Los Alamos Environmental Restoration Records Processing Facility

ER Record I.D.# 0008664

DEPARTMENT OF ENERGY
ALBUQUERQUE OPERATIONS OFFICE
ENVIRONMENT AND HEALTH DIVISION
ENVIRONMENTAL PROGRAMS BRANCH

COMPREHENSIVE ENVIRONMENTAL ASSESSMENT AND RESPONSE PROGRAM

PHASE I:
INSTALLATION ASSESSMENT
LOS ALAMOS NATIONAL LABORATORY

Volume 2 of 2

October 1987

DRAFT

14304

Los Alamos Environmental Restoration Records Processing Facility
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MDAs — T, M, Y, Z, AT; Dry wells; firing sites
TA16, TA21

DEPARTMENT OF ENERGY
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Sec. V. B

V.B. MATERIAL DISPOSAL AREAS

V.B.1. POTENTIAL SITES

Potential CERCLA sites identified during CEARP Phase I (the equivalent of DOE CERCLA Order Phase I) are presented in Table V.B.1. Additional detail for each potential CERCLA site is provided by material disposal area. The material disposal areas are identified in Figure V.B.1. Because of the overlap between potential CERCLA sites and RCRA sites (e.g., RCRA continuing release sites), both CERCLA and RCRA sites are included in the list of potential sites. The CEARP findings are based on a negative, positive, or uncertain finding for the following EPA CERCLA program elements: (1) Federal Facilities Site Discovery and Identification Findings (FFSDIF), and (2) Preliminary Assessments (PA), Site Inspections (SI) (SI in CEARP is a preliminary SI [PSI]), and Hazard Ranking System (HRS) evaluation. Most disposal areas are slated for CEARP Phase II investigations.

V.B.2. HAZARD RANKING SYSTEM (HRS) AND MODIFIED HAZARD RANKING SYSTEM (MHRS)

The HRS/MHRS Migration Mode Scores for the potential CERCLA sites are presented in Table V.B.1. Migration Mode Scores are calculated for those potential CERCLA sites with positive findings for the CERCLA FFSDIF, PA, and PSI (see Appendix B for scoring details). Sites receiving a score of 28.5 are included in the National Priorities List (NPL). All sites received scores substantially below 28.5.

V.B.3. PLANNED FUTURE ACTIONS FOR POTENTIAL CERCLA SITES

The planned future action for each potential CERCLA site is specified in Table V.B.1. Most of the material disposal areas are slated for Phase II investigation. The Phase II characterization plans for the material disposal areas will be included in their respective CEARP Phase IIA Monitoring Plans.

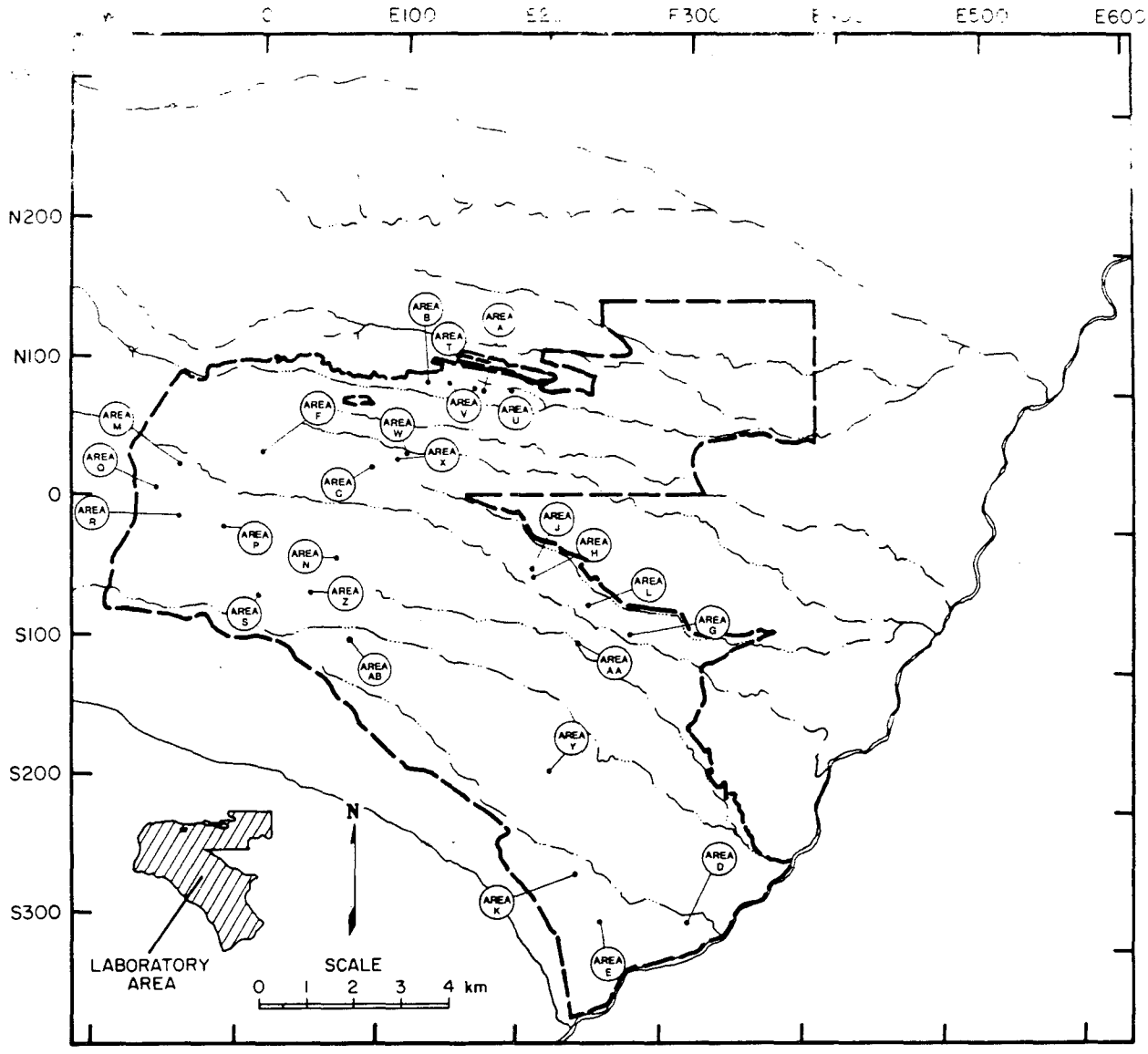


Figure V.B.1. Material disposal areas at Los Alamos National Laboratory.

Table V.B.1. Potential CERCLA Sites Identified During CEARP Phase I--Material Disposal Areas

Material Disposal Areas Site	DOE CEARP Phase I		Planned Future Action	
	FFSDIF/PA/PSI[a] Finding	HRS/MHRS Score[b]	EPA CERCLA Program Element	DOE CEARP/CERCLA Order Phase
Area A	Positive	13.8	None	Confirmation (Phase II)
Area B	Positive	14.8	None	Confirmation (Phase II)
Area C	Positive	17.4	None	Confirmation (Phase II)
Area D	Positive	7.1	None	Confirmation (Phase II)
Area E	Positive	6.9	None	Confirmation (Phase II)
Area F	Positive	1.6	None	Confirmation (Phase II)
Area G	Positive	20.4	None	Confirmation (Phase II)
Area H	Positive	14.9	None	Confirmation (Phase II)[c]
Area J	Positive	8.5	None	Confirmation (Phase II)
Area K	Positive	10.2	None	Confirmation (Phase II)

Table V.B.1. (continued)

Material Disposal Areas Site	DOE CEARP Phase I FFSDIF/PA/PSI[a] Finding	DOE CEARP Phase I HRS/MHRS Score[b]	Planned Future Action EPA CERCLA Program Element	Planned Future Action DOE CEARP/CERCLA Order Phase
Area L	Positive	19.3	None	Confirmation (Phase II)[c]
Area M	Positive	0.5	None	Confirmation (Phase II)
Area N	Positive	3.7	None	Confirmation (Phase II)
Area P	Positive	1.6	None	NA[d]
Area Q	Positive	2.1	None	Confirmation (Phase II)
Area R	Positive	2.1	None	Confirmation (Phase II)
Area S	Negative	NA	None	None
Area T	Positive	9.7	None	Confirmation (Phase II)
Area U	Positive	1.1	None	Confirmation (Phase II)
Area V	Positive	2.6	None	Confirmation (Phase II)

Table V.B.1. (continued)

Material Disposal Areas Site	DOE CEARP Phase I FFSDIF/PA/PSI[a] Finding	DOE CEARP Phase I HRS/MHRS Score[b]	Planned Future Action EPA CERCLA Program Element	Planned Future Action DOE CEARP/CERCLA Order Phase
Area W	Positive	NA	None	Compliance and Verification (Phase V)
Area X	Positive	7.7	None	Confirmation (Phase II)
Area Y	Positive	2.1	None	Confirmation (Phase (II)
Area Z	Uncertain	2.1	None	Confirmation (Phase II)
Area AA	Positive	10.1	None	Confirmation (Phase II)[c]
Area AB	Positive	6.7	None	Confirmation (Phase II)

TA-10 Shaft

[a]Federal Facilities Site Discovery and Identification Findings/Preliminary Assessments/Preliminary Site Inspections.
[b]EPA HRS and DOE-modified HRS (for HRS and MHRS scoring details see Appendix B).
[c]Disposal area contains both potential CERCLA and RCRA sites.
[d]Not Applicable.

MATERIAL DISPOSAL AREA A

DISCUSSION

Background--Inactive Material Disposal Area A, located at TA-21, consists of five pits and two storage tanks and is described in detail in Rogers (1977). The storage tanks are known as the "General's Tanks" after Maj. Gen. Leslie R. Groves, head of the Manhattan Engineering District during World War II. Waste solutions containing plutonium and americium were stored in these tanks with the hope that chemical recovery processes would improve so that the plutonium in them could be recovered. Liquids in the tanks were removed for processing in 1983. The tanks presently contain a few inches of semisolid precipitate (Balo and Warren 1983). There is some evidence that rainwater has been leaking into the tanks since the recovery operations.

Site stabilization was done in FY 1985 and included sealing and covering openings in the General's Tanks to prevent any further water entry, removing surface contamination, adding cover material, and recontouring and reseeding the area. The reseeding operation was largely unsuccessful.

Four small disposal pits are believed to contain solid waste contaminated with polonium (now decayed away), trace amounts of beta-gamma activity, and probably some trace amounts of long-lived alpha emitters (probably plutonium). These pits were used between 1944 and 1947. A larger pit, constructed in 1969, contains building debris from the decommissioning of several facilities at TA-21. This pit was covered over in May 1978 (Balo and Warren 1983).

Additionally, hundreds of drums of radioactive iodide waste were stored on the surface at Area A; some of the drums were leaky. The drums were hauled to TA-45 in 1960. Residual radioactive iodide would have decayed by now.

This site undergoes routine radiological monitoring sponsored by the Interim Waste Management Program (IWMP) of DOE's Office of Defense Waste and Transportation Management.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 13.8 (Appendix B). Area A was scored with Areas T and U because they are on the same mesa and share a common watershed.

Planned Future Actions--This site will be evaluated primarily for radiological constituents under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-A: Material Disposal Area A

REFERENCES

Balo, K. A., and J. L. Warren. 1983. "Waste Management Site Plan, Los Alamos National Laboratory, December 1983," Los Alamos National Laboratory report LA-UR-84-98, December 1983.

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.

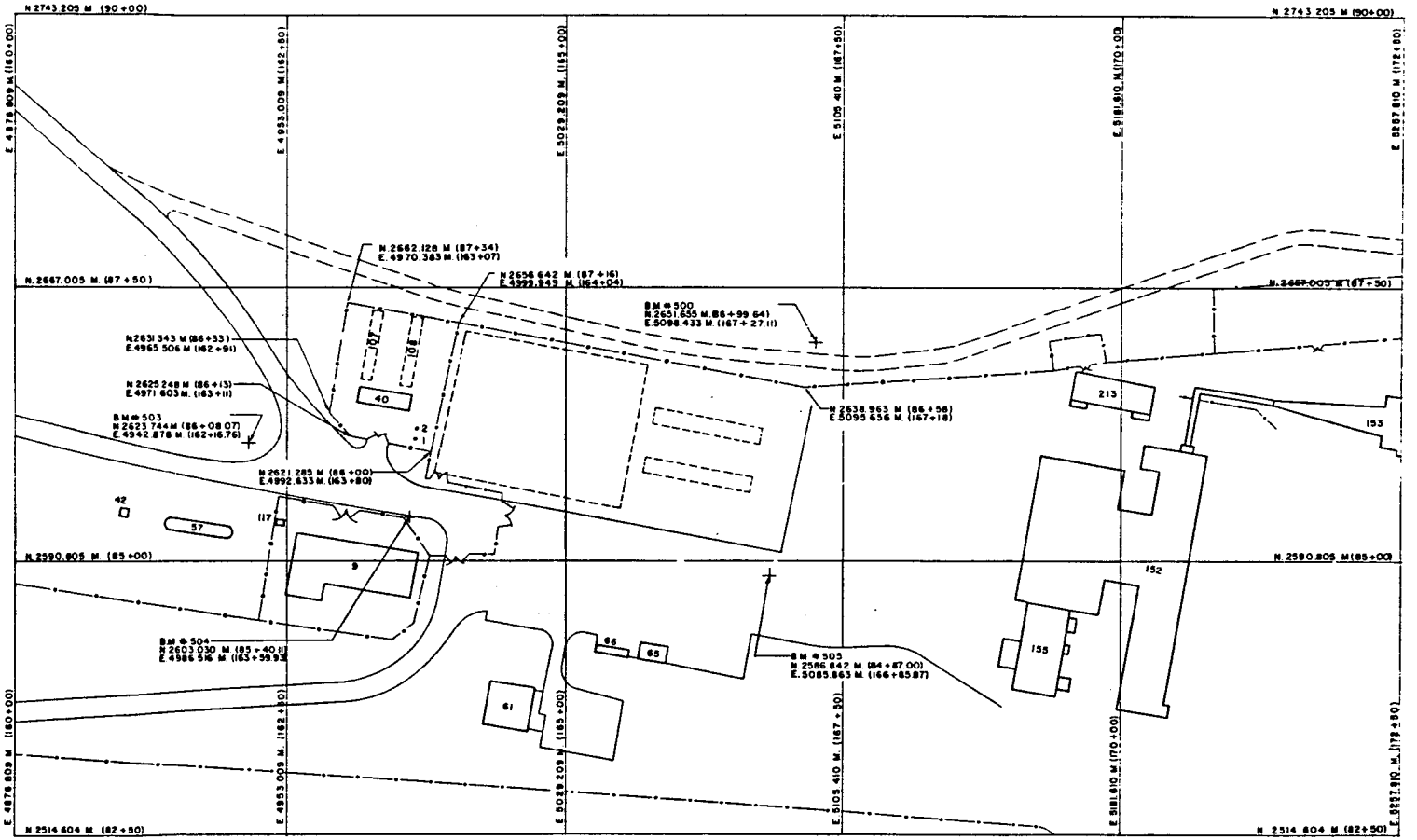
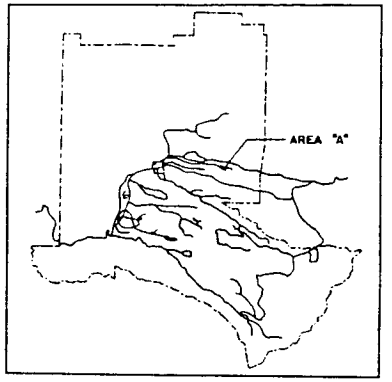
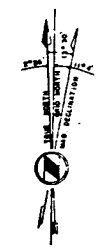
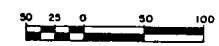


Figure MDA-A: Materials Disposal Area A



LOCATION PLAN





SCALE

1" = 50' (1:600)

NO	DATE	CLASS. REVIEW	REVISIONS	BY	CHKD	APPR	G.D.	ENG LDR	ENGR D.D.
1	3/24/76		REVISED TO STATUS AS OF 3/24/1976	RA					

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LOS ALAMOS SCIENTIFIC LABORATORY

ENGINEERING DEPARTMENT

UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION: U MDKoller TITLE: U

AUTHORIZED FOR: SECURITY, SAFETY, HEALTH, DIVISION, GROUP

MATERIALS DISPOSAL AREAS

AREA "A"

DP SITE TA - 21

SUBMITTED: PROJ. ENGR. — APPROVED: MDKoller ENGR. GROUP LEADER — APPROVED: ENGR. DEPT. OFFICE

CHECKED R J A — CA — RA — DATE 6-4-74 — SHEET OF

DESIGNED H A H — LAB JOB NUMBER 1757-0 — DRAWING NO. ENG-R 4457

DRAWN P FEUFER

MATERIAL DISPOSAL AREA B

DISCUSSION

Background--Inactive Material Disposal Area B is located south of DP Road near TA-21. With the information now available, the exact number of pits cannot be ascertained. One employee mentioned in an interview that Area B was basically one large pit. As more pit space was needed, the pit was enlarged at one end, and as it was filled, it was closed from the other end (Employee Interviews 1984). The wastes consist primarily of solids with various radioactive contaminants such as plutonium, polonium, uranium, americium, curium, and actinium. At least one truck contaminated with fission products from the Trinity test is buried there. At the east end, several small slit trenches were dug for chemical disposal. These trenches were 3 to 4 ft deep, 2 ft wide, and less than 40 ft long (Employee Interviews 1984). When chemical disposal was started at Area C, it was discontinued at Area B. Chemicals disposed of include old bottles of organics, perchlorates, ethers, solvents, etc. Lecture bottles of mixtures, spent chemicals, old chemicals, and corrosive gases may be in these trenches (Employee Interviews 1985). A section of the western portion of the site has been paved and the surface has been leased to Los Alamos County, which in turn rents parking spaces to store trailers, old cars, etc. Erosion on the south perimeter of Area B is a continuing problem.

