



# ENVIRONMENTAL QUALITY

## 4.1 INTRODUCTION AND ANALYSIS

The people of the County of Hawaii live in an environment with qualities that other areas have long since lost. Economic expansion and population growth in the County are bringing about more demand for products, transportation, services, energy, and other necessities that could affect the environmental quality of the County.

The County's basic industries, agriculture, tourism, and scientific and technological enterprises, depend upon a "clean" environment for optimum growth. The agricultural industry depends upon the availability of clean air, soil, and water. The island's major visitor attraction, especially for tourists from large urban centers, is its natural beauty accentuated by the quality of the air, land, and water. The environmental quality of the County thus not only enhances the quality of life for its residents, but is also a major economic asset.

In order to maintain an ecological balance for the biological, physical, social, and psychological well-being of the island community, it is essential to control pollution, develop more effective solid waste and sewer treatment programs, control soil erosion, water runoff, and sprawl development, as well as protect endangered plants and animal species. Greatly altering aspects of the ecological system could destabilize its existing balance and translate into high economic and social costs. Increasing population and urbanization place a greater demand on the limited natural resources, making their utilization and protection a vital concern to the people of the County of Hawaii. The increasing number and affluence of residents and visitors will increase the rate of consumption of local resources, the amount of sewage and solid waste (litter, junk cars, and other scrap metal), the demand for electrical power that will necessitate additional sources, and the number of motor vehicles in use. In urbanizing areas, the generation of pollutants will be greater with increased density and intensified use of the land.

Pollutants may be classified by characteristics, such as organic or inorganic, by stimuli, or by the type of environment affected, such as air, land, or water. Legislation relating to the appropriate disposition of specific pollutants is administered by Federal, State, and County agencies. The large area of the County makes it difficult to adequately monitor and enforce environmental quality standards. The General Plan is concerned primarily with those controls that can properly be formulated and enforced by County agencies.

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Current sources of pollution are a problem not only in the amount and type of discharge but also in patterns of dispersal that cause local concentrations of pollutants. There is also a lack of basic information on the existing condition of the County's environment. This is needed to establish a baseline from which future deterioration of the air, land, water, and noise levels can be measured. In order to prevent, abate, and control pollution, deteriorating conditions must be recognized before they reach critical proportions.

### **Air**

The County of Hawaii, along with the other counties comprising the island State, enjoys the unique situation of being geographically isolated from any large land mass and major sources of man-made pollutants. The island's geographical isolation combined with very minimal locally generated man-made air pollution has contributed toward the Island of Hawaii's world wide recognition for the clarity of its air at the summits of Mauna Kea and Mauna Loa. These sites offer some of the best areas in the world for astronomy, combining optical clarity and accessibility.

As in any metropolitan area, though, there is some air pollution. The major sources of air pollution are open burning (by permit only), sprayed agricultural chemicals, modes of transportation, and fixed combustion sources such as power plant emissions. Natural pollutants are also contributing factors. These can be organic, including plant pollens and spores, or inorganic, including airborne dust and volcanic gases. Salt laden ocean spray, though not a pollutant in itself, is a contributing factor towards increased amounts of suspended particulate matter.

Prevailing northeast trade winds and diurnal land and sea breezes sculpted by the Big Island's topography forms air circulation patterns that can create local concentrations of pollutants. The windward or eastern coast is dominated by trades, while on the leeward coast, the side of the island sheltered from the trade winds, the diurnal land - warmed, upslope winds of the day and the cooling, nightly downslope winds prevail. In areas where the topography favors a confluence of air currents, the potential is great for hazy conditions to develop, especially if vehicular, volcanic, and other air pollution sources increase.

Volcano induced smog, known since the 1950s as vog, has been a long standing issue of concern. In 1983, Kilauea Volcano began a long eruptive cycle at Pu'u O'o with brief pauses between eruptive phases. Volcanic gases are released at the rate of about 385 tons per day during eruptive pauses, and 2,000 tons per day during active eruptions. Volcanic gases are composed primarily of sulfur, silicon, sodium, and chlorine with lesser amounts of potassium, calcium, magnesium, aluminum, titanium, and iron. The sulfur, measured in the form of sulfur dioxide, is believed to be oxidized into sulfuric acid, an ingredient in acid rain, in the presence of sunlight and water.

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The effect of emissions from Kilauea Volcano on the acidity of rain during noneruptive periods rapidly decreases within six miles of the site and studies suggest that the volcano's influence on the chemistry of rain is localized. However, this minimum level of impact is altered when the volcano is actively erupting. Vog has affected those with chronic respiratory or cardiovascular disease.

The spraying of agricultural chemicals is controlled within many divisions and branches of the State Department of Agriculture and the State Department of Health. Emissions from other private and municipal sources such as power generation facilities, are controlled through State and Federal regulations. Under the guidance of the Federal government, the State Department of Health continuously scrutinizes and updates the State's standards and regulations to address current issues, either meeting or exceeding Federal standards.

