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June 26, 1995

M. Diana Webb  
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DARHT EIS Project Manager  
528 35th Street  
Los Alamos, NM 87544

FU 2 501086

**RE: Review of Los Alamos National Laboratory's (LANL) Draft Environmental Impact Statement (EIS) for the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), Technical Area 15**

Dear M. Webb:

The DOE Oversight Bureau (DOE OB) has reviewed the subject document. The following comments are provided for the purpose of communicating the results of the DOE OB review. These comments are not provided or intended for the purpose of representing the regulatory position of the New Mexico Environment Department.

**DOE OB General Statement on the proposed completion of the DARHT facility**

DOE OB recommends and supports the "Enhanced Containment Alternative" (Section 3.7) for the proposed completion of the DARHT facility at TA-15. In addition to the obvious benefits of limiting releases to the environment and therefore being more protective of the public health and the environment, there are a number of specific issues elaborated on and listed in the comments below (i.e., perennial stream and spring flows, aquatic communities in the adjacent canyons and the presence of threatened and endangered species (TES)) which support our backing of this alternative. In addition, DOE OB does not feel that DOE has adequately demonstrated that this alternative would compromise the diagnostic capabilities of the proposed facility. One major question that should be addressed by DOE is: Why will it be necessary to conduct 25 percent of the tests in an uncontained mode? LANL is purportedly working on reusable containment vessels which can be used with higher explosive loadings and accommodate a full diagnostic suite. DOE OB feels that the 25 percent figure was not adequately justified. In summary, DOE OB recommends that the "Enhanced Containment Alternative" should be re-written as to fully mitigate environmental impacts by the DARHT facility.



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## GROUND-WATER AND SURFACE-WATER

1. Page 4-26, Section 4.4.1

**General Statement:** It should be noted that surface-waters discharged off-site (San Ildefonso Pueblo, Bandelier National Monument, Rio Grand River, etc.) via Pajarito and Los Alamos Canyons from 1992 to 1995. Pueblo and Acid Canyon surface waters may have flowed off-site; however, we have no direct evidence. Ancho Canyon surface waters may have connected with Ancho Spring and subsequently discharged off-site (Rio Grande River); however, we have no direct evidence.

2. Page 4-26, Section 4.4.1, Second paragraph, First sentence

**Comment:** Recent investigations conducted in 1994 and 1995 indicate that there is a perennial reach in Cañon de Valle. A total of three springs: Burning Ground (long 106 20 15; lat 35 50 56), SWSC (long 106 20 25; lat 35 51 02), and Peter (long 106 20 25; lat 35 51 02), contribute to perennial flow in Cañon de Valle whose total combined flow has been measured at the culvert below MDA P, ranging from 18 gpm (1-20-95) to 80 gpm (5-5-95). Visual observations have determined that Burning Ground and SWSC emanate at a relatively constant rate. On December 9, 1994, flow was encountered in Cañon de Valle approximately 0.8 miles up from the confluence of Water Canyon and Cañon de Valle. Flow continued some unknown distance down Water Canyon. More surveillance is needed to determine if flow in this reach is perennial.

3. Page 4-26, Section 4.4.1, Second paragraph, Second sentence

**Comment:** NPDES Outfall #05A056 discharges approximately 700 ft upgradient (southwest) from SWSC Line Spring. Should be noted that Material Disposal Areas (MDA) M is located near springs that contribute to perennial flow in Pajarito, and MDAs P and R are located near springs that contribute to perennial flow in Cañon de Valle. Solid Waste Management Unit (SWMU) 22-015(c), a former outfall and plating etching facility, is also located at the upper area of perennial flow in Pajarito Canyon.

4. Page 4-26, Section 4.4.1, Third paragraph, Third sentence

**Comment:** Recent investigations in Pajarito Canyon have shown that there are several (9) additional springs (4 perennial, 5 ephemeral) which feed a perennial reach in Starmers Gulch (tributary to Pajarito Canyon). This perennial flow joins with the flow from Homestead Spring (long 106 20 21; lat 35 51 31) for a combined discharge that ranges from 46 gpm (8-9-94) to 120 gpm (2-24-95) and extending for up to 3 miles downstream, near the confluence of Two Mile Canyon (depending on climatic conditions). The flow in this reach is supplemented by a smaller canyon, consisting of several perennial springs and seeps whose total combined flow has been measured to be 12 gpm to 15 gpm (2-10-95). This canyon joins Pajarito about 1/3 mile below the junction of Starmers Gulch and Pajarito Canyon.