A study of the area in 1966 by the U.S. Geological Survey (USGS) indicated possible lateral movement of water--probably from the pit. The amount of water moving through the tuff was well below the estimated effective porosity of the tuff. Radiochemical analyses of the soil and tuff from the 13 test holes around the perimeter showed no indication of radioactive contamination (Rogers 1977). Investigations of the eastern end of the site in the late 1970s showed plant root penetration of the waste and animal intrusion. The surface of the eastern portion of the site was extensively renovated in 1982 and replanted in 1984. All vegetation was removed and it was divided into two areas for treatment. The control was adding (from the top) a 6-in. layer of topsoil followed by 30 in. of crushed tuff with 6 in. of topsoil below that. Grass plugs (sand dropseed) and rabbit brush were then planted. The other treatment, starting from the top, was to spread 6 in. of topsoil, 18 in. of crushed tuff, and 2 ft of cobble (for a biobarrier) and 6 in. top soil on the bottom. Grass plugs and rabbit bush were also planted in the area. The effectiveness of this new trench cap is being studied by the LANL Environmental Science Group (HSE-12). This area is being monitored for radioactive transport under the IWMP.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 14.8 (Appendix B).

Planned Future Actions--This site will be evaluated for the radiological and nonradiological constituents under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-B: Material Disposal Area B

REFERENCES

Employee Interviews. 1984. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1984.

Employee Interviews. 1985. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1985.

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.

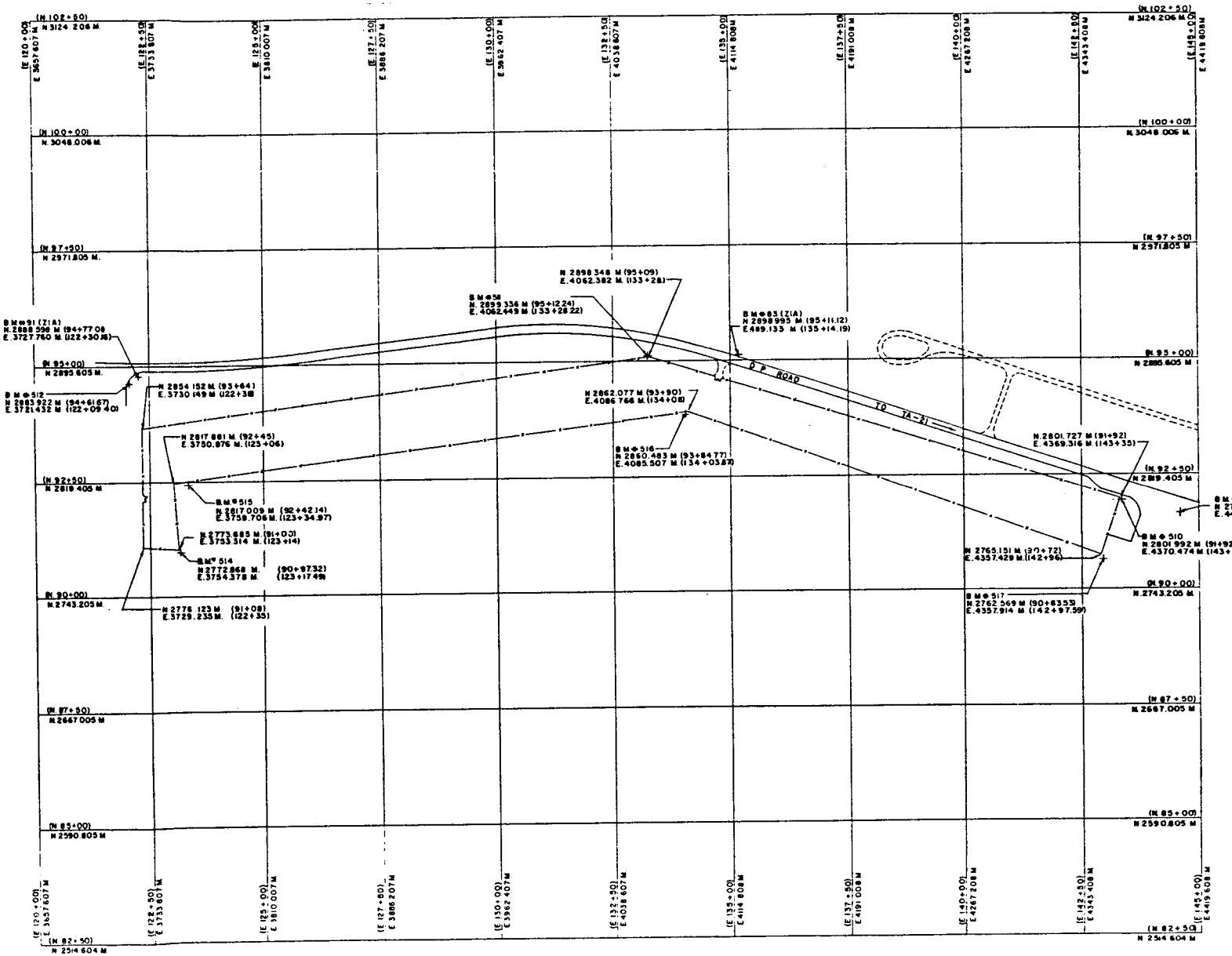
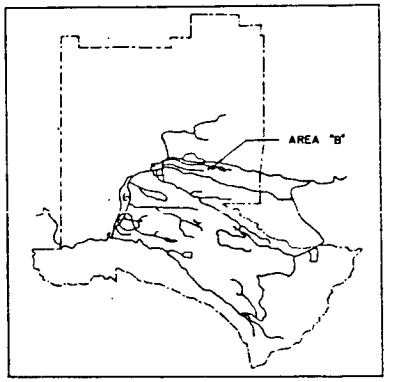


Figure MDA-B: Materials Disposal Area B



LOCATION PLAN

100 50 0 100 200

SCALE
1"=100' (1:1200)

NO.	DATE	CLASS. REVISED	REVISIONS	BY	CHKD	DRP	D.S.	CORP. ENG. LOC.

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY ENG-6 PHONE

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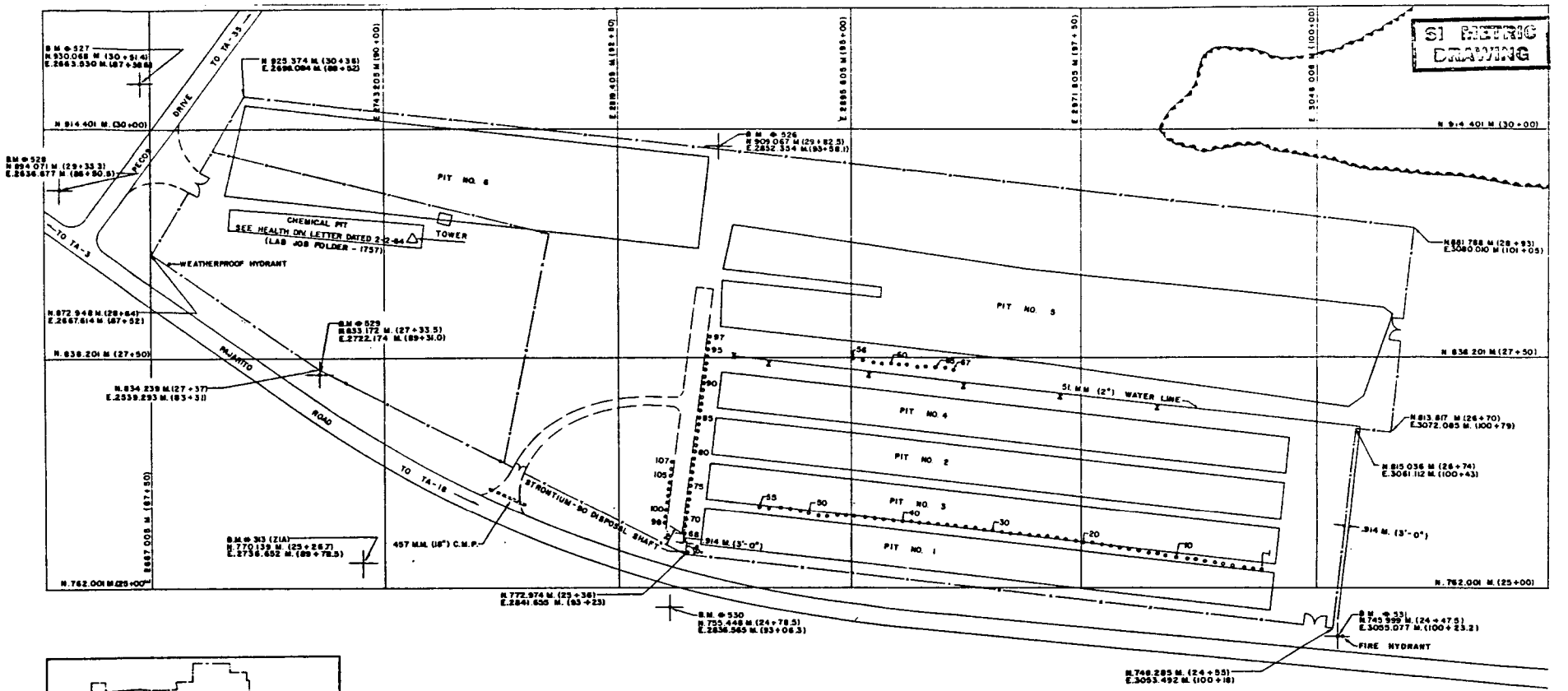
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

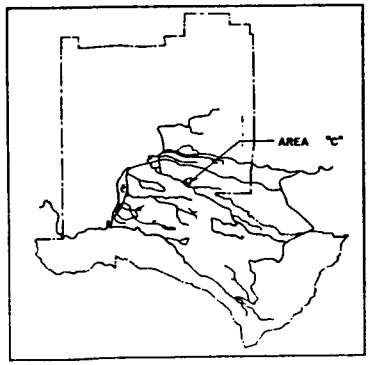
SUB. CLASSIFICATION: U TITLE U

AUTHORIZED FOR: SECURITY, SAFETY, HEALTH, DIVISION, GROUP

MATERIALS DISPOSAL AREAS
AREA "B"
DP ROAD TA-0

SUBMITTED	APPROVED	APPROVED
FROM L.H.E.R.	ENGR. GROUP LEADER	ENG'G DEPT. OFFICE
CHECKED R.J.A.	CA SA	DATE 6-4-74
DESIGNED H.A.H.		
DRAWN PFEUFER	LAB JOB NUMBER 1757-0	DRAWING NO. ENG-R 4458





LOCATION PLAN

Figure MDA-C: Materials Disposal Area C

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MATERIALS DISPOSAL AREAS
AREA "C"
PAJARITO ROAD TA-0

ENG-R 4459

MATERIAL DISPOSAL AREA D

DISCUSSION

Background--Inactive Material Disposal Area D is at TA-33 and is described in detail in Rogers 1977. Basically, there are two 6- by 8-ft concrete-lined shafts that are 46 ft deep. At the bottom of each shaft is an octagonal room to one side. The rooms were used for tests on weapon components. The principal contaminant was polonium-210, but beryllium may also have been used, probably in small amounts. Shaft one was used once on April 14, 1948. Shaft two was used twice--on December 23, 1948, and April 15, 1952. The April 1952 test used 600 mCi of polonium-210, which has a half-life of 138.4 days and decays by alpha emission to stable lead-206. In the ensuing 34 years since that test, the polonium has undergone 90 half-lives of decay. In seven half-lives, the decay rate is less than 1% of the original activity. Because an additional 83 half-lives have occurred, there is no more polonium in Area D.

CERCLA Findings--Positve for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 7.1 (Appendix B).

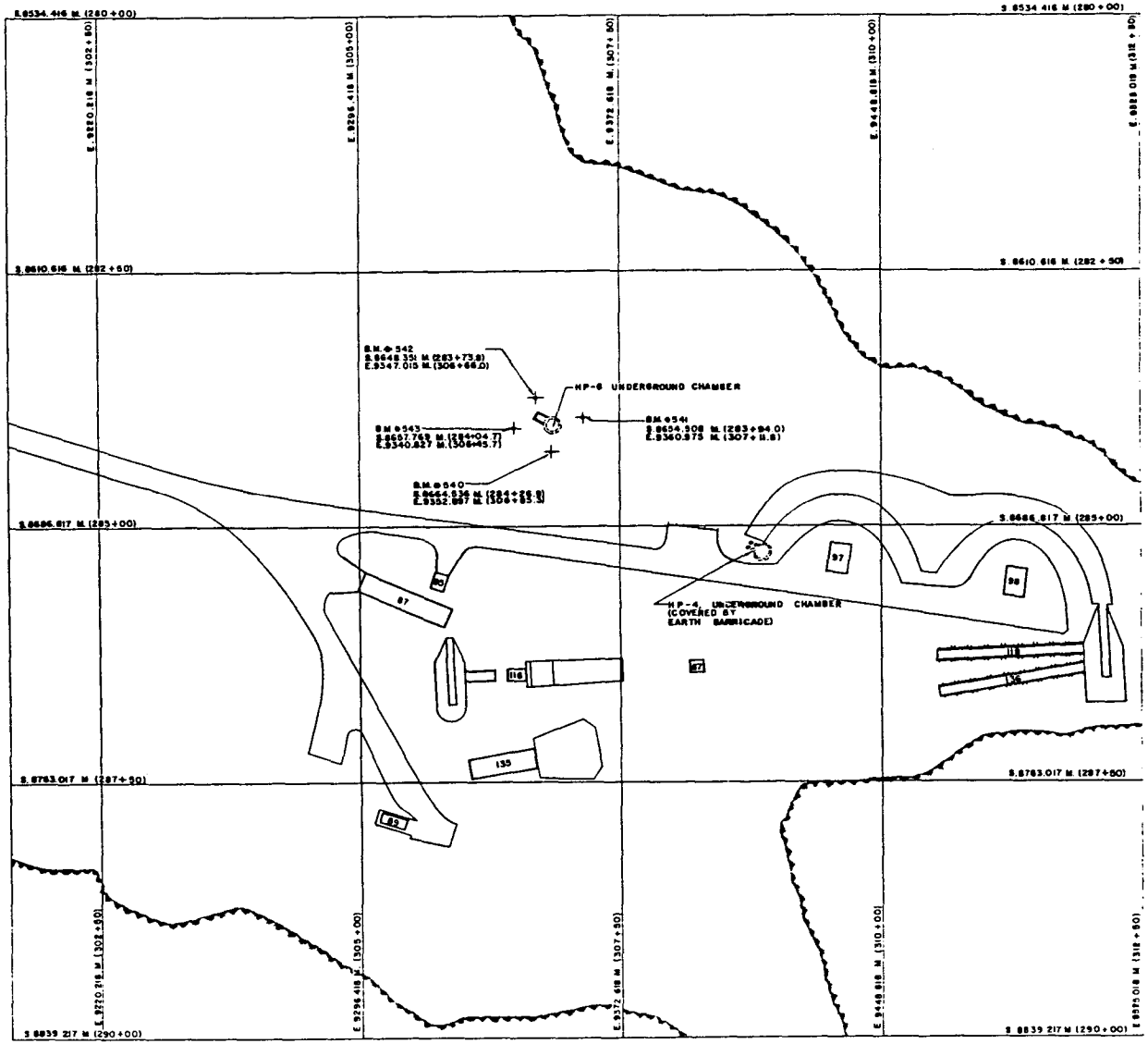
Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

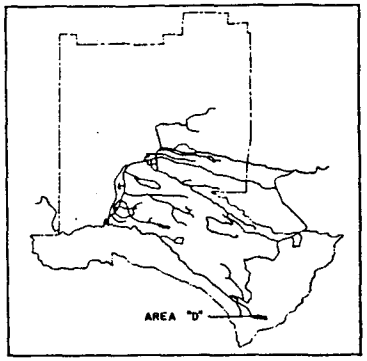
FIGURE

Figure MDA-D: Material Disposal Area D

REFERENCE

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.





LOCATION PLAN

SCALE
1" = 50' (1:600)

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UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "D"
HP SITE
TA - 33

ENG- R 4460

Figure MDA-D: Materials Disposal Area D

MATERIAL DISPOSAL AREA E

DISCUSSION

Background--Inactive Material Disposal Area E is located at TA-33. Although its history is not well known, it probably contains solid waste contaminated with polonium-210 (now decayed away) and uranium. One note indicates one pit contains a can of beryllium dust immersed in kerosene (Rogers 1977). Drawings indicate six pits and one test shaft; however, it is not known whether all pits were used. The shaft was used for a weapons component test and contained only polonium-210 and beryllium as contaminants. The polonium-210 would be decayed by now and the beryllium is probably in small quantities. Subsidence has occurred around the shaft.

With the possibility that a pit was not included in the drawings for Area E or within the fence line of Area E, how well the presently known pits are documented can be questioned.

Area E is being monitored for radioactivity under the IWMP. Monitoring showed some tritium in soil moisture that was above background levels.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 6.9 (Appendix B).

Planned Future Actions--This site will be evaluated for hazardous constituents under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-E: Material Disposal Area E

REFERENCE

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.

