCHOOL	248887	9858423	21-Feb-08	C/150/08									AB		0.6	0.8	0.2																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	KAWANGWARE PRIMARY SCHOOL	248887	9858423	15-Jan-08	C/54/08		0.29	73.60		AB			0			1.00	1.20	0.20		0.1																					Odour=; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	NEW KIHUMBUINI PRIMARY SCHOOL	249417	9859967	21-Feb-08	C/146/08									AB		0.20	0.30	0.10																							Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	NEW KIHUMBUINI PRIMARY SCHOOL	249417	9859967	20-Oct-10	C/547/10	7.63	0.33	78.6	AB	AB		37.4	0	AB	32.0	0.3	0.40	0.10	9.99	NDT	0.90	8.50	0.00	6.60	0.1	5.0	NDT	NDT	NDT	0.009	0.000	0.02		NDT							Odour=AB; Deposite =AB; Alka_Phe =AB; SO4=NDT; NO2 =; NO3 =; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LAVINGTON PRYIMARY SCHOOL	252326	9858384	22-Feb-08	C/164/08	7.72	0.59	71.7		AB		45.0	0	AB	27.0	0.60	0.70	0.10	6.39	6.1				ABST			AB							NDT	53.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =AB ; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	LAVINGTON PRYIMARY SCHOOL	252326	9858384	14-Mar-08	C/217/08	7.52	0.53	77.90				19.0	0	AB	28.0	0.80	0.90	0.10	5.68																						Odour=; Deposite =; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LORESHO PRIMARY SCHOOL	249546	9861552	20-Jul-09	C/300/09	7.72	0.1	73.5	UO	AB	14	34	0	AB	35	0.6	0.8	0.2	10.65	1.2	1.1	48	NDT	NDT					NDT	NDT	NDT				51.45						Odour=UO; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	LOWER KABETE PRIMARY SCHOOL	249119	9863140	08-Apr-10	C/158/10	7.30	0.10	139.2	AB	AB		20.0	0	AB	50.0	0.35	0.40	0.05	1.00		20.00	1.17	0.02	3.98	0.33		2.90														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	LOWER KABETE PRIMARY SCHOOL	249119	9863140	23-Jan-11	C/47/11	7.21	0.2	78.8	AB	AB		27.4	0	AB	40	0.3	0.5	0.2	4.97	4	2.6	9	NDT	NDT	0.93	7		0.02	0.9544	NDT	NDT	0.0161									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	MOUNTAIN VIEW ESTATE	247629	9860124	21-Sep-08	C/687/08	8.1	0.3	85.9	AB	AB	14	27	0	AB	30	0.6	0.7	0.1	5.68	1.75	1.2	5.8	ND	ND			NDT		0.1213	0.0262	0.032			NDT	41.9						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	MUGUGA GREEN PRIMARY SCHOOL	247123	9860260	02-Nov-08	C/94/08	7.42	0.80	78.20				18.0	0	AB	23.0				5.68	1.0	0.5	9.8	NDT	NDT			AB							0.10	52.1						Odour=; Deposite =; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	MUGUGA GREEN PRIMARY SCHOOL	247123	9860260	21-Jul-08	C/567/08	7.42	0.13	66.90	AB	AB	10.00	25.00	0	AB	34.00				7.10		1.7	7.5	NDT	NDT			NDT		0.12	0.00	NDT			NDT	49.50						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	MUGUGA GREEN PRIMARY SCHOOL	247123	9860260	21-Sep-08	C/685/08	8.17	0.19	71.2	AB	AB	10	26	0	AB	29	0.6	0.7	0.1	9.26	4.75	1.4	5.1	ND	ND			NDT		0.0255	NDT	0.1441			NDT	51.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	MUGUGA GREEN PRIMARY SCHOOL	247123	9860260	04-Mar-08	C/249/08	7.37	1.35	65.2	AB	AB		54.0	0			1.00	1.20	0.20	4.97	6.4									0.2					NDT							Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	NAIROBI SCHOOL	251236	9860591	21-Jul-08	C/564/08	7.36	0.02	79.30	AB	AB	10.00	24.00	0	AB	25.00				10.60		1.7	7.6	NDT	NDT			NDT		NDT	0.00	NDT			NDT	33.80						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	NAIROBI SCHOOL	251236	9860591	04-Nov-08	C/809/08	6.50	0.01	90.3	AB	AB	16	24	0	AB	32	0.1	0.2	0.1	7.1	24.5	1.5	7.3	NDT	NDT					NDT	0.0126	0.2163			N.1	67.7						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=N.1
