MEMORANDUM

TO: Ronald A. Kern, RCRA Technical Program Manager

FROM: Teri Davis, RCRA Technical Program

THROUGH: Lee Winn, RCRA Technical Program Supervisor

DATE: July 7, 1994

SUBJECT: **Technical Compliance Review of LANL's Business Plan for Ground Water Protection (March 31, 1994)**

General Comment

It is advised that EPA Region 6 be brought into this discussion as soon as possible to avoid any potential differences in approach to this complex subject.

Item	Comment
1	(Section 3, pg.2) An additional regulatory requirement to consider under the context of a GWPMP is within the HSWA, Section P.,Task III Part(A.)(1). The permittee shall conduct a program to evaluate hydrogeologic conditions at the facility. It has been determined by NMED that the existing ground water monitoring system is inadequate to sufficiently address the requirements under the HSWA module.
2	Another regulatory consideration is the requirements under RCRA ground-water monitoring requirements per regulated unit. An understanding of the uppermost aquifer (conceptual model) beneath a regulated unit is required in 40 CFR Parts [264, 265,and 270]. At present, individual zones of saturation beneath LANL have not been delineated and the hydrogeologic connection between these zones is not understood. A GWPMP could incorporate the needs of RCRA ground-water monitoring requirements to assure the required hydrogeologic information is available and adequate.
3	(Section D., pg.12) In general, clarification is needed to understand if this plan pertains only to DOE properties or if this approach will incoordinate all technical concerns regardless of property boundaries.
4	(Section D., pg.13,(3)(c). It is recommend that

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sampling frequencies be considered on a bi-annual basis.

The following comments refer to a recommended phased approach with items representing the order. Additional items from the subject document have been included. Items with the same number represent concurrent tasks to be conducted during that phase. When appropriate, activities list in the Business Plan are prioritized.

PHASE 1 - Develop and Implement Integrated Information and Archiving System

ITEM	Comment
1	Evaluate and assess the validity of existing hydrogeologic data.
2	(5)(a). Compile validated existing subsurface geologic and hydrogeologic information into common database.
3	(5)(b). Integrate databases with FIMAD
4	Conduct geophysical surveys across known or suspected fault-fracture zones to investigate the role fractures may play in the migration of aqueous fluids..
4	Complete site-wide geologic mapping to facilitate development of hydrogeologic model and to assist in siting of monitoring wells.
4	Identification of all springs on-site and near laboratory boundaries (Spring Inventory).
4	Evaluate water chemistry trends utilizing the validated integrated data within the various zones of saturation (alluvial aquifers, perched-intermediate aquifers, and main aquifer intervals) for indications of potential migration pathways.
5	Evaluate validated aquifer characterization data with respect towards siting initial phase monitoring wells as guided by water chemistry trend analysis.

PHASE II- Develop Integrated Ground Water Program for Technical Studies and Reporting

1 Delineation of occurrence and extent of saturated canyon ground water (seasonal saturation). For example, Ancho Canyon by State route 4, Canon de Valle by TA-16 Area P Landfill, etc.)

1 (4)(b). Determine recharge pathways into intermediate depth perched ground water.

high o Delineation of occurrence and extent of intermediate depth perched ground waters (perched ground water within Tuff recognized).

high o Recharge route from saturated canyon ground water.

med o Recharge from mesa tops surface waters. This topic might be divided into different components: 1) drainage run-off from mesa tops to canyon surface waters and 2) water balance budgets.

1 (4)(a). Determine recharge pathways into main aquifer.

high o Secondary route from perched-intermediate groundwater.

high o Secondary route from saturated canyon groundwater.

high o Develop understanding of mechanisms and processes for recharge through unsaturated zone. Agree that fracture transport should be understood as well understanding flux through the Cerro Toledo interval and other "underlying strata such as basalts" and vapor phase transport within the particular intervals within the Tuff. However, additional testing of hydraulic conductivity of

nonwelded ignimbrite may not yield as much needed information as it is already fairly known that these units of the Tuff have low hydraulic conductivities values and high matrix potentials.

med o Secondary route from mesa tops surface waters. This topic might be divided into different components: 1) drainage run-off from mesa tops to canyon surface waters and 2) water balance budgets.

low o Regional recharge route.

low o Recharge to main aquifer on regional basis.

1 Determine discharge of main aquifer and perched-intermediate aquifers.

1 Determine recharge for springs site-wide.

PHASE III- Develop Hydrogeologic Model.

1 Agree with all of these activities. These projects will most likely occur after portions of Phase II are complete or may occur concurrently.

low o Regional flow model for main aquifer.