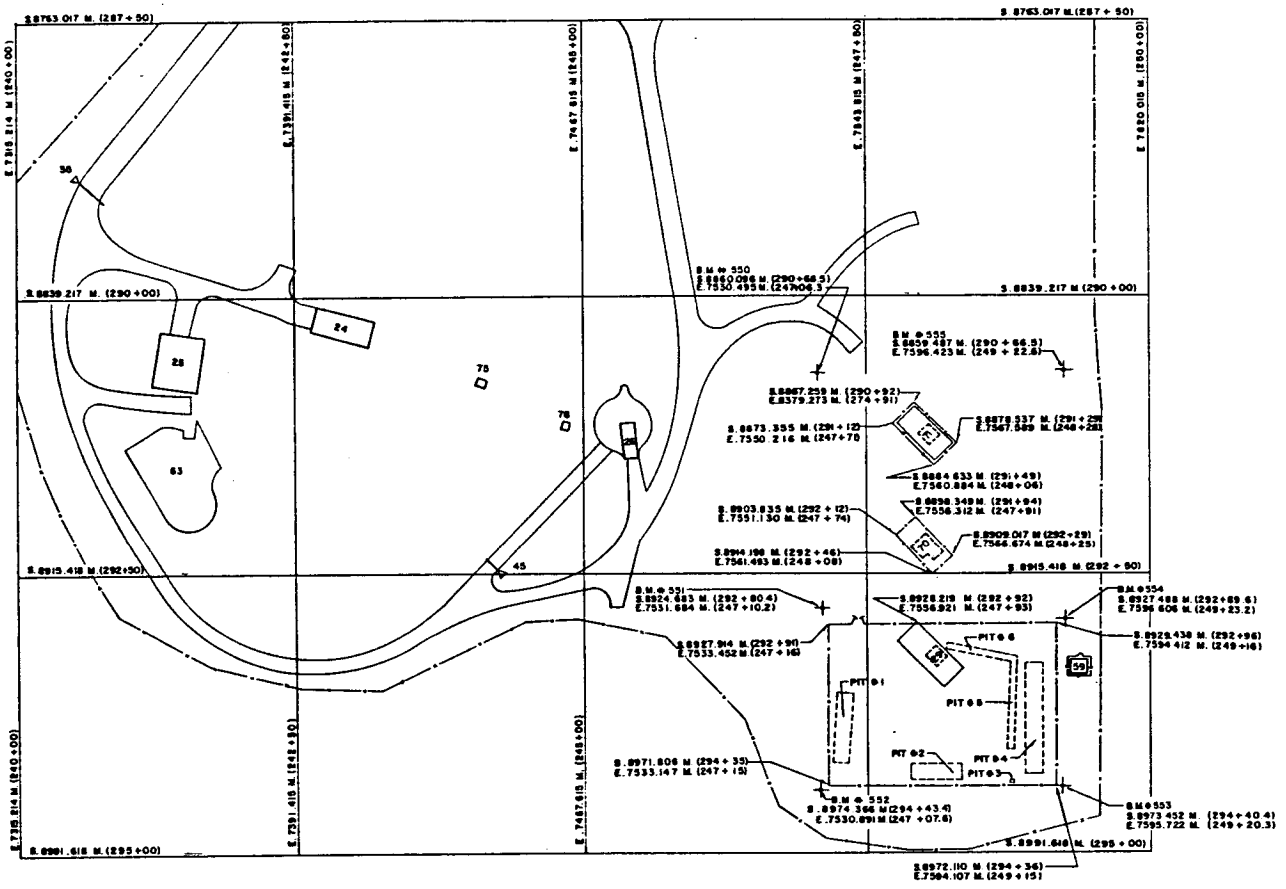
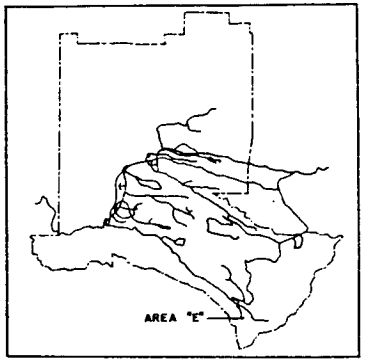
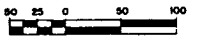


Figure MDA-E: Materials Disposal Area E



LOCATION PLAN



SCALE

(1" = 50') 1:600

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ENGINEERING DEPARTMENT

UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS

AREA "E"

HP SITE TA - 33

DRAWN PFEUFER

ENG-R 4461

MATERIAL DISPOSAL AREA F

DISCUSSION

Background--Inactive Material Disposal Area F is located on Two-Mile Mesa near TA-6. Maps indicate two pits, but the maps may not accurately reflect field conditions. Area F was opened in 1946 for disposal of unsalvageable classified objects--particularly those that would be too difficult to cut up or otherwise destroy. One individual recalled a large number of large metal parts and some depleted uranium (less than 5 lbs). One group put some blocks of high explosive and primacord in the pit, but at one side. Another individual recalled the large pit was used for casings and handling equipment of the Fatman unit (the plutonium implosion weapon) and metal parts from other groups at the Laboratory. The small pit is reported to contain firing gap units that contained small amounts of cesium-137 and small detonators with squibs, both of which would be hazardous to disturb (Courtright 1964).

It is not likely that great deal of hazardous material was disposed of in Area F, other than the high explosive buried there. Because the type of high explosive is not known, it is difficult to predict its present state. Some types biodegrade rather rapidly and others persist for quite some time. Also, the possibility exists that several small pits near Area F were used for the disposal of nonhazardous classified material.

Area F is behind a security fence and is monitored for radioactivity under the IWMP. Surface stabilization, using research and development-based technology, was completed at this site in FY 1986.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 1.6 (Appendix B).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-F: Material Disposal Area F

REFERENCE

Courtright, W. C. 1964. "Burial of Large Navy Guns and Ammunition," Los Alamos Scientific Laboratory memorandum to H-3 file, December 10, 1964.

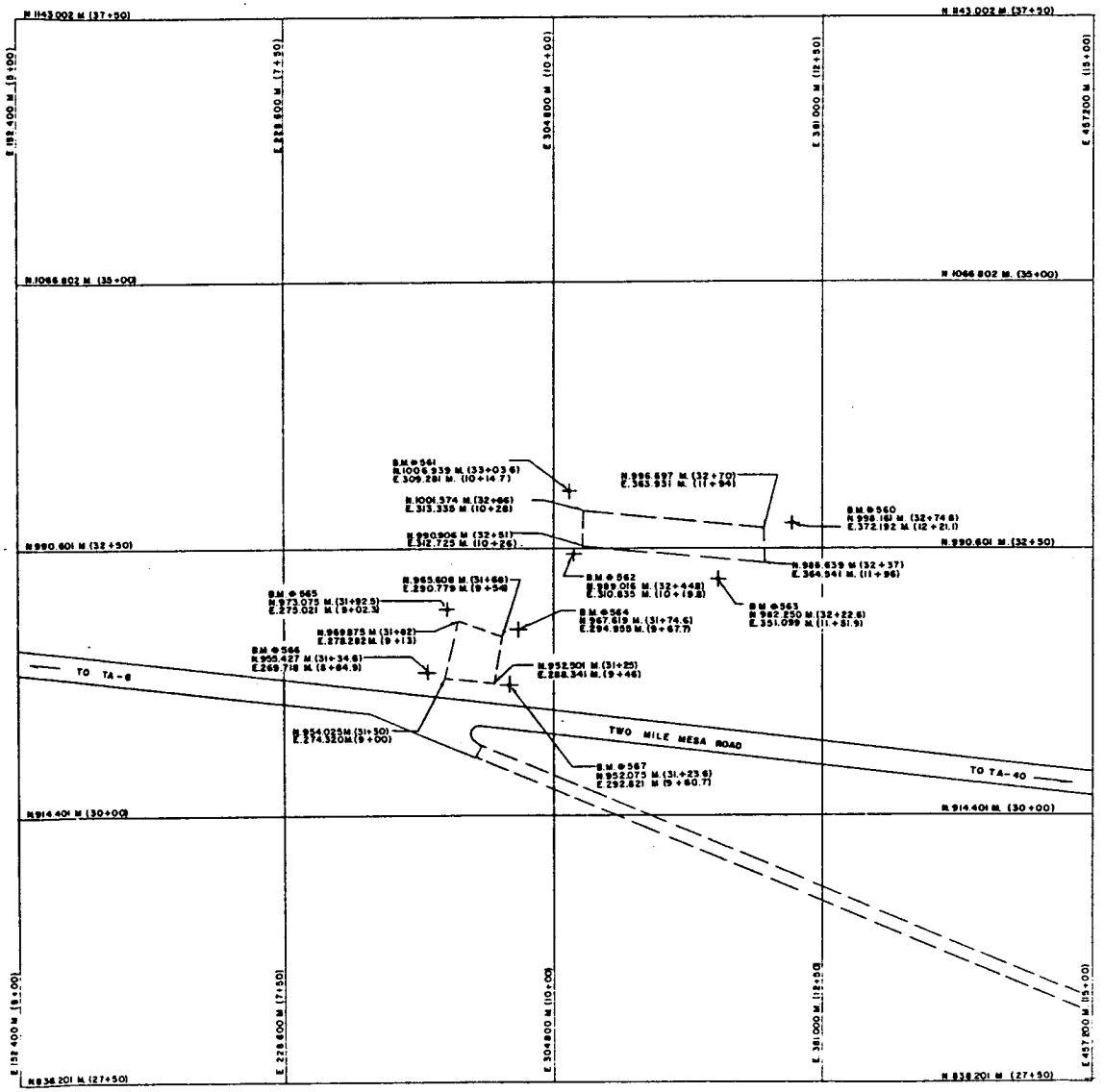
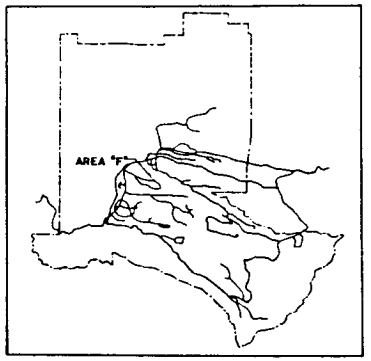
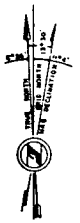
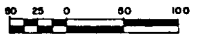


Figure MDA-F: Materials Disposal Area F



LOCATION PLAN





SCALE
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NO.	DATE	CLASS. (STAFF)	REVISIONS	BY	CHKD.	SUP.	D.A.	APPR. LAB.

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UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION: U M D Lilly TITLE U

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SECURITY
SAFETY
HEALTH
DIVISION
GROUP

MATERIALS DISPOSAL AREAS
AREA "F"
TM SITE TA-6

SUBMITTED	APPROVED	APPROVED
Kenneth C. Rich	M D Lilly	
PROJ. ENGR.	ENGR. GROUP LEADER	CHIEF, DEPT. OFFICE
CHECKED ALARID	CA	BA
DRAWN H.A.M.	LAB JOB NUMBER	DRAWING NO.
PFEUFER	1757-0	ENG-R 4462

DATE 6-4-74 SHT. OF

MATERIAL DISPOSAL AREA C

DISCUSSION

Background--The 11.8-acre inactive Material Disposal Area C is located on the north side of Pajarito Road adjacent to TA-50. It was opened in 1948 and is composed of six radioactive waste pits, a chemical pit, and 107 numbered shafts (Rogers 1977). Pit disposal ended in 1964 and shaft disposal ended in 1969 (Department of Energy 1979). Studies in the late 1970s indicated animal intrusion into the waste and other problems. The surface was improved in 1984 by adding soil cover (depths $\geq$ 6 in. with average cover approximately 2 ft), recontouring, and seeding with native grasses.

The types of radioactively contaminated waste buried at Area C include building debris from the demolition of TA-1 and TA-10, routine contaminated trash, sludge from waste treatment plants, and depleted uranium chips (Rogers 1977). Plutonium-contaminated sodium loops from TA-35 were buried in shafts (Enders 1964). Noncombustible waste was put in the west end of pit 5 in 1957 (Meyer 1957).

About the chemical pit (pit 6), one reference states, "A variety of chemicals, pyrophoric metals, hydrides and powders, sealed vessels containing sodium-potassium alloy or compressed gases, and equipment not suitable for salvage, public dump or the contaminated dump have been placed in the pit. No high explosives have ever been put in this pit. Normal uranium powders and hydrides have been disposed of in this pit. Inadvertently some plutonium-contaminated objects were placed in the pit. . . . Because of the uranium disposal it should be assumed that the pit is mildly alpha contaminated" (Stearns 1964a). It was mentioned that before the closing out of Area C, the safety office would "place approximately 200 gas cylinders which are full or partially full in this dump then cover the cylinders with approximately 10 ft of compacted fill. . . . Any exploratory drilling must not be permitted and this disposal area should be clearly defined on drawings" (Stearns 1964b). Some full nickel carbonyl cylinders (lecture bottles--approximately 1 lb) may have also been put in the chemical pit. (This was the recommended procedure because it was felt the nickel carbonyl would corrode the bottles and develop pinhole leaks through which the contents could slowly be released [Employee Interviews 1984].) Carboys of di- or triethylbenzene from the whole-body counter at TA-43 were deposited on the ground where the present solar panels are located (Employee Interviews 1984).

A new surface cover, applied to the easten half and extreme western end of the site in 1984, consisted of the addition of 0.15 m of topsoil over 0.5 m of crushed tuff, slope recontouring, and seeding of the cover with native grasses. The new cover was not applied to the extreme northeast corner of Area C because this area does not include any of the waste trenches. A very heavy cover of white and yellow clover has invaded the site.

Area C is being monitored for radioactivity under the IWMP.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 17.4 (Appendix B).

Planned Future Actions--This site will be evaluated for radiological and nonradiological constituents under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-C: Material Disposal Area C

REFERENCES

Department of Energy. 1979. "Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site," Department of Energy report DOE/EIS-0018, December 1979.

Employee Interviews. 1984. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1984.

Enders, J. W. 1964. "Disposal of Plutonium Contaminated Sodium Loops from Ten Site," Los Alamos Scientific Laboratory memorandum, August 7, 1964.

Meyer, D. D. 1957. "Dumps for Contaminated Waste," Los Alamos Scientific Laboratory memorandum, September 12, 1957.

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.

Stearns, J. G. 1964a. "Closing Out of the Hazardous Chemical Pit, Area C, Pajarito and Pecos Road Intersection," Los Alamos Scientific Laboratory memorandum, May 22, 1964.

Stearns, J. G. 1964b. "Future Land Use Control-Chemical Disposal Area, Pajarito Road and Ten-Site Road Intersection," Los Alamos Scientific Laboratory memorandum, February 12, 1964. See also J. H. Abrahams, "Physical Properties and Movement of Water in the Bandelier Tuff, Los Alamos and Santa Fe Counties, New Mexico," U.S. Geological Survey open file report (1963).

DISCUSSION

Background--Area G is located at TA-54 and is the main active radioactive solid waste burial/storage site at the Laboratory. Before Area G was established, geological surveys were made by the USGS; recommendations from these surveys led to its establishment. The area has been in use since 1957 and is expected to remain active through the foreseeable future to dispose of low-level waste. In FY 1977, the active portion of the site was expanded to 63 acres, and future expansions are planned. One hundred acres at TA-54 have been dedicated to waste disposal. Burial/storage facilities within the area include pits, shafts, trenches, and pads, all of varying dimensions. Although early disposals did not have recorded details on curie contents, the isotopic composition was noted. Current practice calls for maintaining detailed information on all aspects of the waste. Since 1971, solid waste contaminated with transuranic (TRU) radionuclides at activity levels >10 nCi/g of waste (>100 nCi/g for plutonium-238) has been stored and made retrievable for possible transport to a repository. The limit for all forms of retrievable TRU waste was changed to >100 nCi/g in 1983. In addition to TRU waste, the main radioactive wastes are uranium, strontium-90, cobalt-60, tritium, fission products, and induced activity. For several years during the 1970s, plutonium and uranium wastes were segregated into separate pits. Additionally, asbestos wastes and materials contaminated with PCBs are still placed in Area G.

Environmental studies have been conducted at Area G since about 1970 (Rogers 1977, Mayfield 1983). They include extensive moisture measurements, vertical and horizontal drill holes, air sampling, surface sampling, and direct radiation measurements. Results generally indicate that tritium is diffusing slowly away from its disposal location, that there is some surface contamination, and that this surface contamination causes somewhat elevated local air concentration for plutonium-239. Sediment sampling stations in the vicinity of Area G indicate some transport of plutonium-238 and plutonium-239 surface contamination. In 1984 the maximum plutonium-238 and plutonium-239 concentrations were 0.73 and 0.44 pCi/g, respectively, in stream channel sediments (Environmental Surveillance Group 1985). These values, and the tritium values, are well below any present or proposed environmental standards for these radionuclides.

Area G has stopped receiving RCRA chemical waste under interim status. It will continue to receive radioactive waste. Mixed waste is not being disposed of at Area G but is presently being stored at Area L. Area G has been used for disposal of classified waste contaminated with radioactivity and is still used for that purpose.

DOE has applied for an interim-status groundwater waiver in compliance with RCRA. In response to the application, the New Mexico EID issued a compliance order that required DOE to complete a vadose zone characterization program. DOE submitted the final report on the vadose zone characterization to the EID during March 1987.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 20.4 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area G are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-G: Material Disposal Area G

REFERENCES

Environmental Surveillance Group, LANL. 1985. "Environmental Surveillance at Los Alamos During 1984," Los Alamos National Laboratory report LA-10421-ENV, April 1985.

