LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO 87544

OFFICE MEMORANDUM

TO : LaMar J. Johnson, H-8 Group Leader DATE: July 3, 1974

FROM : Wayne C. Hanson, H-8 Associate Group Leader WCH

SUBJECT : QUARTERLY PROGRESS REPORT FOR THE PERIOD APRIL-JUNE, 1974

SYMBOL : H8-74-238

0974 Report

RADIONUCLIDES IN LOS ALAMOS LIQUID WASTE DISPOSAL AREAS (F651) ENVIRONMENTAL INVENTORY

Field work on the LASL soil survey was begun by USDA-SCS personnel and much of the preliminary work in nonrestricted areas was completed. Restricted area surveys will depend upon receipt of security clearances of the personnel.

Eleven intensive mammal study sites in Acid-Pueblo, DP-Los Alamos, and Mortandad Canyons were selected and 25 m x 100 m grids were permanently marked at each site. Small mammal trapping was conducted through the entire series on a schedule of two days of prebaiting (traps locked open) followed by five consecutive days of trap-mark-release procedures. The animals were marked by a standard system of toe amputation. Predominant species at most sites included the piñon mouse Peromyscus truei, deer mouse P. maniculatus, western harvest mouse Reithrodontomys megalotis, and the least chipmunk Eutamias minimus. Selected specimens were collected for radionuclide analyses. Data are being analyzed for information on species composition, densities, sex ratios, reproductive performance, and estimates of home range. A bibliography of coyote and gray fox research was started and initial contacts were made with various researchers involved in carnivore studies throughout the United States. The feasibility of radiotelemetry studies on local carnivore populations is being investigated through consultant help from the Cedar Creek Biotelemetry Laboratory of the University of Minnesota. Similar techniques will probably be used in our northern Alaskan studies.

NATIONAL ENVIRONMENTAL RESEARCH PARK

No further progress was made, pending a response from the local LAAO-AEC officials.

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RADIATION ECOLOGY STUDIES

Radionuclides in Canyon Ecosystems

Nine intensive study sites in the three canyon ecosystems were selected on the basis of relative radionuclide concentrations determined at 39 sites over the past two years. About 600 soil samples and 100 vegetation samples were collected at these intensive sites during May and are being held until the exchange of laboratory and office spaces by analytical chemistry and Ecology Section personnel has been completed. Permanent weather recording equipment and fallout collectors were installed in the three canyons. A preliminary experiment was conducted to determine suitable sampling techniques for water-soluble plutonium in LASL soils.

Experiments were begun in Pu metabolism of rodents in Mortandad Canyon. Caged animals are being fed liquid waste effluent water to determine Pu accumulation patterns and rates. Studies of fish maintained in the Mortandad stream channel were initiated with great difficulty, due to complete mortality in the extremely toxic water.

Rio Grande River

The second series of fish and sediment samples were collected during May and are being held for processing when the new analytical chemistry facilities are available.

Trinity Site

Over 300 1973 Trinity soil samples were processed for Pu analyses, of which 110 were sent to Eberline for Pu determinations. Results are expected to be available early next quarter. Replicates will be processed through our own analytical chemistry procedures for comparative purposes.

General Activities

Revegetation of Area G solid waste disposal pits was studied in conjunction with U.S. Forest Service personnel from Santa Fe, consultant services of Dr. Elmer E. Remmenga of Colorado State University,

and several Environmental Studies personnel. About 200 soil samples were taken at various depths and locations within waste disposal pits in Areas C and G to determine levels of macro- and micro-nutrients in the soils. The U. S. Forest Service will recommend seed species and fertilizer amendments based on the soil analyses, and Dr. Remmenga will recommend study design criteria. Natural revegetation stages will be reconstructed by study of closed pits of known age.

ALASKAN INVESTIGATIONS (F210 and F211)

Discussions were held with Battelle-Northwest Ecosystems Department regarding cooperative radiation ecology studies in northern Alaska in the light of definite USAEC-DBER funding. Approval was obtained from the Alaskan Native Health Service and the Anaktuvuk Pass Village Council to continue and expand our studies of selected native populations.

Cooperative studies of the ecological impact of North Slope oil development with the University of Alaska Wildlife Research Unit were continually negotiated. Some redirection of the proposed program was undertaken following discussions in order to avoid duplication with other agencies. Personnel to service these programs were recruited and most are now in place.

Arrangements were begun to participate in a Danish expedition to northern Greenland to again evaluate the distribution of plutonium in the Thule region. Samples collected there will be used to describe Pu behavior in another arctic ecosystem, to compare with data obtained there in 1968, and to compare with distributions in other study sites.

OTHER ACTIVITIES

Environmental Consequences of Depleted Uranium Penetrators (R112)

Experiments were conducted in conjunction with H-5, H-8, and WX-2 Groups to determine aerosol generation and larger particle fragments that resulted from DU penetrators fired against armor plate targets. Results were summarized and presented in two LA-reports, one of which is completed and the other in press.

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Archaeological Salvage and Mapping of LASL Environs

Two sites were excavated by Charlie Steen to salvage materials endangered by LASL operations in Area G and at the Weapons Neutron Facility. The artifacts are now being cleaned, processed, and prepared for a report of the operation.

WCH:mar