5. Page 4-26, Section 4.4.1, Fourth paragraph, First sentence

Comment: Springs that supply perennial flow in Pajarito Canyon emanate from elevations that range from approximately 7,456 ft to 7,400 ft are: Charlies Spring (long 106 20 21; lat 35 51 31) located in southern tributary to Pajarito Canyon, Bulldog Spring (long 106 20 17; lat 35 51 24) located in a southern tributary to Pajarito Canyon. Springs that supply perennial flow in Cañon de Valle emanate from elevations that range from approximately 7,370 ft to 7,400 ft are: Burning Ground Spring, located in Cañon de Valle; SWSC and Peter Spring, also located in Canon de Valle.

6. Page 4-26, Section 4.4.2

General Statement: It should be noted that perched ground water in canyon alluvium and volcanics exist at the subject area. Little or no investigation has occurred.

7. Page 4-27, Section 4.4.2, Second paragraph, First sentence

Comment: Recent field surveillance indicates that a saturated perched zone within the canyon alluvium and an associated wetlands exists in the lower section of Threemile Canyon. The existence off a perched zone within the bandelier tuff and/or basalts beneath Threemile canyon has not been investigated.

8. Page 4-27, Section 4.4.2, Second paragraph, Second sentence

Comment: It should be noted that hydrologic characteristics of the "Discharge Sink" in Potrillo Canyon have not been determined.

9. Page 4-27, Section 4.4.2, Third paragraph

Comment: A total of three springs: Burning Ground, SWSC and Peter, contribute to perennial flow in Cañon de Valle, east of West Jemez Road, and the possibility of a perched zone within the canyon alluvium is probable.

10. Page 4-27, Section 4.4.2, Fourth paragraph, Fifth sentence

Comment: The thickness of the alluvium at Beta Hole and WCO-1 is 8 and 24 ft respectively. Hence, Beta Hole may have been drilled at an inappropriate location (i.e., side of canyon) for ground-water detection. Beta Hole was drilled for geologic information, not ground-water exploration (Purtymun, 1995). "Near saturation" conditions existed at a depth interval of 24 to 32 ft at observation well WCO-1 in October of 1989 (Purtymun, 1995). It appears that perched ground water does indeed exist in Water Canyon because two shallow wells, WCM-1 and WCM-2, were drilled due south of TA-15 and ground water was encountered (Purtymun, 1995).

11. Page 4-27, Section 4.4.2, Sixth paragraph, Sixth sentence

Comment: No direct evidence exists to support this statement. The usage of the word "may" or "could" may be more appropriate.

12. Page 4-30, Section 4.4.3, First paragraph: "Important contaminant transport mechanisms associated with surface water include:

\*Erosion and sedimentation (sediment and contaminant accumulation) of contaminated surface and near-surface materials

\*Infiltration of surface water that may be contaminated, or movement of water through a contaminated deposit that in turn carries contamination deeper into the soil/rock profile

\*Movement of contaminants in surface water as solutes, suspended sediments and bedload phases."

Comment: Though storm water monitoring stations at the PHERMEX site exist (station #'s SWO-15-184A, B, & C), no data is presented that characterizes the water quality resulting from storm water runoff resulting in the movement of contaminants as solutes, or suspended sediments from a facility with known contamination levels (approximately the same levels projected for the DARHT facility). PHERMEX storm water quality data, displaying the dissolved and suspended components, must be obtained and presented to verify that the model described in appendix E3 correctly simulates the transport of depleted uranium, beryllium and other heavy metals.

13. Page 4-30, Section 4.4.3, Fifth paragraph: "Surface water sampling station locations near TA-15 are presented in figure 4-14. The radiochemical, trace metals, and chemical quality analysis of samples taken at Pajarito Canyon, Water Canyon, and Ancho Canyon at the Rio Grande are listed in tables 4-6 and 4-7 (LANL 1994a)."

Comment: The surface water monitoring station for Water Canyon is located just below the junction of Water Canyon and Cañon de Valle. The data presented in Table 4-6 and 4-7 is representative of springs, NPDES outfalls and snowmelt runoff from watersheds upstream from the potential effects of PHERMEX and the proposed DARHT facilities. The data presented in table 4-6 is for dissolved constituents (filtered prior to analysis) and therefore does not include the suspended sediment component. This data does not adequately characterize the water quality of Water Canyon and does not assess contaminant contribution from the PHERMEX facility.

14. Page 4-30, Section 4.4.3, Fifth paragraph, Second sentence

Comment: It should be noted that Ancho Canyon surface-water data may actually be from Ancho Spring. Ancho Spring water is ground water, not surface water.

15. Page 4-33, Section 4.4.3, Tenth paragraph

Comment: It should be noted that isotopic data from LANL test wells are questionable due to the fact that the wells are not adequately grouted which could cause wellbore leakage. Hence, results may yield erroneous results. We question all analytical and aquifer data from these test wells.

16. Page 5-18, Section 5.1.11.1, First sentence: "Environmental monitoring currently performed at LANL would continue under the No Action Alternative. Existing stations for monitoring external penetrating radiation and radioactive and hazardous substances in air, water, soil, and sediment would be used to monitor the environmental impacts of the facility." This section is repeated for all alternatives.