Mayfield, D. L. 1983. "Radiological Conditions at TA-35 Former Area W," Los Alamos National Laboratory memorandum to W. R. Hanson, December 14, 1983.

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.

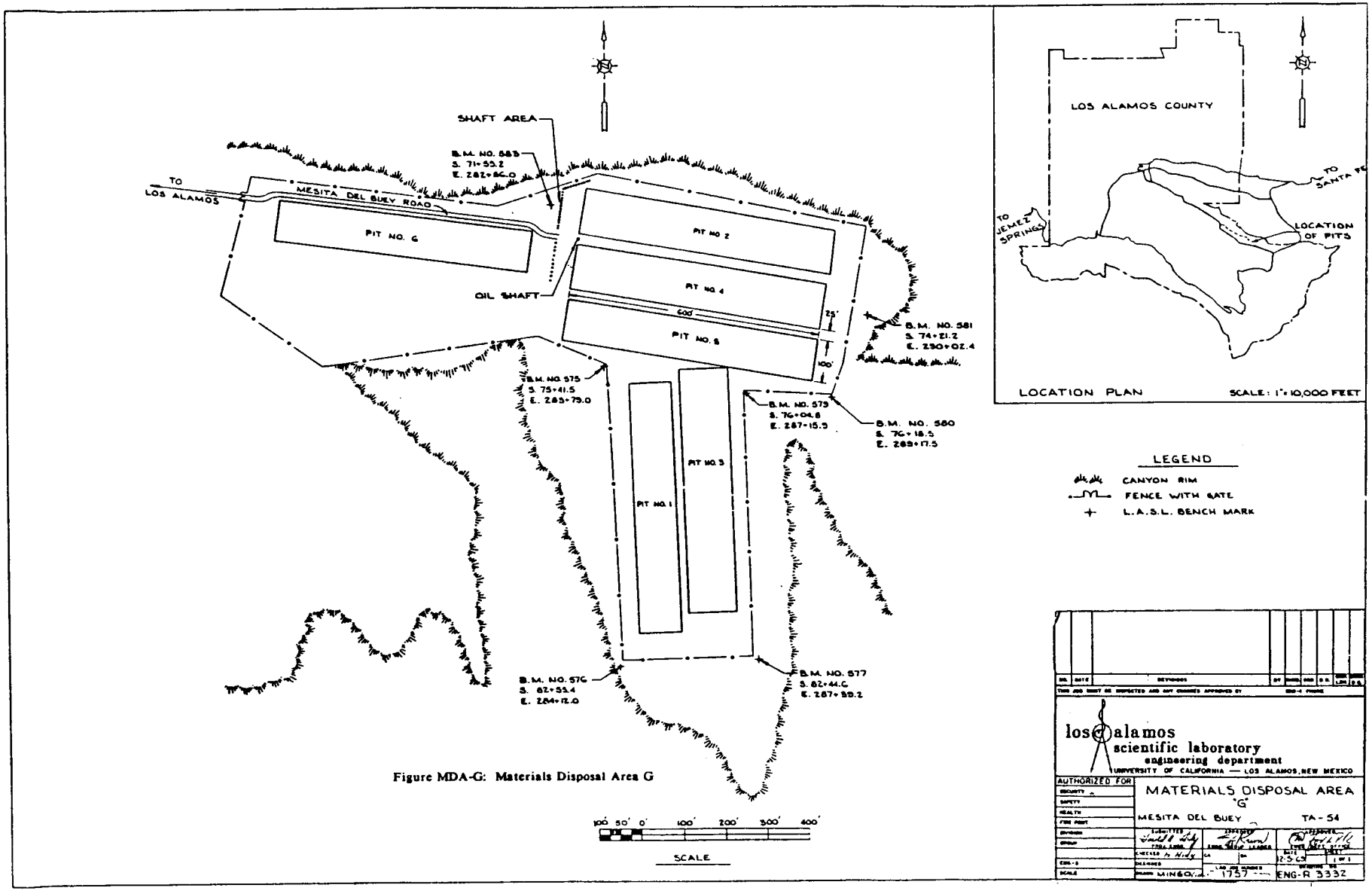


Figure MDA-G: Materials Disposal Area G

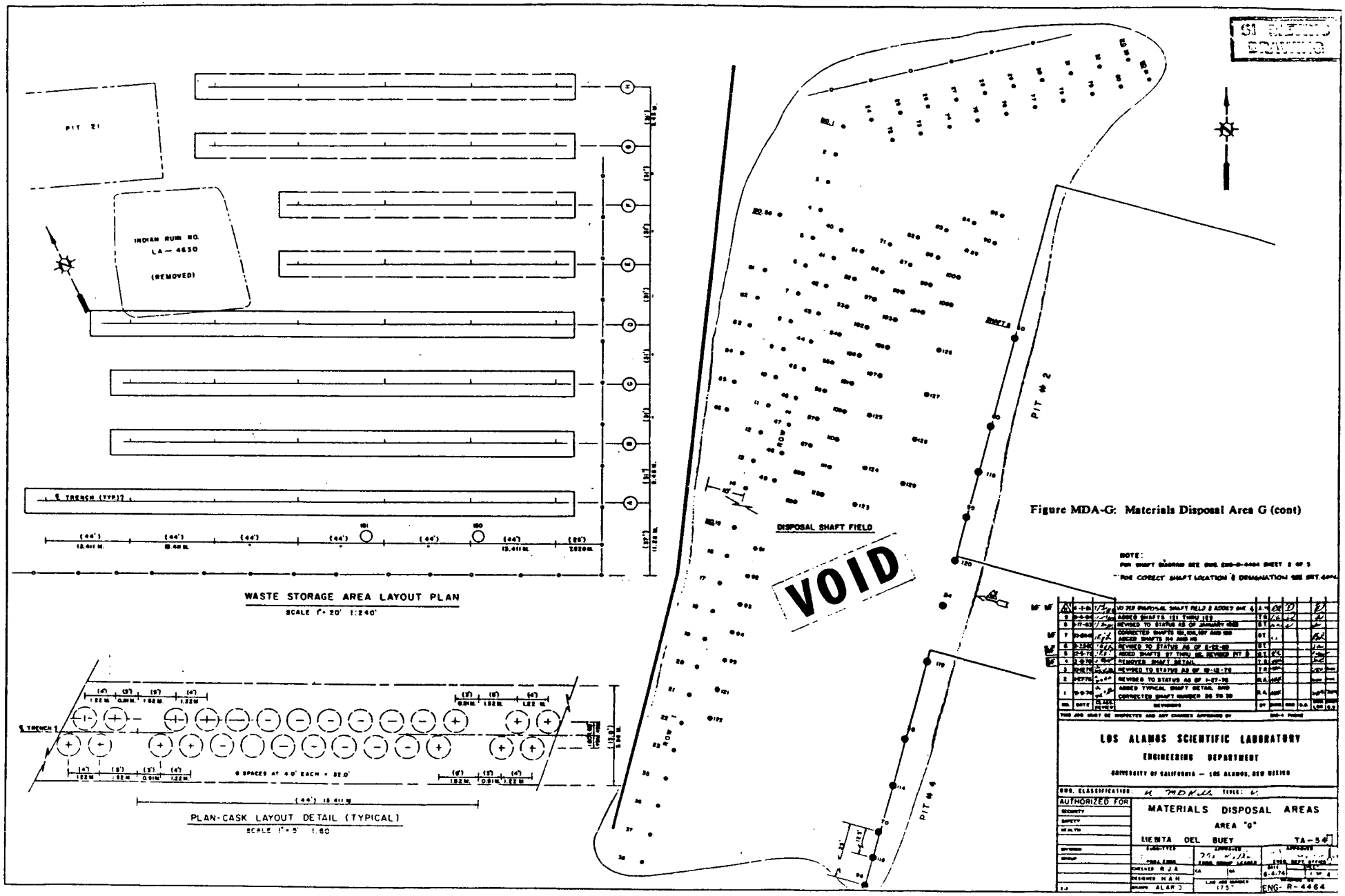


Figure MDA-G: Materials Disposal Area G (cont)

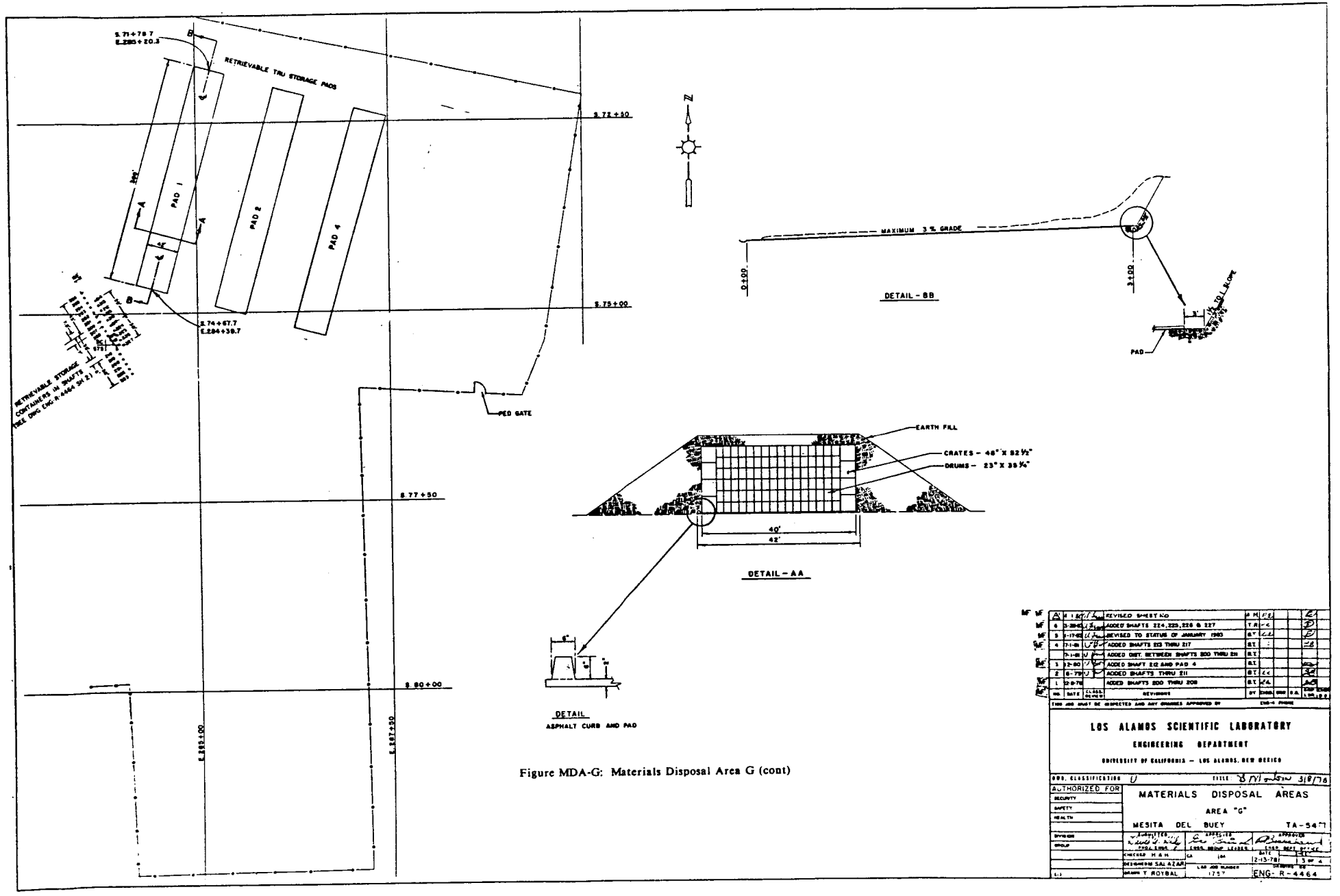


Figure MDA-G: Materials Disposal Area G (cont)

MATERIAL DISPOSAL AREA H

DISCUSSION

Background--Area H, which consists of nine shafts 6-ft in diameter that are up to 60 ft deep, was built between 1959 and 1963 at TA-54 for disposal of uncontaminated material. Additionally, it appears that some radioactive material was placed in this area because trace-level tritium contamination was detected in subsurface samples taken near one of the shafts. It is known that parts contaminated with or containing depleted uranium have been placed in Area H and there is a possibility that some transuranic-contaminated parts were also put into Area H in shafts 1-8, which were used from May 3, 1960, to December 12, 1979. Log book notes indicate beryllium, lithium, and items contaminated with high explosives are buried in shafts 1-8. The shafts were apparently capped with soil to an unknown depth.

Shaft 9, which is still being used, was first used on July 3, 1980. Two containers containing 15 lbs of lithium hydride in solid form were put into this shaft in 1981. Other material disposed of includes beryllium, magnesium, depleted uranium, and various foams.

No radioactive or RCRA waste has been placed in shaft 9 since November 1984. A closure plan was submitted for Area H under RCRA regulations.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 14.9 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area H are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-H: Material Disposal Area H

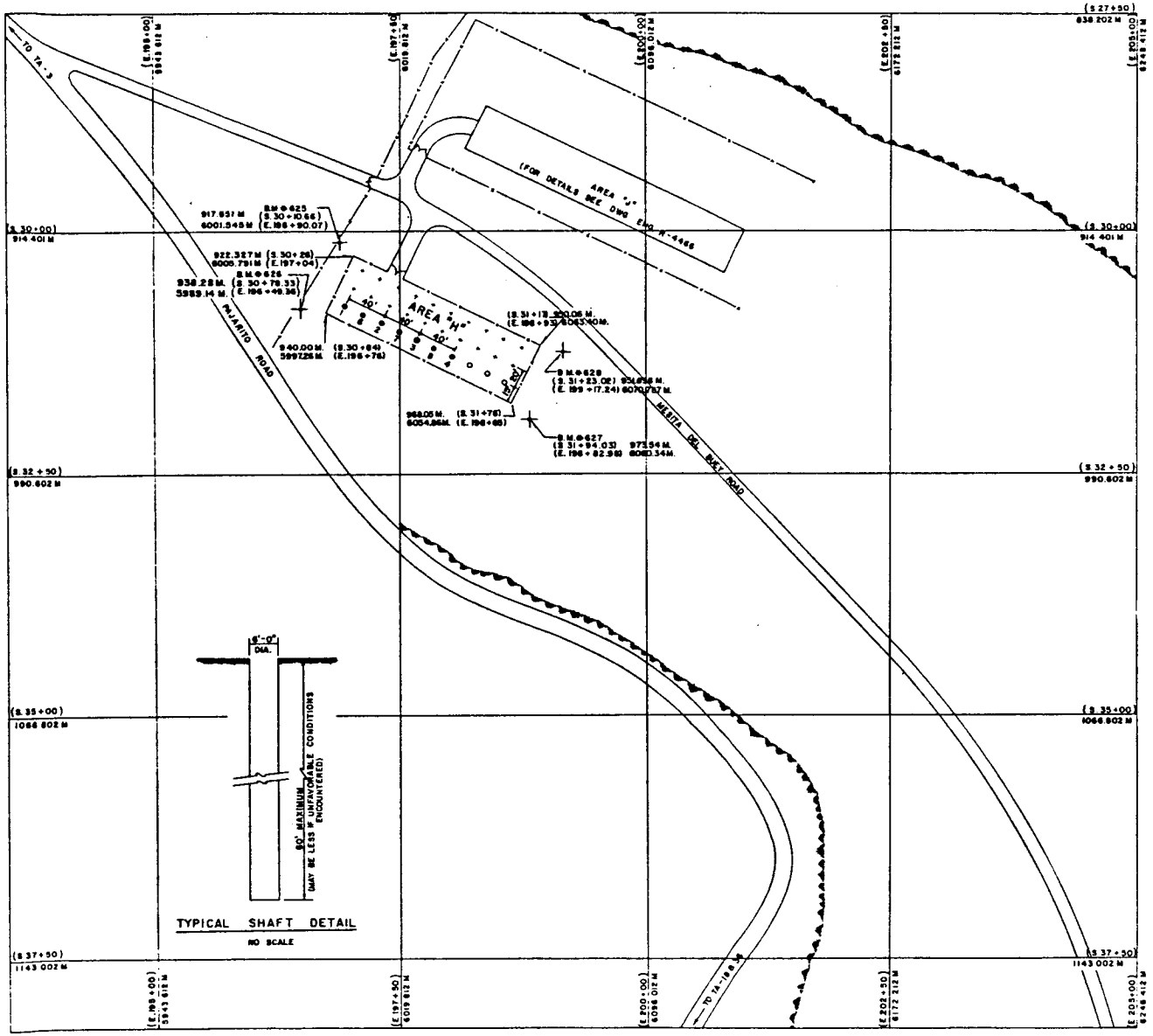
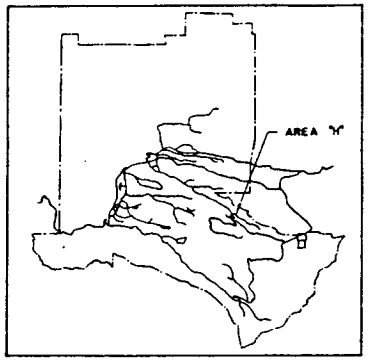
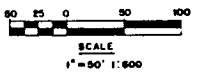


Figure MDA-H: Materials Disposal Area H



LOCATION PLAN



SCALE
1" = 50' 1:600

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "H"
MESITA DEL BUEY TA-54

ENG-R4465

MATERIAL DISPOSAL AREA I

DISCUSSION

Background--The letter I was never used to designate a material disposal area; thus, no such area exists.

