[DENR MEMORANDUM CIRCULAR NO. 2000-03, February 09, 2000]

WATER QUALITY VARIANCE FOR GEOTHERMAL EXPLORATION

Pursuant to the provisions of Section 6 and 8 of Presidential Decree 984, otherwise known as the "Pollution Control Decree of 1976," and by virtue of Executive Order No, 192 Series of 1987, the Department of Environment and Natural Resources hereby provides variance in water quality criteria and standards for geothermal exploration that encounters reinjection constraints but with provision for adequate protection of beneficial use of water bodies downstream of the geothermal project.

SECTION 1. Scope. This Memorandum Circular shall apply to discharges of geothermal brine from existing and future geothermal exploration.

SECTION 2. Definition of Terms:

a. Variance refers to the temporary suspension in the compliance with effluent standards and reasonable temporary relaxation of selected ambient water quality criteria for specified period of time in order to allow time to study, institute and/or finance an appropriate and adequate control system, equipment or technology to meet regulatory standards or requirements.

b. Geothermal exploration refers to preliminary activities consisting of drilling and testing of exploration wells to confirm the presence of a commercially viable geothermal resource and to delineate the boundaries and capacities of the production and reinjection sectors of the geothermal field. These activities include the drilling and testing of reinjection wells to determine their capacity to accommodate discharges of production wells to be able to firm up the resource development plan/strategy. Short-term, activities such as the flushing of the fluid collection and recycling pipelines to ensure safe transport of geothermal fluids to the power plant and the reinjection wells for the long- term closed reinjection system are included here.

c. Geothermal fluid refers to substances derived from a naturally occurring geothermal resource.

d. Geothermal resource refers to the heat that is derived from hot geothermal fluids and that can be tapped for various purposes.

e. Geothermal system refers to the total subsurface hydrologic system associated with a geothermal resource. It includes all parts of the hydrologic flow unit and the associated structural components.

f. Geothermal prospects refer to the geographic area where a geothermal

resource may occur.

g. Geothermal well refers to a cased bore or a hole which serves as a conduit for production or for reinjection of geothermal fluid.

h. Reinjection refers to the process of returning the separated geothermal brine from the earth surface back to the ground as part of the geothermal reservoir management.

i. Reinfection constraints refer to the non-feasibility of reinjecting the geothermat fluid or brine due to various reasons.

SECTION 3. Rationale for the Issuance of Water Quality Variance

a. Geothermal energy is a vital component of the Philippine energy mix. In its thrust to accelerate energy development and attain energy self-reliance in the country, the Department of Energy (DOE) supports the exploration, development and utilization of geothermal energy.

b. Sourcing of geothermal energy involves exploration of geothermal prospects where wells are drilled, and geothermal fluids are allowed to discharge to determine the heat capacity of the well and the resource area.

c. The discharge involves the separation of geothermal fluids into the gas/stream and water/brine components. Ideally, the separated brine component from the geothermal fluid are reinjected. However, there are reinjection constraints encountered during geothermal exploration, which require controlled disposal minimal amount of the brine to the surface waters in order to proceed with the testing and evaluation of the geothermal resource.

d. Reinjection constraints include but not limited to the following: (a) absence of reinjection wells in geothermal exploration areas, especially for the first well; (b) very high cost of reinjection pipeline between the production well and the distant reinjection well, especially in rugged terrain; (c) rapid reinjection fluid returns resulting to rapid and non-representative discharge chemistry of the production wells, or (d) drastic reduction in the reinjection capacity as a result of mineral deposition along the line within the well, or in the formation. Exploration in two adjacent rugged watersheds may require two reinjection areas.

e. There are no proven economically feasible means of treating geothermal brine for its naturally high boron and arsenic content.

Thus, there is a need to set a water quality variance for boron and arsenic for geothermal exploration. The mechanism of implementation are provided herein.

SECTION 4. Water Quality Variance for Geothermal Exploration. The following water quality variance is prescribed for geothermal exploration:

a. Regulated discharge of geothermal brine and temporary suspension of effluent standards for arsenic and boron;