\*Comment: Existing surface water monitoring stations are inadequate to assess the impacts of the existing PHERMEX facility (see comment 13). The Water Canyon surface water monitoring station needs to be located further down stream in Water Canyon to adequately assess all runoff Water and Cañon de Valle from the existing PHERMEX and the proposed DARHT facilities. Storm water monitoring stations at the PHERMEX site need to be monitored to verify that the surface water model adequately predicts contaminant transport from the existing facility. The construction of a new facility on LANL property (DARHT) may require a modification of LANL's general storm water permit. Mitigation measures (i.e., the installation of catchment basins) should be addressed in the EIS in order to prevent the transport of contaminants to Water Canyon, Cañon de Valle, and Potrillo Canyon and to monitor storm water runoff from these facilities.

#### **THREATENED AND ENDANGERED SPECIES**

17. Page 4-43, Section 4.5.4, First paragraph, First sentence: "Surveys conducted at TA-15 in 1992 (Risberg 1995) did not locate any currently listed threatened or endangered species (Table 4-12), although suitable habitat may exist for many of these."

Comment: The statement that suitable habitat may exist for TES species does not adequately address the location of suitable habitats, what surveys were conducted and according to what protocol. Recent investigations have determined the presence of suitable Mexican Spotted Owl habitat within approximately 1/4 mile of the proposed DARHT site.

18. \*Page 4, Section 3.1.2, Fourth paragraph in: Draft Biological and Floodplain/Wetland Assessment for the Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), Debra Risberg, February 1995, LAUR 95-649: "Results from initial modeling indicate three areas within Laboratory boundaries that could have potential owl habitat, one of them being an area near the junction of Water Canyon and Cañon de Valle. Because the model is based on topographic features, the nature of the forest stand is unaccounted for;

thus, this area would not be suitable for nesting spotted owls due to the extensive burn caused by the 1977 La Mesa Fire."

**Comment:** The model used to determine potential Mexican Spotted Owl habitat underestimates suitable owl habitat. Extensive field checking is required when this model is used. Recent field investigations have determined that suitable owl habitat exists in Cañon de Valle, Threemile Canyon and Pajarito Canyon. Ongoing Spotted Owl surveys (ESH-20) in these canyons indicate that at least one pair of Spotted Owls is present in the project area. Until the nest and/or roost area is located, all suitable habitat must be considered occupied.

**\*Note:** This comment is related to the Draft EIS for DARHT but refers to a different document referenced above.

19. Page 5-59, Section 5.8.1, Last sentence on page: "Disturbing wildlife as a result of blast noise from detonation of high explosives"

**Comment:** This addresses impacts due to uncontained tests. This would require seasonal restrictions (from March 1 - August 31), on uncontained tests, to prevent the disturbance of Mexican Spotted Owls during the mating/nesting season. These seasonal restrictions apply to noise due to construction as well as the blast noise from detonation of high explosives. This disturbance may result in the disruption of mating, or disrupted feeding of nestlings, resulting in reproductive failure of a pair of owls. Intensive studies should be initiated to determine the effects of current blast noise on nesting/roosting spotted owls and mitigation measures need to be addressed to prevent a takings issue.

20. Page 5-18, Section 5.1.11.1, First sentence: "Environmental monitoring currently performed at LANL would continue under the No Action Alternative. Existing stations for monitoring external penetrating radiation and radioactive and hazardous substances in air, water, soil, and sediment would be used to monitor the environmental impacts of the facility."

**Comment:** Additional studies, especially biological studies must be initiated to monitor the impacts of the proposed facility. Small mammal studies need to be initiated that will determine the current contamination levels present in prey that may be utilized by Mexican Spotted Owls. The impacts of feeding contaminated mice to nestling Spotted Owls must be evaluated to prevent a takings issue. Studies also should be initiated to determine the concentration of contaminants found in pellets found near Spotted Owl roost/nest sites.

21. Page 5-11, Section 5.1.5.4, First sentence: "It is unlikely that activities at PHERMEX would change the attractiveness of the area for potential use by threatened or endangered species. The concentration of depleted uranium and metals in foodstuffs of threatened and endangered species is expected to remain negligible. Ingestion of these substances is not expected to have any consequences to these populations."

Comment: See above comments. What studies of foodstuffs have been completed which allow these expectations to be stated?

22. Page 5-26, Section 5.2.5.1.2, Second paragraph: "Impacts upon wildlife would be caused by repetitive, short-term disturbances from site activities. However, these impacts would be insignificant to overall population levels."

Comment: Populations of TES species is not the issue, individual animals and the impacts upon each individual or their habitats need to be addressed.