Distribution	WESTERN	NEMBU PRIMARY SCHOOL	246393	9858139	18-May-08	C/375/08	7.14	2.55	85.3	AB	AB		30	0	AB	31	AB	AB	AB	4.26	2.31	13.3	13.3	NDT	NDT			NDT		0.2998	0.0344	0.1797			NDT	51.2						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=AB; TRC=AB; CC=AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	NEMBU PRIMARY SCHOOL	246393	9858139	21-Oct-08	C/768/08	7.42	0.01			AB	22	40	0			TR.	TR.	TR.		19.5	3.7	23.3	NDT	NDT			NDT		0.2217		1.6967				84						Odour=; Deposite =AB; Alka_Phe =; FRC=TR.; TRC=TR.; CC=TR.; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	NEMBU PRIMARY SCHOOL	246393	9858139	15-Jan-08	C/55/08		1.05	68.50		AB			0			0.50	0.60	0.10		0.1																					Odour=; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	NEMBU PRIMARY SCHOOL	246393	9858139	08-Nov-08	C/842/08	7.00	0.02	245	AB	AB	10	40	0	AB	87	TR	TR	TR	29.8	26.4	1.9	5.3	NDT	NDT					0.0137	0.0859	0.1724			0.1	187.3						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	NETWAS INTERNATIONAL	251017	9849624	22-Feb-08	C/165/08	7.36	1.16	198		AB		40.0	0	AB	42.0				29.11	1.2				AB			AB							NDT	48.0						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =AB; F=; Fe=; Mn= ; Si=; PV = AB; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	NORTH HIGHRIGE PRIMARY SCHOOL	257717	9861201	15-Jun-08	C/456/08	7.13	0.38	77.10		AB		24..0	0	AB	28.0	0.90	1.00		4.26		1.4	10.5	NDT	NDT			8.7		0.2	0.01	0.2	NDT		NDT	46.3						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	NORTH HIGHRIGE PRIMARY SCHOOL	257717	9861201	09-Aug-08	C/591/08	7.86	0.10	65.1	AB	AB	7.0	32.0	0	AB	26.0	0.20	0.30	0.10		1.75	1.5	8.3	NDT	NDT			0.6		0.0	0.0	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	WESTERN	VISHA OSHWAL NURSERY SCHOOL	257413	9859891	04-Mar-08	C/250/08	7.46	0.56	81.1	AB	AB		50.0	0			TR	0.10	0.10	5.68	9.4									0.0					NDT							Odour=AB; Deposite =AB; Alka_Phe =; FRC=TR; TRC=0.1; CC=0.1; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	VISHA OSHWAL NURSERY SCHOOL	257413	9859891	05-Aug-08	C/569/08	7.77	0.58	67.90	AB	AB	7.0	28.0	0	AB	30.0	0.60	0.80	0.20		4.75	1.4	10.0	NDT	NDT			NDT		0.0	NDT	0.4										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	15-Feb-10	C/063/10	7.62		98.1			6.0	38.0			42.0				0.99	24.00	2.9	13.5	0.01	3.00				NDT	1.7	NDT	NDT	NDT									Odour=; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	19-Nov-10	C/613/10	7.53	0.03	57.4	AB	AB		25.8	0	AB	33.0	0.60	0.80	0.20	5.68	8.0	1.03	10.0	0.013	NDT	0.53		NDT	NDT	NDT	NDT	NDT	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = NDT; Cu=NDT; Zn=NDT; Pb =NDT; COD=
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	04-Nov-08	C/810/08	6.70	0.29	69.5	AB	AB	10	24	0	AB	29	1.5	1.7	0.2	7.1	23	1.7	9.7	NDT	NDT					0.0364	0.0114	0.051			NDT	52.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	03-Jul-11	C/119/11	7.92	0.22	77.7	AB	P		27.4	0	AB	23	0.4	0.5	0.1	7.1	11	3.6	10	0.017	NDT	--	8		0.01	0.75	0.0516	0.0116	NDT									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F= --; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	07-Nov-08	C/833/08	7.00	1.21	68.7	AB	AB	8	24	0	AB	20	0.5	0.7	0.2	6.39	24.9	1.9	5.6	NDT	NDT					0.0159	0.0278	0.06			NDT	51.5						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	21-Apr-09	C/173/09	7.82	0.88	68	AB			28	0	0	29	0.8	1	0.2	4.26	3	1.67	8.5	0.007				NDT		0.0965	0.0106	1.9545			NDT	40.8						Odour=AB; Deposite =; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	15-Jun-08	C/454/08	7.08	0.83	74.30		AB		21.0	0	AB	24.0	1.00	1.20		3.55		1.4	11.4	NDT	NDT			5.0		0.1	0.01	0.0	NDT		NDT	44.6						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	09-Aug-08	C/588/08	7.83	1.10	67.0	AB	AB	7.0	29.0	0	AB	25.0	0.50	0.60	0.10		2.25	1.5	9.0	NDT	NDT			1.20		0.0	0.0	0.0										Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	06-Sep-08	C/649/08	7.49	0.33	66.3	AB	AB	8	18	0	AB	39	0.7	0.8	0.1	3.55	1.75	1.3	10	ND	ND			NDT		0.0361	0.0015	0.0495			NDT	39.78						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =ND; NO3 =ND; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	06-Sep-08	C/649/08	7.28	2.12	70.5	AB	AB		45	0	AB	26	0.7	0.8	0.1	5.68	7.8	2	14.2	NDT	NDT			NDT		0.1382	0.0076	NDT			NDT	42.84						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	PARKLAND BOYS HIGH SCHOOL	257174	9859876	06-Sep-08	C/649/08	7.15	0.81	79	AB	P		27	0	AB	35	0.4	0.5	0.1	4.26	6	--	--	NDT	NDT	0.64	4		NDT	0.0106	0.0711	0.0294	0.0142									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	PLUMS HOTEL	256475	9859591	12-May-08	C/352/08	7.22	2.17	71.5	AB	AB		46	0	AB	26	1	1.2	0.2	3.55	11.27	2	11.7	TR	NDT			NDT		NDT	0.0015	NDT			NDT	42.15						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =TR; NO3 =NDT; F=; Fe=NDT; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT
Distribution	WESTERN	RUTHIMITU PRIMARY SCHOOL	244339	9858671	02-May-11	C/66/11	8.71	4.52	281	AB	AB		38.9	1	4	1.22	N/T	N/T	N/T	8.52	0	13.8	20	NDT	0.014	3.2	31		0	0.4104	0.0404	0.0729	NDT									Odour=AB; Deposite =AB; Alka_Phe =; FRC=N/T; TRC=N/T; CC=N/T; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=
Distribution	WESTERN	ST MARYS CATHOLIC CHURCH - MUHURI ROAD	243437	9860081	30-Apr-11	C/180/11	7.54	0.02	232	AB	P		26.2	0	AB	34	0.2	0.3	0.1	28.4	5	17.2	26.1	0.001	NDT	--	10		NDT	NDT	NDT	NDT	0.0176									Odour=AB; Deposite =P; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=NDT; Zn=NDT; Pb =; COD=
Distribution	WESTERN	TOTAL PETROL STATION UTHIRU	246092	9860600	16-Apr-08	C/306/08	6.63	0.66	280.00	AB	AB		94.0	0			0.40	0.50	0.10	41.95	6.2	2.9	30.0					1.20		0.0					2.00	168.0						Odour=AB; Deposite =AB; Alka_Phe =; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	TOTAL PETROL STATION UTHIRU	246092	9860600	21-Oct-08	C/766/08	6.72	0			AB	24	52	0			0.8	1	0.2		11.5	4.3	21.8	NDT	NDT			NDT		0.0083		NDT				147.6						Odour=; Deposite =AB; Alka_Phe =; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	TOTAL PETROL STATION UTHIRU	246092	9860600	08-Nov-08	C/843/08	6.00	0.65	244	AB	AB	20	52	0	AB	42	TR	TR	TR	36.9	28.1	2.5	3.5	NDT	NDT					0.1763	0.0366	0.0691			0.2	183						Odour=AB; Deposite =AB; Alka_Phe =AB; FRC=TR; TRC=TR; CC=TR; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	TOTAL PETROL STATION PARKLANDS ROAD	256436	9860095	15-Jun-08	C/453/08	7.15	0.48	73.20		AB		20.0	0	AB	26.0	0.60	0.72		3.55		1.4	9.6	NDT	NDT			6.0		0.1	0.01	0.1	NDT		NDT	43.9						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	TOTAL PETROL STATION PARKLANDS ROAD	256436	9860095	04-Nov-08	C/814/08	6.70	0.29	72.9	AB	AB	8	24	0	AB	30	0.8	1	0.2	6.39	29.8	1.6	7.2	NDT	NDT					0.0638	NDT	0.0329			NDT	54.6						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	TRITON PETROL STATION WAIYAKI WAY	247623	9860144	08-Nov-08	C/846/08	6.60	0.01	70.9	AB	AB	12	29	0	AB	28	0.5	0.6	0.1	3.55	12.8	9	12.3	NDT	NDT					0.0203	