

UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

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MEMORANDUM FOR:

Leland Rouse, Chief Fuel Cycle Safety Branch Division of Fuel Cycle, Medical, Academic & Commerical Use Safety, NMSS

John Surmeier, Chief Technical Branch Division of Low-Level Waste Management and Decommissioning, NMSS

FROM: Frank A. Costanzi, Chief Waste Management Branch Division of Engineering, RES

SUBJECT: TRANSMITTAL OF WEST VALLEY U.S.G.S. WATER-RESOURCES INVESTIGATIONS REPORTS 85-4308, 85 4309, and 85-4145

The Office of Nuclear Regulatory Research was requested by the Fuel Cycle Division of NMSS to conduct research studies at the West Valley site to examine the hydrologic pathways, and to determine the possibility of off-site releases via these defined pathways. The work was conducted by New York State (NYSGS) and the U.S. Geological Survey (U.S.G.S.) over a period of 5 years to examine the specific site geologic and hydrologic features. The U.S.G.S. hydrologists utilized both their own site study data (i.e. borehole logs) and the NYSGS geologists analyses. Earlier NYSGS reports were published as NUREG/CR's, and are listed and summarized in NUREG-1164.

Please find enclosed, the final reports from the RES-funded West Valley Research Program issued by the U.S.G.S. The first report, "Simulation of Ground-Water Flow Near the Nuclear-Fuel Reprocessing Facility at the Western New York Nuclear Service Center, Cattaragus County, New York", U.S.G.S. WRI 85-4308, describes: 1) hydrogeologic conditions and ground-water flow near the reprocessing plant and its supporting facilities on the "North Plateau", 2) the migration of radioisotopes in the vicinity of the reprocessing-plant facility area, 3) ground-water flow patterns on the "North Plateau" within the surficial sand and gravel deposits, 4) the development and calibration of a two-dimensional finite-difference model used to simulate steady- and transient-state flow within the surficial material, and 5) the application of the model to analyze past tritium migration and to predict flow paths and velocities of ground water from two potential sources of tritium detected in 1972.

The second report, "Surface-Waste Hydrology of the Western New York Nuclear Service Center, Cattaragus County, New York", U.S.G.S. WRI 85-4309, describes the relationships between precipitation and surface-water runoff at the burial ground and reprocessing-plant areas and includes analyses of streamflow and precipitation data, seepage measurements from springs, and estimates of evapotranspiration. Four appendixes present 1) precipitation records,

8711040321 871001 PDR ADOCK 05000201 PDR PDR 2) stream discharge at three gauged sites, 3) seepage discharge at 19 seeps along the edge of the reprocessing-plant area, and 4) water levels measured during 1982-23 period in wells around the reprocessing-plant area.

The third report, "Geohydrologic Conditions at the Nuclear Fuels Reprocessing Plant and Waste-Management Facilities at the Western New York Service Center, Cattaragus County, New York", U.S.G.S. WRI 85-4145, describes the hydrogeologic conditions at the fuel reprocessing plant and waste-management facilities. The geologic and hydrologic information presented was obtained largely from studies conducted since 1980, but data from previous investigations are also included. The report includes maps and several geologic cross sections that illustrate the stratigraphic relationships of the glacial deposits and the underlying bedrock and describes ground-water flow patterns and hydraulic properties of the sediments. It also includes: 1) descriptions of the surface-waterdrainage areas and characteristics, with results of inventories of ground-water seepage to the surface; 2) hydrologic information from wells and borings drilled during 1980-83, including locations and depths of wells, water levels, and general well-construction data; and 3) natural gamma and neutron-moisture logs of selected test holes.

In reviewing these three reports, we consider that the surface and ground-water flow pathways have been identified and investigated. The modeling of the ground-water pathway for ambient conditions (not incorporating the complexities of the previous burials and future post-closure scenarios) has been accomplished through the calibration phase, but has not been fully validated. The U.S.G.S. results provide a sound basis for additional technical studies (e.g. scenario modeling, design of field studies to identify travel times and mixing zones, and post-closure assessments) which should be combined with the ongoing DOE studies to fully resolve the future burial and/or storage issues, and site closure design.

These three reports should be reviewed with respect to the ongoing DOE West Valley Pilot Project for additional baseline data, and hydrologic analyses. The major observations and conclusions were previously printed in NUREG-1164, "Information of the Confinement Capability of the Facility Disposal Area at West Valley New York." If you would like a formal presentation of the report's contents or if you have any questions please call Thomas J. Micholson, Ext. 37672, the Project Manager.

Frank A. Costanzi, Chief/ Waste Management Branch RES

Enclosures: As stated

cc w/out encls:	R. Davis Hurt, FCSB, NMSS T. Clark, FCSB, NMSS L. Deering, LLTB, NMSS M. Weber, LLTB, NMSS J. Starmer, LLTB, NMSS
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