SCI – WATER

Water is absolutely fundamental to life as we know it. Happily, Earth is virtually flooded with water. A total volume of some 325 million cubic mils covers 71% of the Earth's surface. About 97.5% of this volume is the salt water of the oceans and seas. The remaining 2.5% is fresh water. This is water upon which most terrestrial biota, ecosystems and humans depend. Of the 2.5%, though, two-thirds is bound up in the polar ice caps and glaciers. Thus only 0.77% of all water is found in lakes, wetlands, rivers, groundwater, biota, soil, and the atmosphere. Nevertheless, evaporation from the oceans combines with precipitation to resupply that small percentage continually through the solar powered hydrologic cycle.

Streams, rivers, ponds, lakes, swamps, estuaries, groundwater, bays, oceans, and the atmosphere all contain water and they all represent ecosystem capital—goods and services vital to human interests. They provide drinking water, water for industries and water to irrigate crops. Bodies of water furnish energy through hydroelectric power and control flooding by absorbing excess water. They provide transportation, recreation, waste processing and habitats for aquatic plants and animals. Fresh water is a vital resource for all land ecosystems, modulating the climate through evaporation, and essential global warming. During the last two centuries, many of these uses, have led man to construct a huge infrastructure designed to bring water under control. We have built dams, canals, reservoirs, aqueducts, sewer systems, treatment plants, water towers, elaborate pipelines, irrigation systems, and desalination plants. As a result water borne disease have been brought under control in the developed countries, vast cities thrive in deserts, irrigation makes it possible to grow 40% of the world's food, and one-fifth of all electricity is generated through hydropower. These great benefits are especially available to people in the developed countries.

In the developing world, by contrast, 1.1 billion people still lack access to safe drinking water, 2.6 billion do not have access to adequate sanitation services and more than 1.7 million deaths each year are traced to waterborne diseases (mostly in children under 5). In addition, because of the infrastructure that is used to control water, whole seas are being lost, rivers are running dry, millions of people have been displaced to make room for reservoirs, ground water aquifers are being pumped down, and disputes over water have raised tensions from local to international levels. Fresh water is a limiting resource in

many parts of the world and is certain to become even more so as the 21st century unfolds.