MATERIAL DISPOSAL AREA J

DISCUSSION

Background--Area J is a 2.65-acre site in TA-54 that is used for the disposal of equipment wastes over which the Laboratory wishes to maintain administrative control, such as those that are possibly contaminated with high explosives. Pit 1 was filled in 1966. Pit 2 was filled in 1984. A third pit and two 6-ft-diam, 65-ft-deep shafts were excavated in 1984 and have been used for disposal since then (Balo and Warren 1984). All wastes currently buried at Area J must be certified to be free of detonatable quantities of high explosives.

CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 8.5 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area J are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-J: Material Disposal Area J

REFERENCE

Balo, K. A., and J. L. Warren. 1984. "Waste Management Site Plan, Los Alamos National Laboratory, December, 1984," Los Alamos National Laboratory report LA-UR-85-336, December 1984.

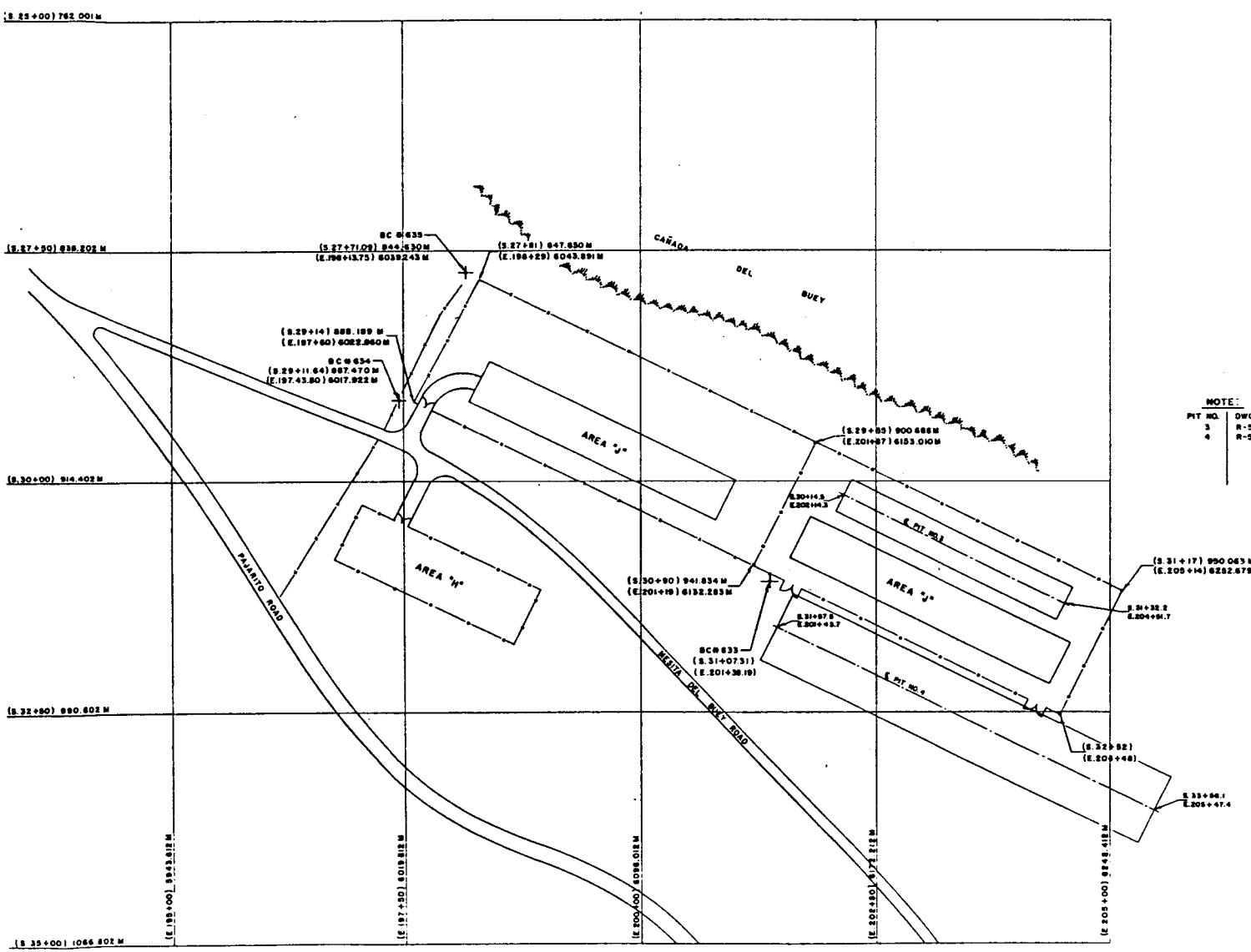
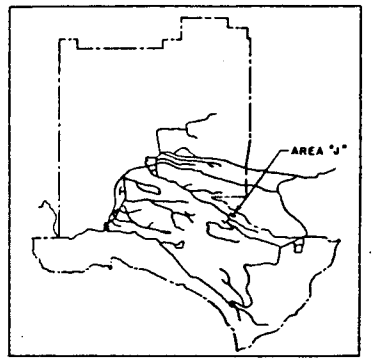


Figure MDA-J: Materials Disposal Area J



LOCATION PLAN

AS BUILT DRAWING

NOTE:

PIT NO.	DWG. NO.
3	R-5392
4	R-5393

80' 25' 0 50' 100'

SCALE
1" = 50' 1:600

NO.	DATE	CLASS. REVISED	REVISIONS	BY	CHKD.	SUPV.	D.D.	SUPV. APPR'D
1	2-87		ADDED PITS 3 AND 4	T.K.				

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY ENG-4 PRIOR

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION: U M.D.Nell TITLE: U M.D.Nell

AUTHORIZED FOR: SECURITY, SAFETY, HEALTH, DIVISION, GROUP

MATERIALS DISPOSAL AREAS
AREA "J"
MESITA DEL BUEY TA-54

SUBMITTED	APPROVED	APPROVED
Prog. Engr.	Engr. Group Leader	Engr. Supt.
CHECKED R J A	CA	DATE 9-26-74
DESIGNED H A H	LAB JOB NUMBER 1757	DRAWING NO. ENG-4466
DRAWN T G ROYBAL		

MATERIAL DISPOSAL AREA K

DISCUSSION

Background--Area K is composed of one or two sump pits at TA-33 that serve building TA-33-86. The drawings for Area K indicate one pit identified as TA-33-134 that is 4 ft in diameter and 6 ft deep. Engineering records indicate TA-33-133 is also a sump pit located just a few feet west of sump 134. The sumps are not indicated on a 1957 map but Area K was identified in 1965 (Engineering Division 1965). The principal contaminant from TA-33-86 is tritium. Uranium is another possible radioactive contaminant. Chemical constituents of the waste are not presently known. The sump(s) are scheduled for removal when TA-33-86 is decommissioned. It is believed that these sumps served a large sink that was built to maintain and repair an old-style tritium transfer pump. Solvents and oils contaminated with tritium were probably used.

Area K is being monitored for radioactive transport under the IWMP.

CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 10.2 (Appendix B).

Planned Future Actions--The site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-K: Material Disposal Area K

REFERENCE

Engineering Division, LANL. 1965. "Approximate Acreages of Materials Disposed Areas A through Q," Los Alamos Scientific Laboratory memorandum, April 9, 1965.

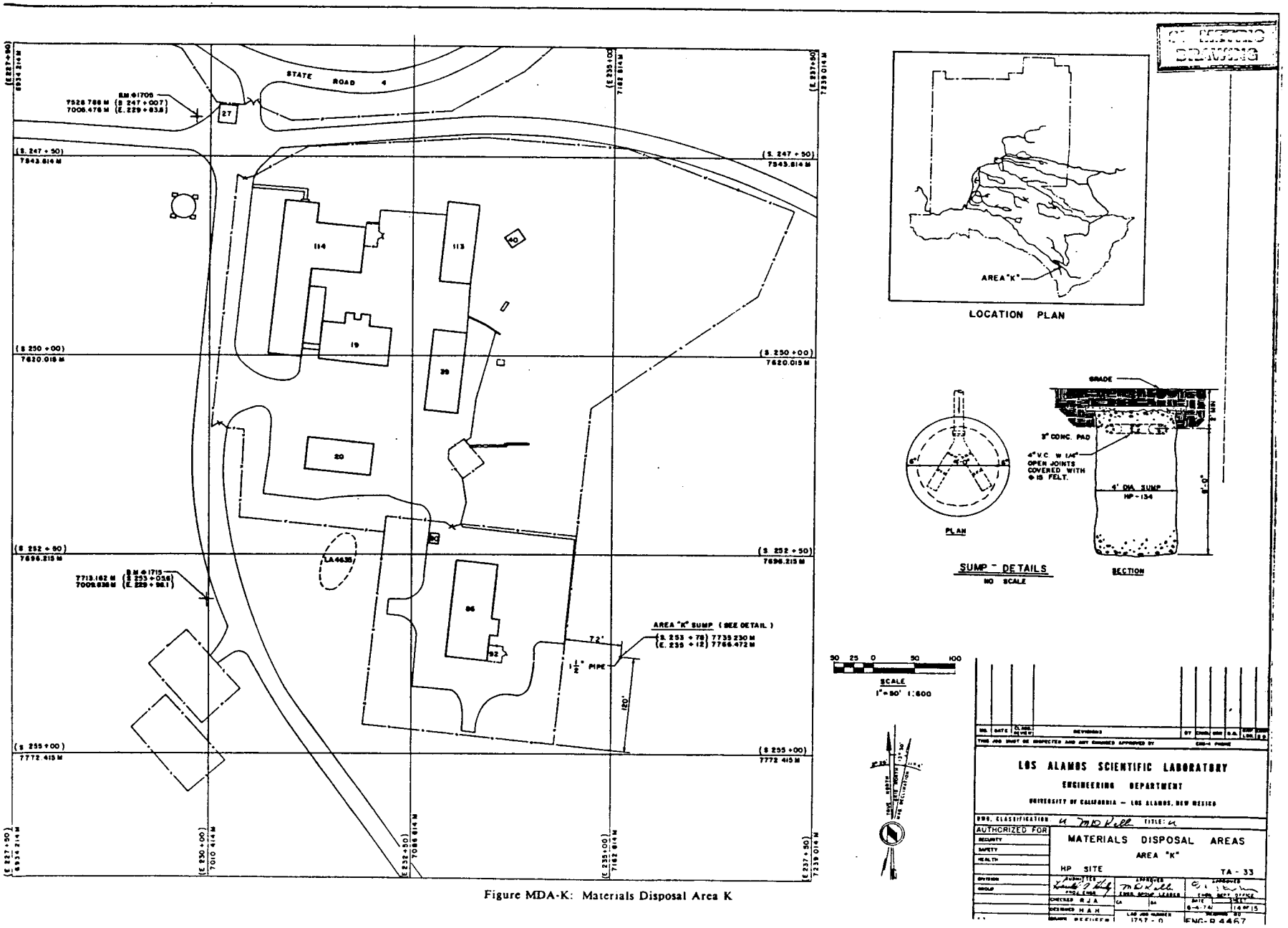


Figure MDA-K: Materials Disposal Area K

MATERIAL DISPOSAL AREA L

DISCUSSION

Background--Area L is a 2-acre site within TA-54 that was the principal chemical waste disposal area for the Laboratory from 1964 to November 1985. From 1964 through May 1975, all wastes were put into three pits. The last pit was covered in June 1975. Disposal from then until November 1985 was in shafts that range from 2 to 8 ft in diameter and are up to 65 ft deep. The shafts have now all been filled and capped with concrete. Different shafts were used for different categories of waste chemicals (organics, inorganics, oils, acids, bases, reactive metals) to assure that incompatible chemicals did not mix and react.

Two small pits at the site were used to dispose of bulk quantities of treated aqueous waste--water quickly evaporated from these wastes, leaving a salt cake in the bottom of the pit. When a salt cake reached 1 yd from the top, the pit was backfilled. This practice was stopped in FY 1984 (Balo and Warren 1984). The impoundment is now undergoing characterization in accord with a compliance order issued by the New Mexico EID, and the results will determine the closure actions to be taken.

DOE has applied for an interim-status groundwater waiver in compliance with RCRA. In response to the application, the New Mexico EID issued a compliance order that required DOE to complete a vadose zone characterization program. DOE submitted the final report on the vadose zone characterization to EID during March 1987.

The DOE has applied for a long-term permit to continue to treat and store waste at Area L through the RCRA Part B application submitted to the EID. No further disposal is planned. A closure plan for Area L was submitted on November 23, 1985. Monitoring requirements have not yet been issued.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 19.3 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area L are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-L: Material Disposal Area L

REFERENCE

Balo, K. A., and J. L. Warren. 1984. "Waste Management Site Plan, Los Alamos National Laboratory, December, 1984," Los Alamos National Laboratory report LA-UR-85-336, December 1984.

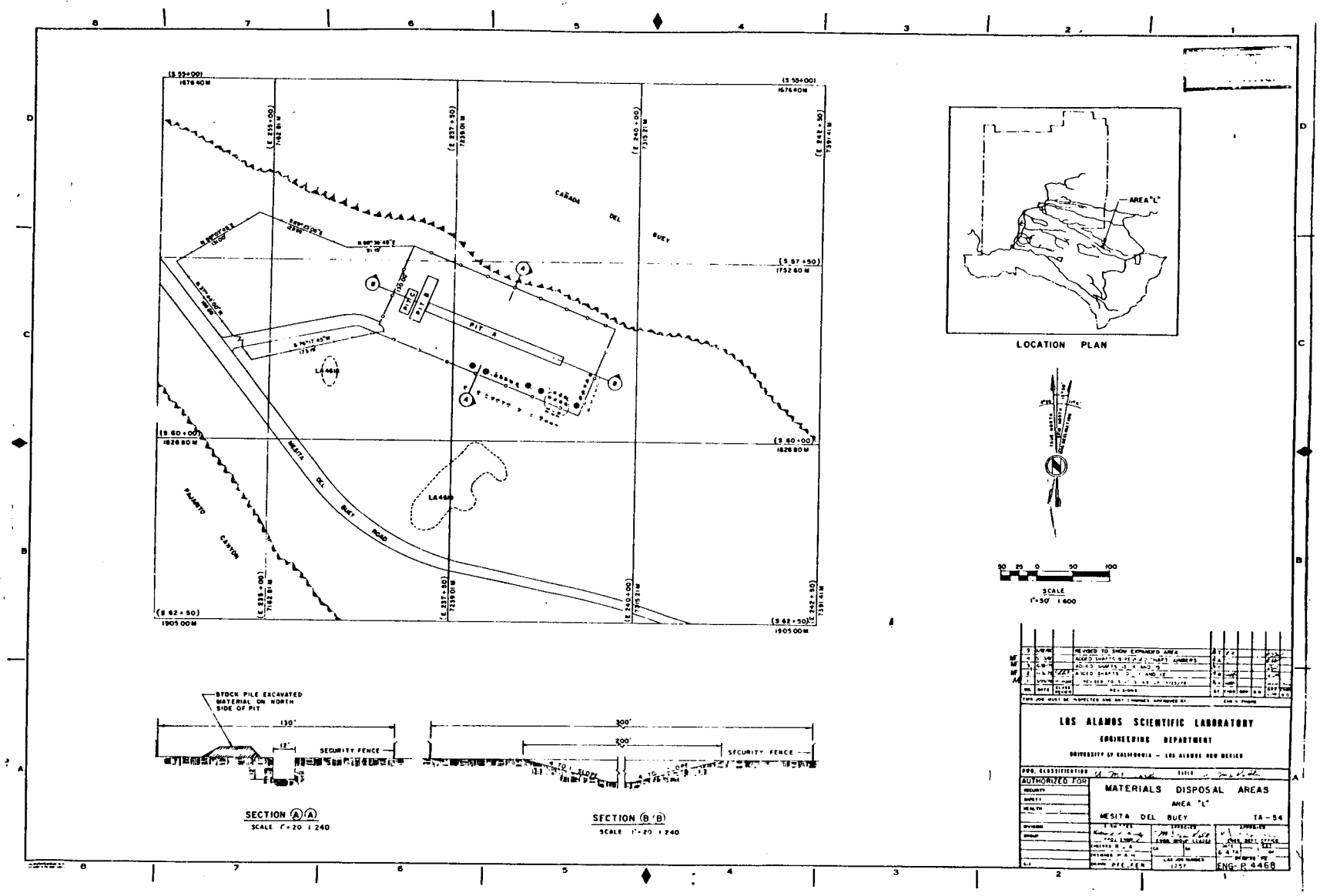


Figure MDA-L: Material Disposal Area L

MATERIAL DISPOSAL AREA M

DISCUSSION

Background--Area M was created by the AEC about 1947 as a disposal site for construction debris (Employee Interviews 1983). It is in an isolated location in the woods near TA-9 and covers approximately 3.2 acres (Engineering Division 1965). According to engineering drawing ENG-R102 (Rev. 12), April 1965, designating Area M as a material disposal area, debris was suspect of being contaminated with explosives or chemicals. The area has been inactive for many years.

Most of the debris is rubble from the demolition of old facilities. The debris is thought to come from TA-6, -8, and -9, and possibly from TA-15 and -16, and includes tile, cabinets, asbestos-covered pipes, conduits, and fluorescent lighting fixtures. Over the years, other things were added to the site, including some uranium-contaminated firing site debris, chemical bottles, paint cans, pails, and garbage cans. The containers observed during the 1984 field reconnaissance studies were empty.