0.023	0.1922			NDT	53.1						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	KABETE VET LAB PRIMARY SCHOOL	246762	9860253	18-Jan-11	C/27/11	6.39	0.27	256	AB	AB		30.9	5	AB	30	0.6	0.7	0.1	36.21	2	9.8	30.4	NDT	5.3	0.8	24		0	NDT	NDT	0.117	0.0043									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=NDT; Mn=NDT ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	16-Mar-10	C/123/10	7.58		417.0			8.0	29.0			55.0	N/C	N/C	N/C	41.9	12.00	10.0	54.0	0.05	14.00	0.46																Odour=; Deposite =; Alka_Phe =; FRC=N/C; TRC=N/C; CC=N/C; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	15-Apr-10	C/182/10	6.20	2.40	259.0	AB	AB		44.0	0	AB	51.0	0.05	0.10	0.05	2.00		11.10	30.00	0.03	1.33	2.4		1.50														Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	11-Jul-10	C/581/10	7.36	0.02	230.0	AB	AB		51.6	0	AB	37.0	2.50	3.00	0.50	34.08	2.0	6.02	17.0	0.021	NDT	NDT		NDT	NDT	0.005	0.197	0.0981	0.0669									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=NDT; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =; COD=
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	04-Jul-08	C/504/08	6.19	0.19	257.9	AB	AB	20.0	60.0	0	AB	26.0	>	4.00	4.00	7.10		8.0	39.1	NDT	0.40			1.10		0.1	0.1	0.1			NDT	154.2						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	21-Oct-08	C/76708	6.51	0.01			AB	20	40	0			TR.	TR.	TR		12.8	4.3	15.8	NDT	NDT			NDT		0.1026		NDT				138						Odour=; Deposite =AB; Alka_Phe =; FRC=TR.; TRC=TR.; CC=TR; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	23-Apr-09	C/178/09	6.3	7.86	279	AB			40	5	0	46	0	0	0	34.08	NDT	7.47	26.3	0.008				NDT		0.2106	0.4388	NDT			NDT	167.4						Odour=AB; Deposite =; Alka_Phe =0; SO4=NDT; NO2 =; NO3 =; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=; Zn=NDT; Pb =; COD=NDT

Component	Region	Sampling_Station	Longitude	Latitude	Sampling_Date	Lab_Ref	pH	Turb	Cond	Odour	Deposit	Ca_Hard	T_Hard	Color	Alka_Phe	Total_Alka	FRC	TRC	CC	Cl	SO4	K	Na	NO2	NO3	F	Si	PV	Cu	Fe	Mn	Zn	Pb	Al	COD	TDS	BOD	Ca	Mg	PO4	NH3	Remark
Distribution	WESTERN	WAITHAKA SHOPING CENTRE STAND PIPE	245419	9858460	08-Nov-08	C/850/08	6.40	0.01	69.4	AB	AB	10	17	0	AB	30	0.3	0.4	0.1	5.68	23.7	2.5	6.2	NDT	NDT					0.1621	0.0141	0.0391			NDT	52						Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =; COD=NDT
Distribution	WESTERN	WESTLAND PRIMARY SCHOOL	255056	9860831	21-Oct-11	C/347/11	7.39	1.08	93	AB	AB	12		0	AB	42	0.5	0.6	0.1	38	6	3.3	12.5	NDT		0.3			NDT	0.0216	0.0035	0.0428	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =; F=; Fe=; Mn= ; Si=; PV = ; Cu=NDT; Zn=; Pb =NDT; COD=
Distribution	WESTERN	WESTLAND PRIMARY SCHOOL	255056	9860831	15-Jun-08	C/457/08	7.19	1.15	75.30		AB		33.0	0	AB	28.0	0.90	1.00		4.26		1.4	12.3	NDT	NDT			7.1		0.1	0.01	0.1	NDT		NDT	45.2						Odour=; Deposite =AB; Alka_Phe =AB; NO2 =NDT; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = ; Cu=; Zn=; Pb =NDT; COD=NDT
Distribution	WESTERN	WESTLAND PRIMARY SCHOOL	255056	9860831	11-Jun-10	C/578/10	7.63	0.35	53.4	AB	AB		32.7	0	AB	50.0	0.70	0.80	0.10	4.26	5.0	1.03	13.2	0.026	NDT	0.50		NDT	NDT	0.100	0.007	0.029	NDT									Odour=AB; Deposite =AB; Alka_Phe =AB; NO2 =; NO3 =NDT; F=; Fe=; Mn= ; Si=; PV = NDT; Cu=NDT; Zn=; Pb =NDT; COD=

Key

FRC Free Residual Chlorine
TRC Total Residual Chlorine
CC Combined Chlorine
PV Permanaganate Value

Not Detected
Absent
Nill
Trace
Present
Not Treated
Presence of material is Un-Objectionable
Not chlorinated