23. Page 5-27, Section 5.2.5.4: "It is unlikely that completion of DARHT construction would change the attractiveness of the area for potential use by threatened or endangered species."

Comment: This statement needs qualification. Seasonal restrictions would need to be placed on construction for the protection of TES species.

#### AIR QUALITY AND HUMAN HEALTH

24. Page 3-21, Section 3.5.2, Sixth paragraph, First sentence

Comment: It is presumed that the limits established under the NESHAPS permit would not limit testing under the Enhanced Containment alternative. These limits apply to the release, not the use of depleted uranium.

25. Page 3-24, Section 3-7, First paragraph

Comment: The need for conducting 25 percent of the tests in an uncontained mode is not adequately justified. The only satisfactory explanation given is the need to conduct optical diagnosis. However, it is not clear whether the prototype containment vessel, stated to be able to accommodate a full suite of diagnostics, would accommodate laser/optical diagnosis.

26. Page 4-14, Section 4.2.5, Last paragraph: "Later in 1993, three air monitoring stations ... were added downward of the firing site for PHERMEX and DARHT. The monitoring stations are about 320 to 3,200 ft (100 to 1,000 m) northeast of the firing site. The samples collected at these stations are analyzed for isotopic uranium, isotopic plutonium, gross alpha, beta gamma, and beryllium (Jacobson 1995)."

Comment: The significance of these stations is unclear. No data is presented from these three stations, nor is there any reference to the possible future use of these stations for monitoring any of the operational alternatives presented. Since the soil around PHERMEX is contaminated as a result of previous experiments, it may be worth while to examine the possibility that these stations can detect the effects of soil resuspension

due to wind or construction activities in the vicinity.

**Comment:** Does the term "downward" mean down wind or down gradient? The samplers would be most effective if they are placed down wind of the prevailing daytime winds.

27. Page 4-69, Section 4.8.1.1, Third paragraph, Second sentence: "In 1992, the estimated maximum EDE resulting from LANL operations was 6.1 mrem, taking into account shielding by buildings (30 percent reduction) and occupancy (100 percent of residences, 25 percent for businesses)."

**Comment:** It should be noted that EPA Region 6 issued DOE a Notice of Noncompliance (NON) with the National Emissions Standards for Hazardous Air Pollutants (NESHAPS), 40 C.F.R. part 61, Subpart H, on November 23, 1992 for taking into account the shielding by building (30 percent reduction) in assessing the dose for 1990 LAMPF emissions. It is recommended that the shielding criteria not be used in dose calculations.

28. Page 4-70, Section 4.8.1.1, First paragraph

**Comment:** Comparison with the DOE 100 mrem/yr PDL is misleading when as is stated 95 percent of the dose is attributable to the airborne emissions from LAMPF. A more appropriate comparison would therefore be made to the EPA's 10 mrem standard for radionuclide air emissions.

29. Page 5-4, Table 5-1 "Impacts on Air Quality from Hydrodynamic Testing in the No Action Alternative"; Page 5-37, Table 5-12 "Impacts on Air Quality from Hydrodynamic Testing in the Enhanced Containment Alternative"

**Comment:** Intuitively, it is unclear why the values for beryllium, heavy metals, and lead are greater for the Enhanced Containment Alternative (Table 5-12) compared to the No Action Alternative (Table 5-1).

30. Page 5-50, Section 5.4.12

**Comment:** The range provided for the lessening of the required soil cleanup under the Enhanced Containment Alternative (25-90 percent) is too broad. This is an important component of the cost savings associated with the Enhanced Containment Alternative and should therefore be more accurately estimated.

31. Page 5-36, Section 5.4.2.1.2 "Operations"; Page C-4, Section C1.3 "Source Term"; and Page H-4, Section H2.2 "Atmospheric Release" :

**General Statement:** There are inconsistencies throughout the document regarding the elevation of pollutant release for the uncontained alternatives. On page 5-36, Section

5.4.2.1.2, first paragraph, the statement is made that the emissions for beryllium, heavy metals, and lead are higher for the Enhanced Containment Alternative compared to the other alternatives because the calculations are performed as a ground level release rather than as an elevated release. Page C-4, Section C1.3, states that pollutants were assumed to be released from a ground level point source with the exception of fugitive dust emissions during construction. Page H-4, Section H2.2, third paragraph, deals with determining the effective release height to be used in the GENII and MEPAS models. It is very unclear under which circumstances an elevated height release was assumed, and exactly how these assumptions affected the final outcome of the model calculations.

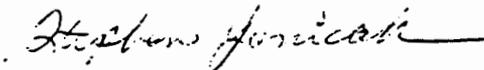
32. Page D-3, Section D.2, Second paragraph

Comment: The term "area-weighted integration" should be defined as it applies to this context.

DOE correspondence to NMED DOE OB comments on this document should be directed to John Parker at (505) 827- 4355.

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Sincerely,



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