In addition to Area M, several subsidiary surface disposal areas were created along the road going into Area M. They contain what appears to be building demolition debris, concrete rubble, metal, and tile for the most part.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 0.5 (Appendix B).

Planned Future Actions--This site will be evaluated for radiological and nonradiological constituents under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-M: Material Disposal Area M

REFERENCES

Employee Interviews. 1983. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1983.

Engineering Division, LANL. 1965. "Approximate Acreages of Materials Disposed Areas A through Q," Los Alamos Scientific Laboratory memorandum, April 9, 1965.

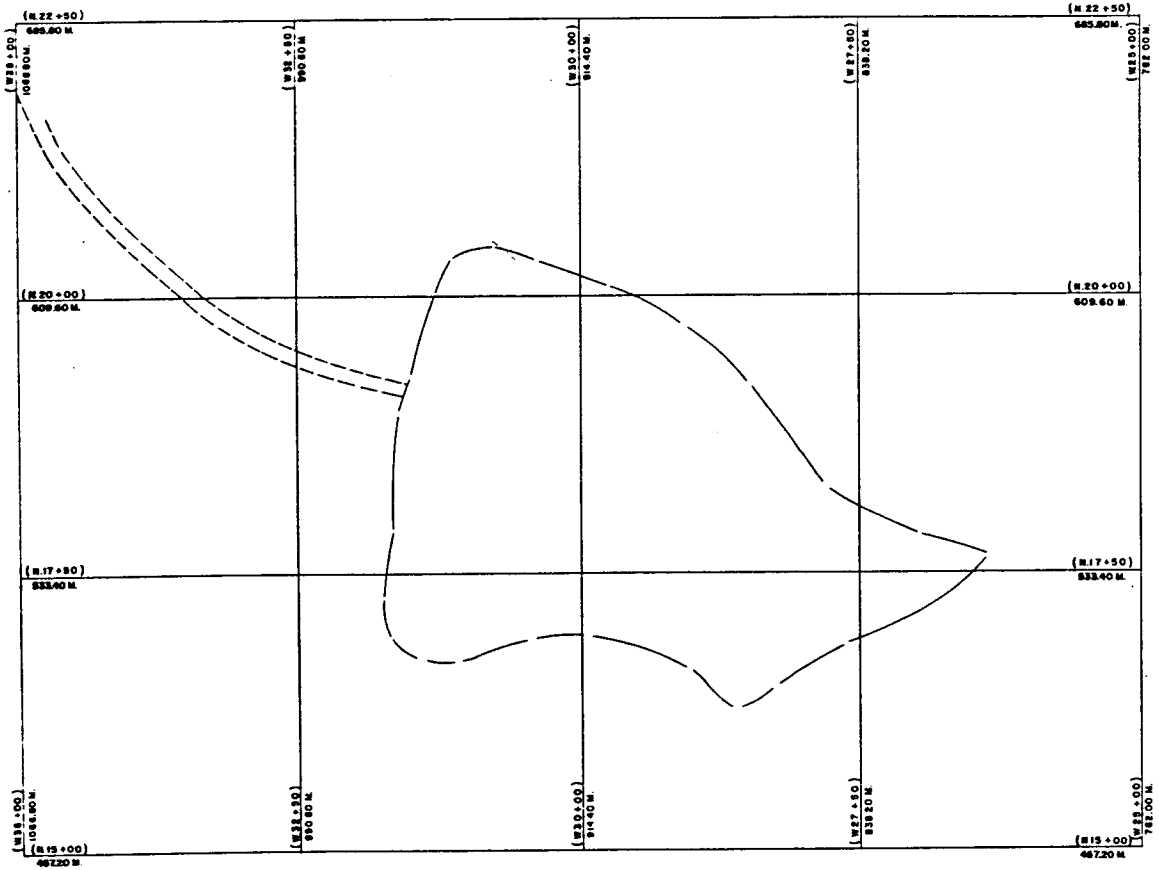
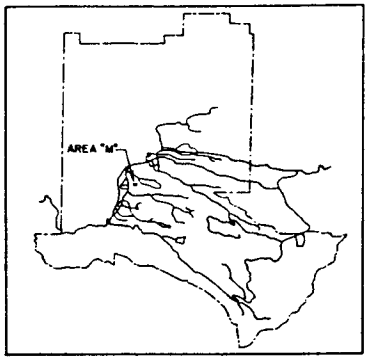
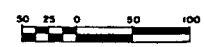


Figure MDA-M: Materials Disposal Area M



LOCATION PLAN



SCALE
1" = 50'
1:600

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION U MDKell FILE: U

AUTHORIZED FOR
SECURITY
SAFETY
HEALTH

MATERIALS DISPOSAL AREAS
AREA "M"

TA - 0

SUBMITTED: FROZ. ENGR.
APPROVED: ENGR. GROUP LEADER
APPROVED: ENGR. DEPT. OFFICE
CHECKED R J A
DESIGNED H A H
DRAWN PFEUFER
LAB JOB NUMBER 1757
DATE 6-4-74
DRAWING NO. ENG- R- 4469

MATERIAL DISPOSAL AREA N

DISCUSSION

Background--Inactive Material Disposal Area N is located at TA-15. Area N is described in engineering drawing ENG-R102 (Rev. 12), April 1965, as a pit "containing remnants of several structures from R-Site which had been exposed to explosives or chemical contamination." The pit ends were surveyed and marked in 1985. Its area is estimated at 0.10 acres (Engineering Division 1965).

CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 3.7 (Appendix B).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-N: Material Disposal Area N

REFERENCE

Engineering Division, LANL. 1965. "Approximate Acreages of Materials Disposed Areas A through Q," Los Alamos Scientific Laboratory memorandum, April 9, 1965.

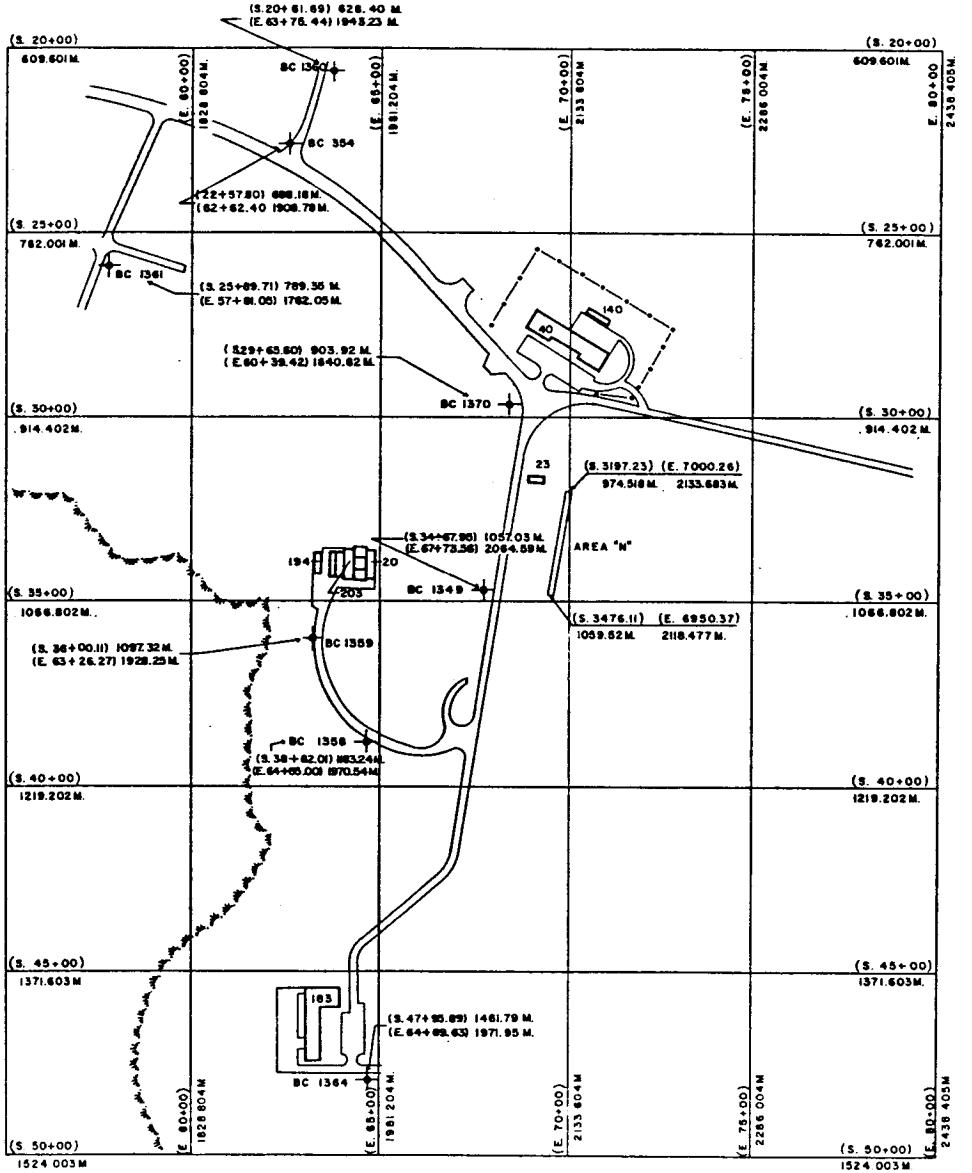
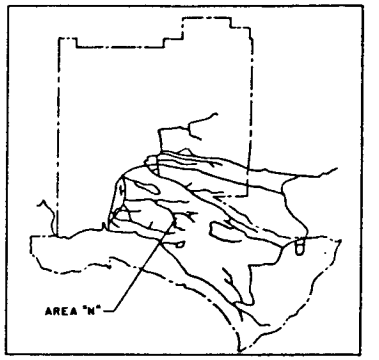
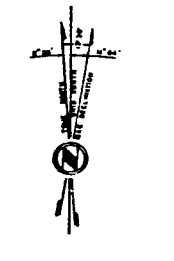


Figure MDA-N: Materials Disposal Area N



LOCATION PLAN

AS RECORD DRAWING



SCALE
1"=150' 1:1800

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "N"
R-SITE TA-15

SUBMITTED	APPROVED
CHECKED R J A	
DESIGNED H A H	LAB JOB NUMBER 1757-15
DRAWN D K MINGO	
DATE 7-15-74	

ENG-R4470

MATERIAL DISPOSAL AREA O

DISCUSSION

Background--The letter O was never used to designate a material disposal area; thus, no such area exists.

MATERIAL DISPOSAL AREA P

DISCUSSION

Background--Area P is a 6.7-acre site located at TA-16 at the edge of Canyon de Valle. Its principal use has been for disposal of noncombustible debris remaining from burning structures that had been exposed to high explosive chemical contamination. These structures include old magazines and explosives buildings from TA-6, -9, -11, and -16. A number of other materials have been added over the years, including ashes from an incinerator in which combustible materials from TA-16 were burned (Employee Interviews 1984), items that were suspected to be contaminated with high explosive--such as chemical bottles and buckets from operations at TA-16, and other general trash. The major portion of the site has been covered with soil and leveled. However, some debris has fallen to the canyon bottom and the material on the edge of the filled area is uncovered. A culvert draining runoff water from a waste explosive burning pad was directed across the top of the site and caused some erosion and subsidence in the surface in 1985. The drainage from this area was directed around the edge of Area P in 1986. The site was closed in 1985 and a closure plan has been filed with the New Mexico EID in compliance with RCRA.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 1.6 (Appendix B).

Planned Future Actions--Area P is covered by routine LANL operations.

FIGURE

Figure MDA-P: Material Disposal Area P

REFERENCE

Employee Interviews. 1984. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1984.

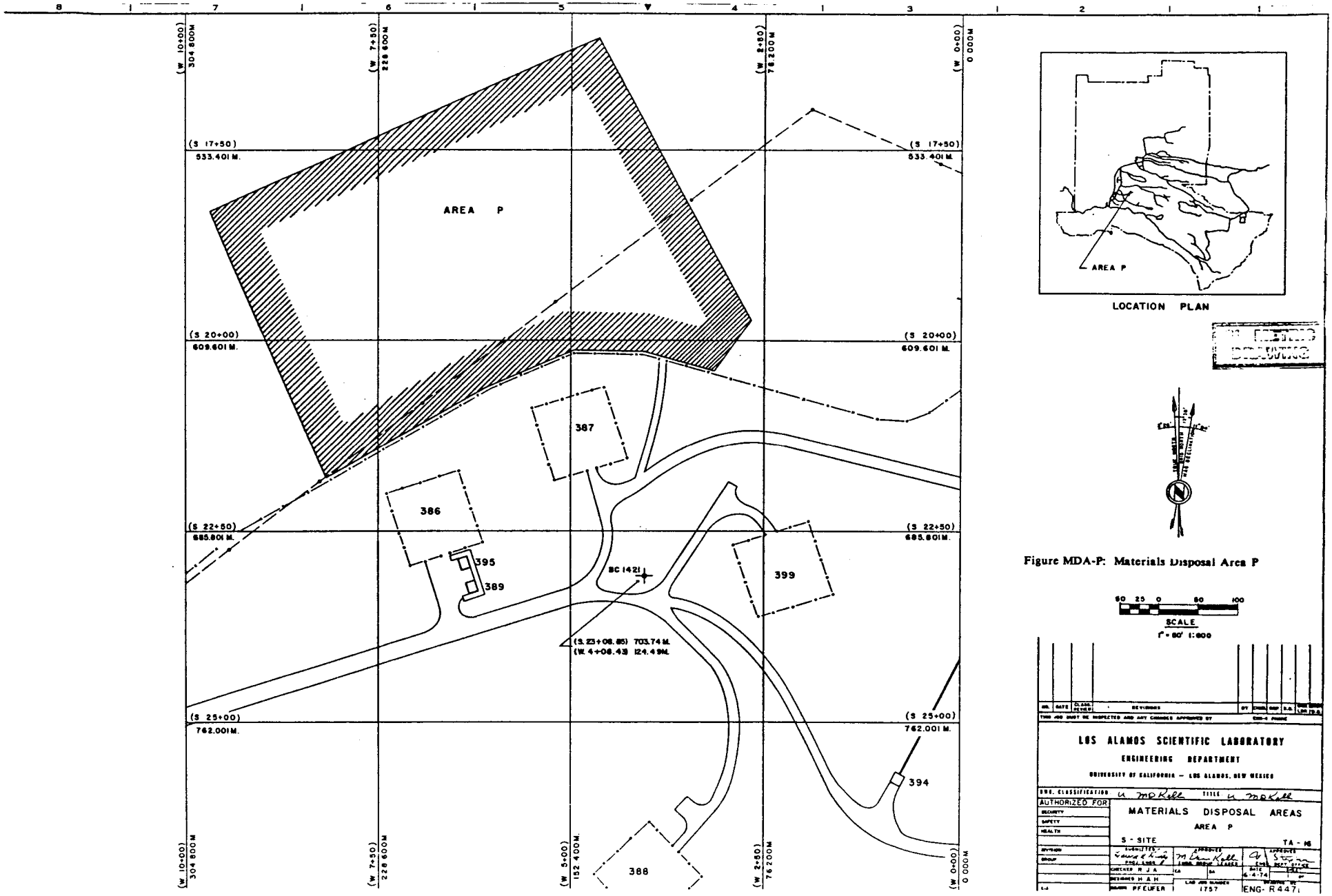


Figure MDA-P: Materials Disposal Area P

MATERIAL DISPOSAL AREA Q

DISCUSSION

Background--Area Q is a 30-ft^2 pit near TA-8-1. The pit contains gun barrels (one nearly 18 ft long), some 80 inert projectiles, about 50 steel blocks with holes in the center and 3-in. projectiles imbedded in them, 3- and 6-in. expended casings, and some Little Boy (1945 uranium gun weapon) bomb parts. The pit's location was easily identified with a metal detector in 1964 (Courtright 1964). A gun mount was dug up and retrieved for use at TA-33 in 1947. People interviewed did not recollect burial of radioactively contaminated items there. There is no indication that hazardous chemicals were disposed of in Area Q, although material is suspected to have trace high explosive contamination. Surveyors marked the pit's location in 1984.

CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 2.1 (Appendix B).

Planned Future Actions--The site will be evaluated for high explosives under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-Q: Material Disposal Area Q

REFERENCE

Courtright, W. C. 1964. "Burial of Large Navy Guns and Ammunition," Los Alamos Scientific Laboratory memorandum to H-3 file, December 10, 1964.

