

THE ROLE OF HYDROLOGIST IN ACHIEVING OUR VISSION 3: 20-20.

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ABSTRACT.

Hydrology as earth science, deals with the occurrence, distribution, movement and properties of the waters of the earth and their environmental relationships. A Hydrologist there fore ,is a person who studies the behavior of surface water and how it can be of use to man kind. This they do by studying and understanding the hydrologic cycle. The research that these do is important in developing, managing and controlling water resources. Key applications of hydrology in achieving our vision 3 : 20 – 20 here in Niger state include controlling floods, and planning recreational uses of rivers, lakes and other waters among others.

INTRODUCTION.

Our vision as a nation in Nigeria is to provide adequate education, shelter, water and food among others for all by the year 20 – 20 ;popularly known as vision 20 -20. We in Niger state are determined to be among the first three top states to make this vision a reality ; that is vision 3: 20 -20 .This dynamic government solely depend on some of us seated here to achieve this . We are there fore here to remind us of our roles as Hydrologists and to also let the government know how our expertise can and will help achieve the vision 3 :20-20

WHAT IS HYDROLOGY? Hydrology is an earth science that encompasses the occurrence, distribution, movement and properties of surface waters of the earth and their environmental relationships. Hydrology has some relationships with Meteorology ,Oceanography, Climatology .and Hydrogeology. A Hydrologist is someone who studies the movement and properties of surface water and how this can apply to the benefit of man kind.

WHAT DO HYDROLOGIST DO? Hydrologists are involved mainly with the study and understanding of the hydrologic or water cycle. Hydrologic cycle is a continuous process by which water is transported from the oceans to the atmosphere ,to the land and back to the sea. The driving force for the global water transport system is provided by the sun ,which supplies the energy required for evaporation. Water quality changes during passage through the cycle, For example sea water is converted to fresh water through evaporation .The complete water cycle is global in nature. The Hydrologist is obligated to ensure that careful attention is received in developing techniques to control weather. This is because climatological changes in one area may greatly affect the hydrology and there fore the water resource of the region.

The hydrologist is saddled with the primary responsibility of collection and generation of hydrologic data. This data are needed to describe precipitation, streamflows, evapotranspiration, infiltration, water quality, air, soil and water temperatures. The data is also necessary for the computation of water the budget of an area. Precipitation in the form of rain, comes from atmospheric water vapor and constitutes the primary input. Some rain may be intercepted by trees, grasses and structural objects and will eventually return to the atmosphere by evapotranspiration. Once precipitation reaches the ground, some of it may fill depressions, part may infiltrate the ground to replenish the soil moisture and ground water reservoirs and some may become surface runoff.

Precipitation is measured by rain gauges located throughout an area. Surface flows can be measured using various devices such as weirs, flumes, velocity meters and depth gauges located in rivers and streams of the area in question. Infiltration can be measured locally by infiltrometers or estimated through the use of precipitation runoff data. Most estimates of evaporation are obtained by using evaporation pans, energy budget, mass transfer methods or empirical relationships.

APPLICATION OF HYDROLOGY TO ENVIRONMENTAL PROBLEMS.

The fact that man can not live without water is very fundamental. It is also a known fact that at times water becomes a threat to the health and welfare of individuals, communities and even regions. Although the use of water for domestic activities is vital, its use in industry, commerce, agriculture and recreation is also basic to the welfare and development of our state. For example water for recreation has become the most important single use in some multipurpose water resource development projects in the developed countries and this shift is expected to accelerate.

The concern of our great state over environmental quality is tied in part to our water resources. Therefore, improved techniques for planning, managing and developing our environment should be high on our priority list. A greater emphasis will have to be placed on humanistic and social values. At the same time, effective planning and management result only if we are able to *clearly understand the physical system with which we must deal*. This is the challenge of the Hydrologist. Reliable mathematical models are needed to *evaluate and predict* the performance of hydrologic systems under expected or known conditions of stress. The effects of physical works such as dams, drainage, channellizations and the like must be understood before construction begins. For Instance Niger state experiences flooding almost every year where lives, properties, and agricultural lands and produce are often destroyed. The most recent experience is the one that happened last year in Akare Wushishi L. G. A. The Bosso dam is also have almost failed because hydrologic the properties of the area was not properly considered before citing the dam. Hydrologist has to play a very fundamental role in our quest for a better managed and understood

environment. His competence will have a tremendous impact on the success of all water resource activities, either small or big.

In conclusion, every one uses water in a variety of ways; for drinking, cooking meals, and bathing. Water is also used in industry, agriculture and in many other very important applications. The average rate of demand will continue to increase. Because water is such an indispensable and yet potentially damaging resource, its effective management has to become an important goal of this very important state that has a lot of surface water within and around it as shown in the figure below.



FIGURE 1: MAP OF NIGERIA SHOWING THE LOCATION OF NIGER STATE (SENIOR SECONDARY SCHOOL ATLAS)

Therefore, we all need to support the hydrologist to rise up to this challenge so that we can achieve this noble vision 3;20 -20. Thank you.

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