### **Water**

The waters of the County are vulnerable to contamination. These include fresh, marine, and potable water. As population increases and further development occurs, there will be an increased demand for drinking and irrigation water. Recycled water is currently being used for erosion and dust control at lined land fills and there may be a need in the future to recycle sewage and waste water for use in irrigation. The major sources of water pollution are sewage, natural surface runoff, and the by-products of agricultural activities.

There are five municipal sewage systems with treatment plants that serve limited areas. As a result, only a small portion of the County's sewage is treated. Most sewage is disposed of in private cesspools, septic systems, or private wastewater treatment plants that must meet the State Department of Health's Water Quality Standards. The State Department of Health (DOH) intends to promulgate rules that will prohibit the installation of cesspools.

Since much of the volcanic soil of the island is highly permeable and underground lava tubes are widespread, seepage from cesspools have been known to contribute to the pollution of coastal waters and may pose a potential threat to underground sources of drinking water.

The State Department of Health is responsible for establishing, monitoring, and enforcing the Water Quality Standards. These standards are intended to protect the environmental quality of the waters of the island as well as to maintain the public health.

## Soil

The soils of the County consist of various forms and stages of volcanic lava and ash. The young age and form of some of these soils make certain areas temporarily non-productive. Much of the volcanic soil is also highly permeable.

Soil pollution has occurred with the accumulation of industrial, agricultural, and domestic chemicals and the improper disposal of solid wastes, such as refuse, old cars, refrigerators, stoves and other scrap metal, thus creating both unsanitary and unsightly conditions.

There is no comprehensive program for the surveillance and monitoring of chemicals to be able to detect the rate and extent of accumulation within the soil. Little is known of their short- and long- term effects on the environment and public health.

## Noise

Loud noises are known to have adverse physiological and psychological effects on people. Noise that is loud or out of character, especially from low flying aircraft, is critically disturbing to residents. Residential and resort areas near the Hilo International Airport are particularly affected. Noise levels will become increasingly more disturbing due to more jet service, vehicular traffic, construction, and the increasing size and density of urban areas. The Department of Health is responsible for establishing standards and regulations for noise control. State noise level regulations and standards are uniform throughout the State. The Federal Aviation Agency has established noise guidelines for determining compatible land uses surrounding airports, however the regulation of surrounding lands remain with the State and County.

Increased air transportation activity and changes in aeronautical technology, that could allow service by super-sonic aircraft could change the "noise contours" that affect lands surrounding the Kona International Airport at Keahole and Hilo International Airport. In order to eliminate the likelihood of surrounding land use development conflicting with future airport activity and/or expansion, appropriate easements and/or covenants should be required in conjunction with land use approvals for lands in the vicinity of the County's two major airports.

## 4.2 GOALS

- (a) Define the most desirable use of land within the County that achieves an ecological balance providing residents and visitors the quality of life and an environment in which the natural resources of the island are viable and sustainable.
- (b) Maintain and, if feasible, improve the existing environmental quality of the island.
- (c) Control pollution.

### 4.3 POLICIES

- (a) Take positive action to further maintain the quality of the environment.
- (b) Reinforce and strengthen established standards where it is necessary, principally by initiating, recommending, and adopting ordinances pertaining to the control of pollutants that affect the environment.
- (c) Advise the public of environmental conditions and research undertaken on the island's environment.
- (d) Encourage the concept of recycling agricultural, industrial, and municipal waste material.
- (e) Encourage the State to establish air and water quality monitoring stations in areas of existing and potential urban growth.
- (f) Encourage the State to continue aircraft noise abatement strategies at Hilo International Airport and the Kona International Airport at Keahole.
- (g) Participate in watershed management projects to improve stream and coastal water quality and encourage local communities to develop such projects.
- (h) Work with the appropriate agencies to adopt appropriate measures and provide incentives to control point and nonpoint sources of pollution.
- (i) Support programs to prevent harmful alien species from becoming established.
- (j) Require golf courses to implement best management practices to limit leaching of nutrients to groundwater in areas where they may affect streams or coastal ecosystems.
- (k) Require implementation of the management measures contained in Hawaii's Coastal Nonpoint Pollution Control Program as a condition of land use permitting.
- (l) Review the County grading and grubbing ordinances to ensure that they adequately address potential erosion and runoff problems.

### 4.4 STANDARDS

- (a) Pollution shall be prevented, abated, and controlled at levels that will protect and preserve the public health and well being, through the enforcement of appropriate Federal, State and County standards.
- (b) Incorporate environmental quality controls either as standards in appropriate ordinances or as conditions of approval.
- (c) Federal and State environmental regulations shall be adhered to.

§4.4: Standards