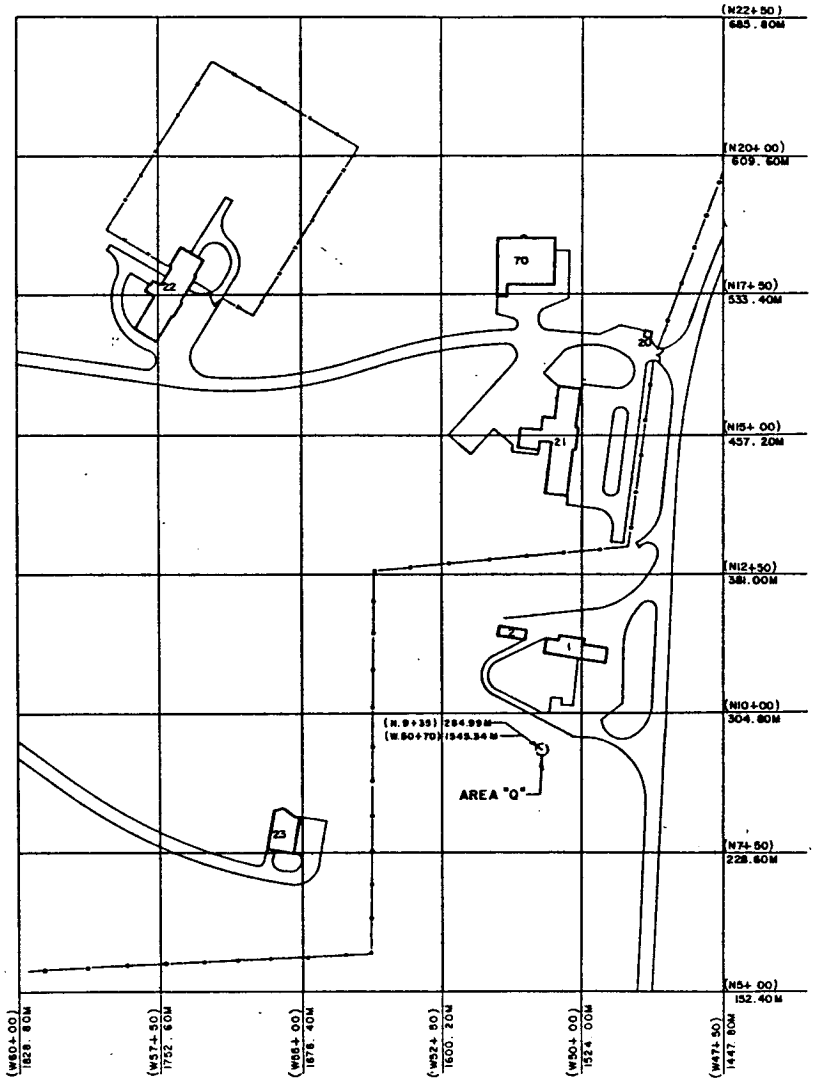
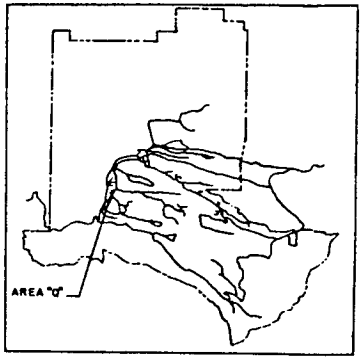
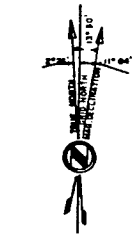


Figure MDA-Q: Materials Disposal Area Q



LOCATION PLAN



SCALE

" = 100' 1:1200

LOS ALAMOS SCIENTIFIC LABORATORY

ENGINEERING DEPARTMENT

UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

AUTHORIZED FOR

MATERIALS DISPOSAL AREAS

AREA "Q"

ANCHOR SITE WEST TA-8

CHECKED R J A

DESIGNED H A H

DRAWN P. FEUFER

1757

ENG-R 4472

MATERIAL DISPOSAL AREA R

DISCUSSION

Background--Area R, which was abandoned in 1948 or 1949, is a 2.27-acre site located at TA-16. It is described as follows: "The area was used as a burning ground for waste explosives prior to construction of the 132 Group buildings and the present burning area. During the course of new construction the ground surface was graded and pushed into the canyon" (Engineering Division 1965). There is no present indication that it was ever used for disposal of objects or debris. Several trees growing in the area suggest the ground surface has not been disturbed for a number of years.

CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS Migration Mode Score is 2.1 (Appendix B).

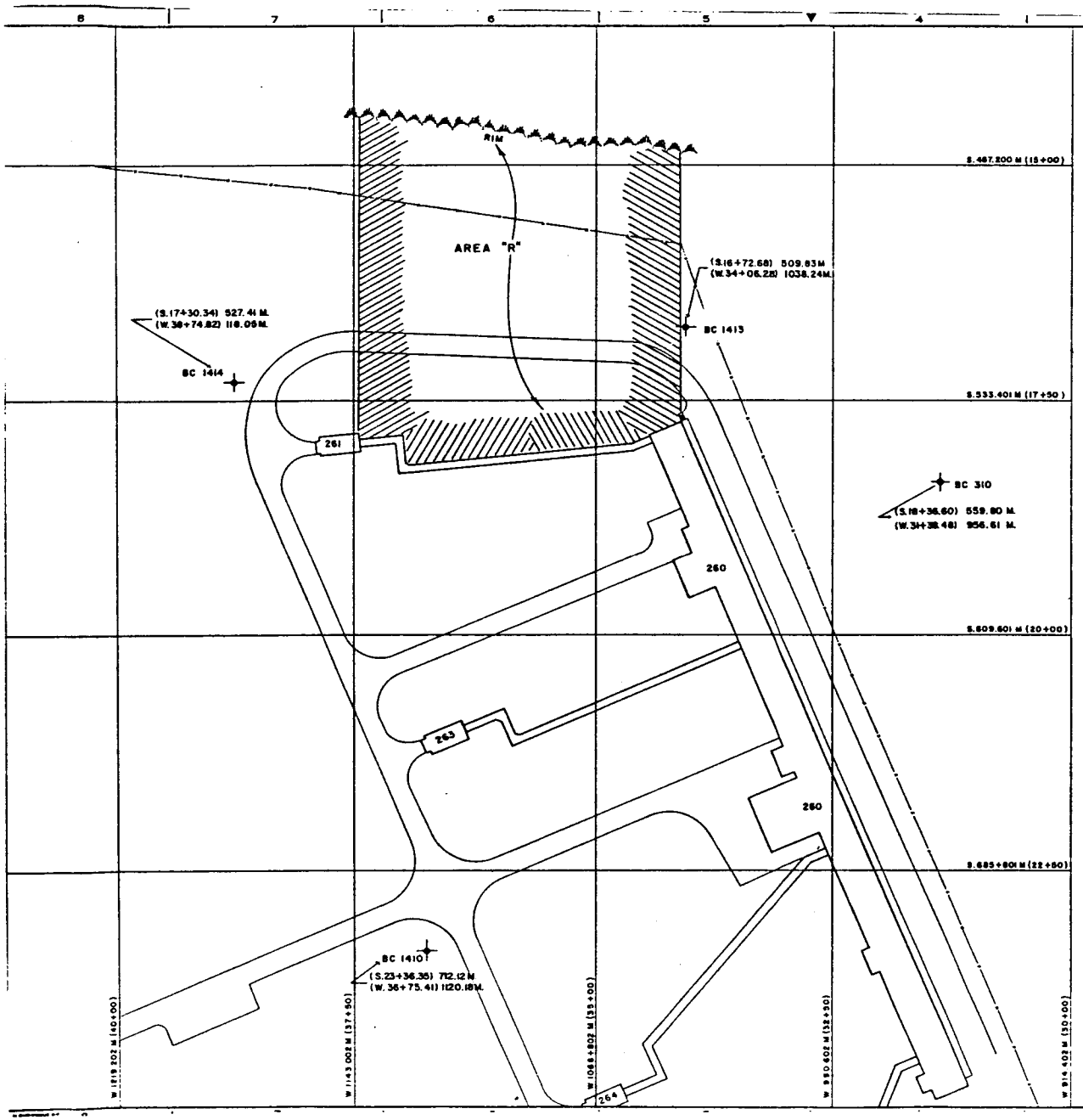
Planned Future Actions--The site will be evaluated for residual waste explosives under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

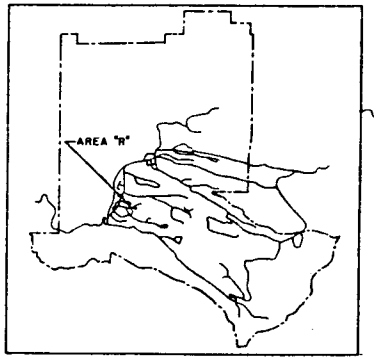
FIGURE

Figure MDA-R: Material Disposal Area R

REFERENCE

Engineering Division, LANL. 1965. "Approximate Acreages of Materials Disposed Areas A through Q," Los Alamos Scientific Laboratory memorandum, April 9, 1965.





LOCATION PLAN

Figure MDA-R: Materials Disposal Area R

50 25 0 50 100

SCALE
1" = 50' 1:600

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "R"
S-SITE TA-16

ENG-R 4473

MATERIAL DISPOSAL AREA S

DISCUSSION

Background--Area S is a 10-ft^2 area still in use located approximately 80 ft southeast of magazine K-36, TA-11. It is enclosed by a pipe rail and is being used for soil studies in connection with disposing of explosives. In 1965, 12 different types of high explosive were deliberately buried at Area S in designated locations. Periodically, samples are excavated and analyzed to determine rates of decomposition of high explosive in soil. In the sample plots, 2 oz of explosive was homogeneously mixed with 11 lbs of soil and then placed in a known location in an open-ended cylinder with a fine mesh screen on the bottom and hardware cloth over the top. Four locations had a homogeneous mixture with a culture of the bacteria Pseudomonas aeruginosa added. The bacteria did not survive beyond 6 months so their effect on the decomposition of high explosive is not known. Small cylinders (5/8 in. diameter by 1/4 in. high) of each of the explosives were also buried.

After the explosives had been exposed for 4 years, the conclusions about them were that "Only those explosives containing TNT, barium nitrate, or boric acid disappear at a rate that can be considered useful for their effective elimination from the environment" (Dubois and Baytos 1972). Results at 8 years indicated these conclusions were still valid. Samples have been taken on a roughly doubling interval between sets of samples. Only the baratol was severely deteriorated by the environment. The others were not affected to any appreciable extent. The cylinders have all been removed. Only the homogeneous mixtures remain and no more than 3 oz of high explosive remains.

CERCLA Finding--Negative for FFSDIF, PA, and PSI; therefore, a HRS Migration Mode Score is not calculated.

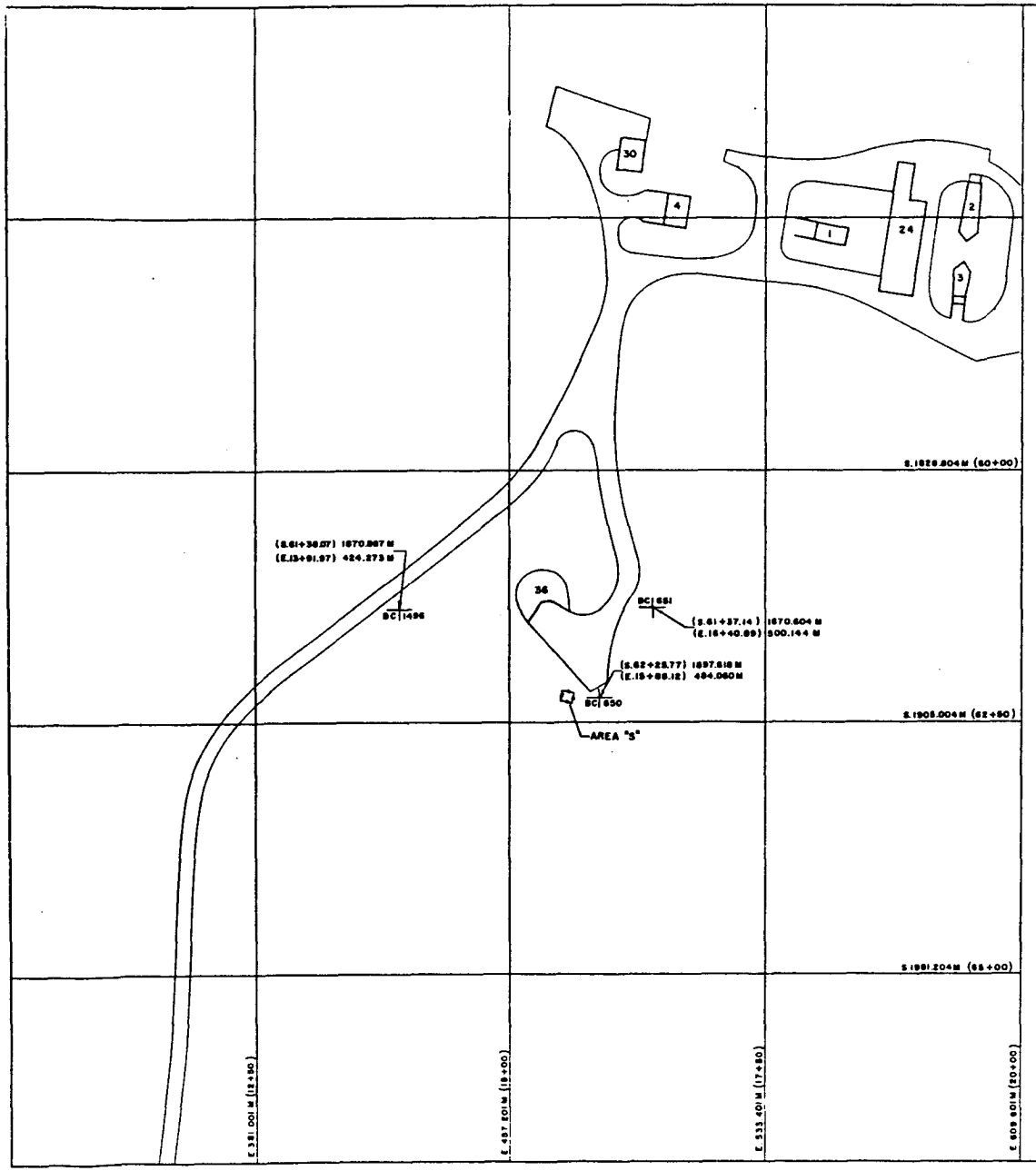
Planned Future Actions--The Dynamic Testing Division (M) or its successor will ensure that continuity of knowledge is maintained on the form, amount, types, and locations of remaining explosives as long as explosives are buried at Area S. Using current standards, persons knowledgeable in explosives safety will determine the adequacy of the pipe rail fencing. When M Division no longer wishes to continue this experiment, all buried material will be removed, and the area will be restored to its nearly natural state. Area S will then be removed from the list of material disposal areas.

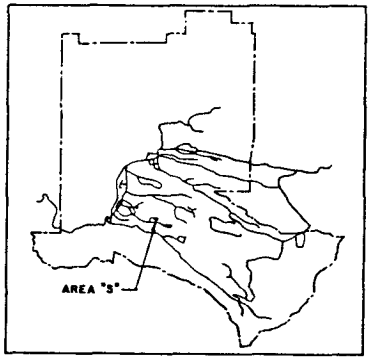
FIGURE

Figure MDA-S: Material Disposal Area S

REFERENCE

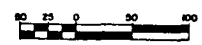
Dubois, F. W., and J. F. Baytos. 1972. "Effects of Soil and Weather on the Decomposition of Explosives," Los Alamos Scientific Laboratory report LA-4943, June 1972.





LOCATION PLAN

Figure MDA-S: Materials Disposal Area S



SCALE
1" = 50' 1:600

NO.	DATE	CLASS. REVIEW	REVISIONS	BY	CHKD.	ENG.	S.A.	ENG. LDR.	ENG. P.E.

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY ENG-4 FINISH

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION: U. McDonald Kelly TITLE: U. McDonald Kelly

AUTHORIZED FOR
SECURITY
SAFETY
HEALTH
DIVISION
GROUP

MATERIALS DISPOSAL AREAS
AREA "S"
K-SITE TA-11

SUBMITTED: Donald F. Hickey, PROJ. ENGR.
APPROVED: M. Dean Kelly, ENGR. GROUP LEADER
APPROVED: [signature], ENGR. DEPT. OFFICE
CHECKED R J A
DESIGNED H A H
DRAWN ROYBAL
CA
LAB JOB NUMBER 1757-11
DATE 6-11-74
SHEET OF
DRAWING NO. ENG-R 4474

MATERIAL DISPOSAL AREA T

DISCUSSION

Background--Inactive Material Disposal Area T is a set of four absorption beds at TA-21. Untreated waste (14 million gal) from processing plutonium was released to the pits from 1945 to 1952. Largely because the volume of liquid discharged to the beds had exceeded their holding capacity, after 1952 wastes were treated in Building TA-21-35, and at infrequent intervals, a few hundred gallons of treated wastes were discharged until 1967. Waste treatment operations shifted to a new treatment plant in 1968. Batch americium wastes from that time were mixed with cement and pumped down shafts augered between two absorption beds. Starting December 31, 1975, TRU wastes were mixed with cement and pumped into corrugated metal pipe, which was stored in a pit dug between two rows of absorption beds. In addition to plutonium in the waste (estimated at 60 counts/min/ml) before 1952, the average fluoride concentration was 160 ppm. In a 1-yr period, 10,500 gal. of effluent, highly concentrated with ammonium citrate, was also added to the absorption beds (Rogers 1977).

The absorption beds are trenches approximately 115 ft long by 20 ft wide by 4 ft deep. The trenches were backfilled with coarse material, grading from 8-in. boulders at the bottom, through gravel, to fine sand at the surface. The shafts, approximately 20 to 65 ft deep and 4 to 8 ft in diameter, were coated with asphalt prior to the disposal of the cement paste mixture (Rogers 1977).

Several studies have been done over the years to characterize the movement of radionuclides through the tuff. Five test holes were dug around the pits in 1953; two were through the pits and one was a 45-degree hole that angled below pit 1. Plutonium concentrations above background were found to extend 20 ft below the surface. In 1961, a 30-ft-deep caisson was dug so that horizontal cores could be taken. It was concluded from this study that plutonium had penetrated to a depth of a least 28 ft in the tuff beneath the pits and that penetration took place mainly along joints in the tuff. Clay-filled joints retain plutonium, resulting in localized areas of high plutonium concentrations. In 1967, several test holes drilled outside the pits showed no alpha, beta, or gamma contamination, but tritium was found in the effluent water (Purtymun 1967).

In a study completed in 1978 (Nyhan and Booth 1984), four sampling holes were drilled to a depth of 100 ft through two absorption beds. In two holes, americium-241 had migrated 100 ft and plutonium-239 to 99.5 ft below the surface. These holes were drilled in the vicinity of the place where the waste water entered the beds. The other two holes were drilled further away from the entrance point for the waste and showed americium-241 and plutonium-239 to depths of 44 and 21.5 ft, respectively.

Data starting in 1952 provide the mineral composition of the waste; before that date, it is unknown. The raw waste was estimated to have an organic content of 3% and the treated waste an organic content of 13% (Emelity 1975).

During FY 1986, 158 corrugated metal pipes containing TRU waste mixed in cement were removed from Area T to TA-54.

Area T is being monitored for radioactive transport under the IWMP.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 9.7 (Appendix B). Area T was aggregated with Areas A and U (which share the same watershed).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-T: Material Disposal Area T

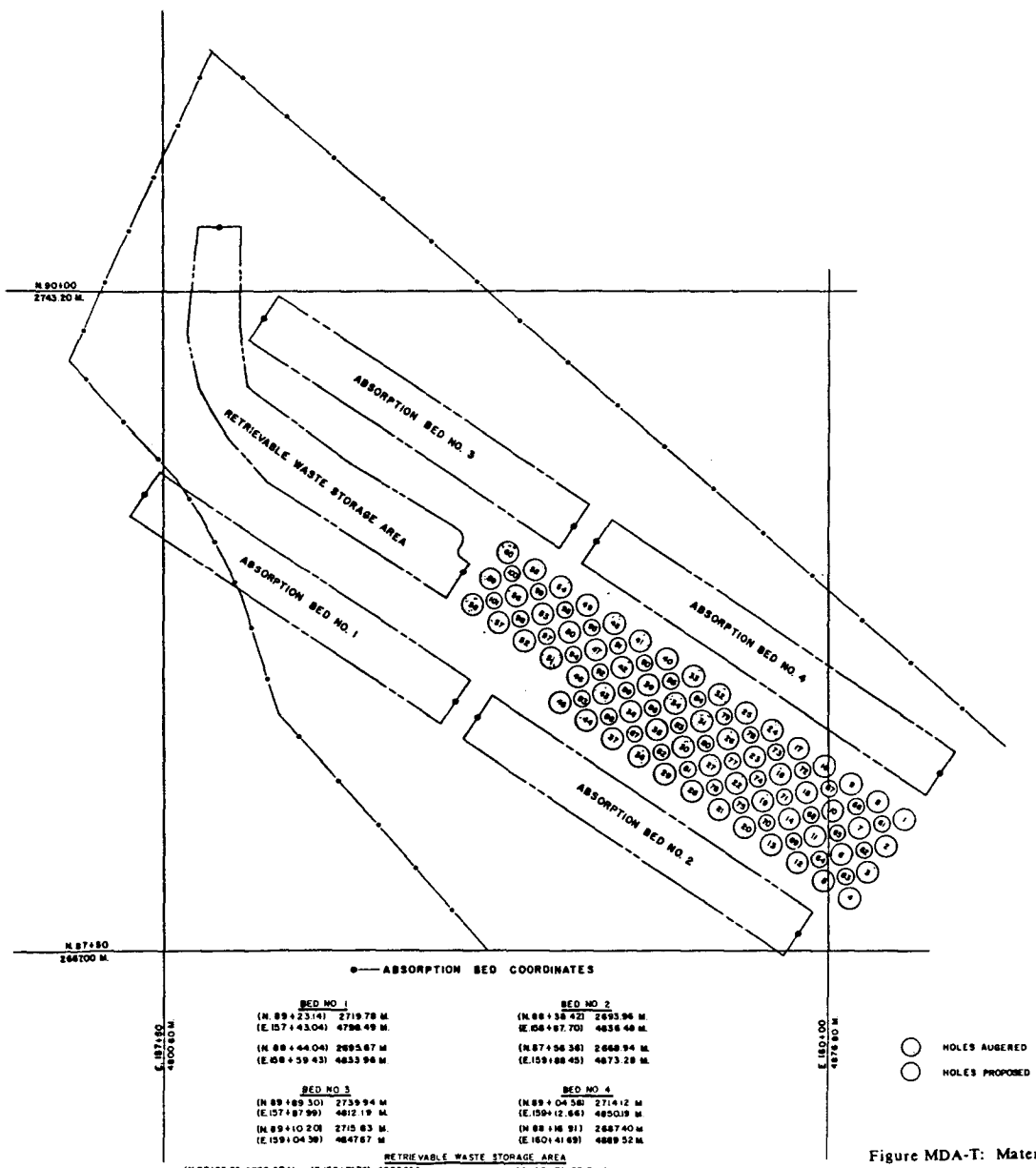
REFERENCES

Emelity, L. A. 1975. "Mineral Analyses of Wastes to Absorption Beds, Area T, Pre-1952," Los Alamos Scientific Laboratory memorandum, September 15, 1975.

Nyhan, J. W., and B. J. Booth. 1984. "Distribution of Radionuclides and Water in Bandelier Tuff Beneath a Former Los Alamos Liquid Waste Disposal Site After 33 Years," Los Alamos Scientific Laboratory report LA-10159-LLWM, July 1984.

Purtymun, W. D., 1967. Los Alamos Scientific Laboratory letter to William Kennedy, in CEARP files at Los Alamos National Laboratory, February 20, 1967.

Rogers, M. A. 1977. "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T)," Los Alamos Scientific Laboratory report LA-6848-MS, Vols. I and II, June 1977.



SHAFT NUMBER	SHAFT DIAMETER	DATE COMPLETED *	APPROXIMATE DEPTH *
1	2.4 M	5-17-71	
2		10/69	25
3		7/69	65
4			
5		3-24-71	65
6		3-20-75	27
7			
8		6-6-74	66
9		10/69	65
10		8/70	29
11		7/69	25
12			
13		8-18-72	65
14			
15			
16			
17		11/68	65
18		1/69	59
19		4/69	65
20		11-25-70	65
21		3/71	21
22		4-9-70	65
23		12-1-70	66
24		9-13-70	60
25		11-26-68	65
26		1/69	23
27		4/69	60
28		7-5-73	66
29		6-19-71	65
30		6-7-70	60
31		4-9-71	18
32		5-6-70	20
33		N A	64
34		5-8-71	65
35		6-2-72	66
36		4-22-71	65
37			
38			
39			
40			
41		8-12-71	65
42		8-28-70	23
43		8-22-74	66
44		8-28-71	30
45			
46		10-11-72	67
47		8-23-74	27
48		10-31-72	65
49		9-12-74	67
50		10-25-72	65
51		7-20-73	28
52		10-31-72	26
53		7-24-73	65
54		10-30-72	65
55		9-12-73	69
56		10-9-72	67
57		7-23-73	27
58		10-26-72	27
59		8-17-74	68
60		10-16-72	65
61			
62			
63			
64			
65			
66			
67			
68			
69			
70 (6-10)	6 1.8 M.	8-20-75	68
71			
72			
73			
74			
75 (6-15)	6	3-25-75	66
76 (6-16)	6	8-15-75	67
77			
78	6	12-1-75	69
79			
80	6	10-30-75	68
81			
82	6	8-30-75	64
83 (6-23)	6	10-15-75	24
84	6	3-12-76	
85			
86			
87	6	10-10-75	69
88			
89			
90			
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92			
93			
94			
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97			
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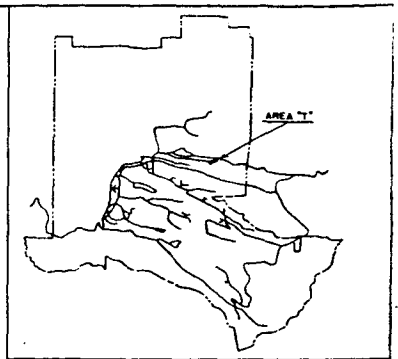
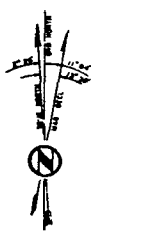
99			
100	6	3-25-76	N A
101			

* INFORMATION AS SHOWN IN ENG-4 FILES



LOCATION PLAN



20 10 0 20 40

SCALE: 1" = 20'
1:240

NO.	DATE	CLASS. (IF ANY)	REVISIONS	BY	CHKD.	APP'D.	ENG. APP'D.
1	3/25/76	U	AS SHOWN AND REVISED TO STATUS AS OF 3/25/76	TH	MH		

THIS AND SHEET BE INSPECTED AND ANY CHANGES APPROVED BY ENG-4 PHONE

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UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

ENG. CLASSIFICATION: U TITLE: U

AUTHORIZED FOR
SECURITY
SAFETY
HEALTH
DIVISION
GROUP

MATERIALS DISPOSAL AREAS
AREA "T"

DP SITE TA-21

	SUBMITTED	APPROVED	APPROVED
	PROJ. ENGR.	ENGR. DEPT. LEADER	ENGR. SECT. LEADER
	CHECKED R J A	CA	DATE 3/25/76
	DESIGNED H A H	LAB. APP. NUMBER 75	DRAWING NO. ENG- R-4475
	DRAWN T ROYBAL		

Figure MDA-T: Materials Disposal Area T

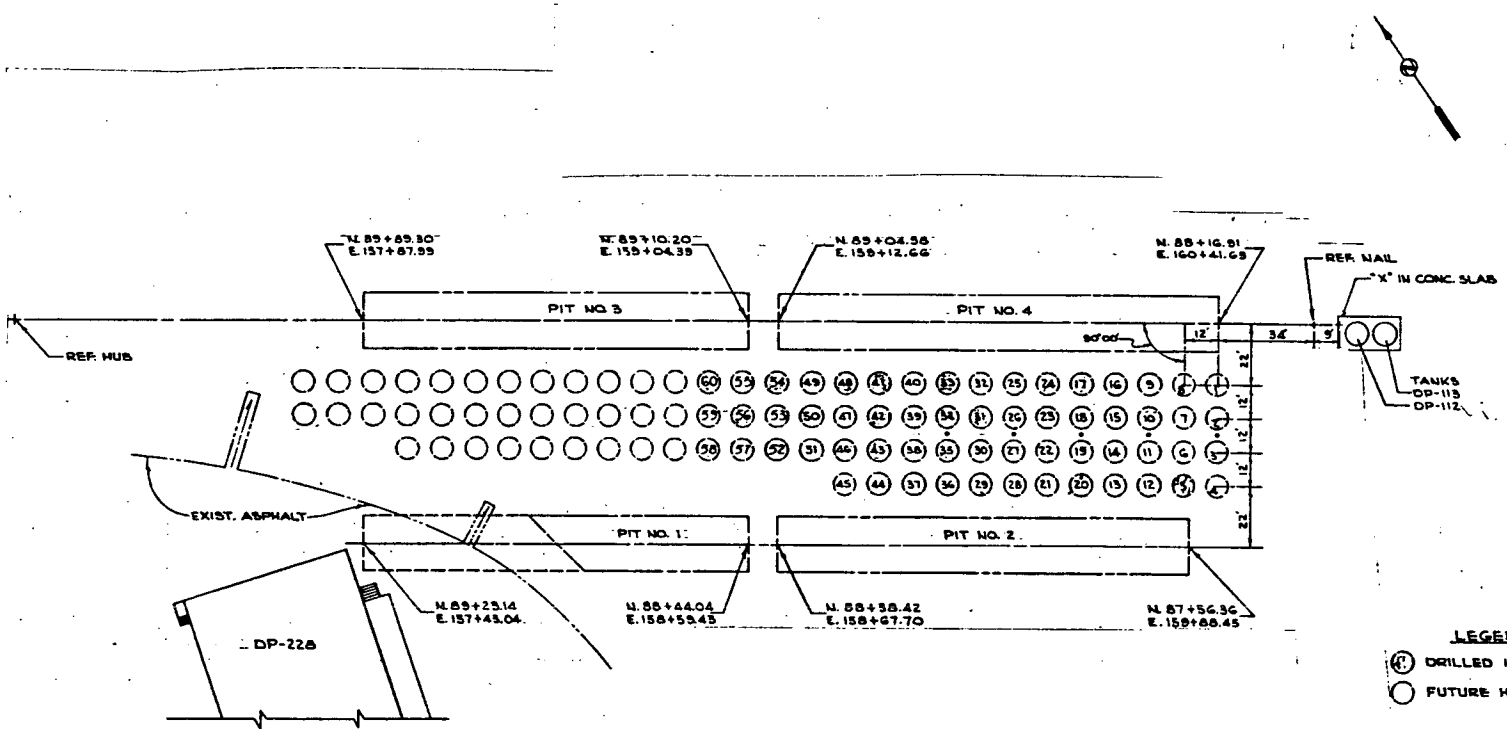

Figure MDA-T: Materials Disposal Area T (cont)

2	12-4-92	ADDED DRILLED HOLES 1,5,21,31,29,34, 35,36,41,43,44,46,48,50,52,54,56,58,60	RA				
1	1-8-71	ADDED DRILLDED HOLES 10,20,23,30,33,42	TR				
NO.	DATE	REVISIONS	BY	CHKD	ENG	D.A.	

THIS JOB MUST BE INSPECTED AND ANY CHANGES APPROVED BY

los alamos
scientific laboratory
engineering department
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

AUTHORIZED FOR

MATERIALS DISPOSAL AREA
AREA "T"

DP SITE TA-21

SUBMITTED
APPROVED
APPROVED

DATE 6-1-70

DRAWN T.G. ROYBAL

LAB JOB NUMBER 1757

ENG-R 356

REVIEWER

CLASS

MATERIAL DISPOSAL AREA U

DISCUSSION

Background--Inactive Material Disposal Area U, located at TA-21, contains two absorption beds similar to those in Area T. These beds were used for the subsurface disposal of contaminated liquid wastes between 1945 and 1968. The primary radionuclide in these wastes was polonium-210 which, with its 138-day half-life, has since decayed away. Several curies of actinium-227 were also discharged to these beds, principally from the effluents from a filter building that scrubbed actinium-227 out of the air in several process buildings at TA-21 (Department of Energy 1979). There were early problems with the pits; they did not function properly and "the oil washing down from the precipitrons is lying on top of the ground. This is very definitely contaminated to a high degree" (Drazer 1946). The area around the filter buildings was decontaminated when the buildings were removed in 1978 (Harper and Garde 1981). Area U was improved in 1985 with the removal of the piping from the absorption beds. (The pipe locations were different than those shown on the drawings.) In addition, a trench 20 ft wide, 100 ft long, and 4 to 13 ft deep was dug in the length of the beds, and soil contaminated with actinium was removed to Material Disposal Area G. Not all contamination was removed because of lack of time and money. A plastic lining was placed in the trench to indicate the excavation boundary, and then the trench was filled with uncontaminated tuff. The excavated area was covered with 6 in. of topsoil.

Area U is being monitored for radioactive material transport under IWMP.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 1.1 (Appendix B).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-U: Material Disposal Area U

REFERENCES

Department of Energy. 1979. "Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site," Department of Energy report DOE/EIS-0018, December 1979.

Drazer, H. W. 1946. "Preliminary Survey of Sewer System," Los Alamos Scientific Laboratory memorandum to E. R. Jette, June 11, 1946.

Harper, J. R., and R. Garde. 1981. "The Decommissioning of TA-21-153, A ^{227}Ac Contaminated Old Filter Building," Los Alamos National Laboratory report LA-9047-MS, November 1981.

LOCATION PLAN

SI METRIC DRAWING

NO.	DATE	CLASS. REVIEW	REVISIONS	BY					

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ENGINEERING DEPARTMENT

UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

DWG. CLASSIFICATION: U mDKell TITLE: U

AUTHORIZED FOR: SECURITY / SAFETY / HEALTH

MATERIALS DISPOSAL AREAS

AREA "U"

DP - SITE TA - 21

SUBMITTED: PROJ. ENGR. — APPROVED: mDKell ENGR. GROUP LEADER — APPROVED: ENGR. DEPT. OFFICE

CHECKED R J A.

DESIGNED H A H

DRAWN PFEUFER

LAB JOB NUMBER 1757 - 0

DATE 6-4-74

ENG-R4476

Figure MDA-U: Materials Disposal Area U

MATERIAL DISPOSAL AREA V

DISCUSSION

Background--Inactive Material Disposal Area V, 1-acre site located at TA-21, was used for the disposal of contaminated liquid waste from laundry operations from 1945 to 1961. It used three absorption beds similar to those in Area T. An estimated 3 Ci of strontium-89, barium-140 and lanthanum-140, now decayed to undetectable levels, was discharged to these pits. Small quantities of strontium-90 and plutonium-239 were also discharged to the pits (Balo and Warren 1983; Department of Energy 1979). The pits did not always function properly; in a check of the area in 1946, "we found the seepage pits, for waste water, not functioning properly and that a large amount of contaminated water was lying above the ground in the pits" (Drazer 1946). Surface stabilization efforts were completed in FY 1985.

Material Disposal Area V is being monitored under the IWMP.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 2.6 (Appendix B).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-V: Material Disposal Area V

REFERENCES

Balo, K. A., and J. L. Warren. 1983. "Waste Management Site Plan, Los Alamos National Laboratory, December 1983," Los Alamos National Laboratory report LA-UR-84-98, December 1983.

Department of Energy. 1979. "Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site," Department of Energy report DOE/EIS-0018, December 1979.

Drazer, H. W. 1946. "Preliminary Survey of Sewer System," Los Alamos Scientific Laboratory memorandum to E. R. Jette, June 11, 1946.

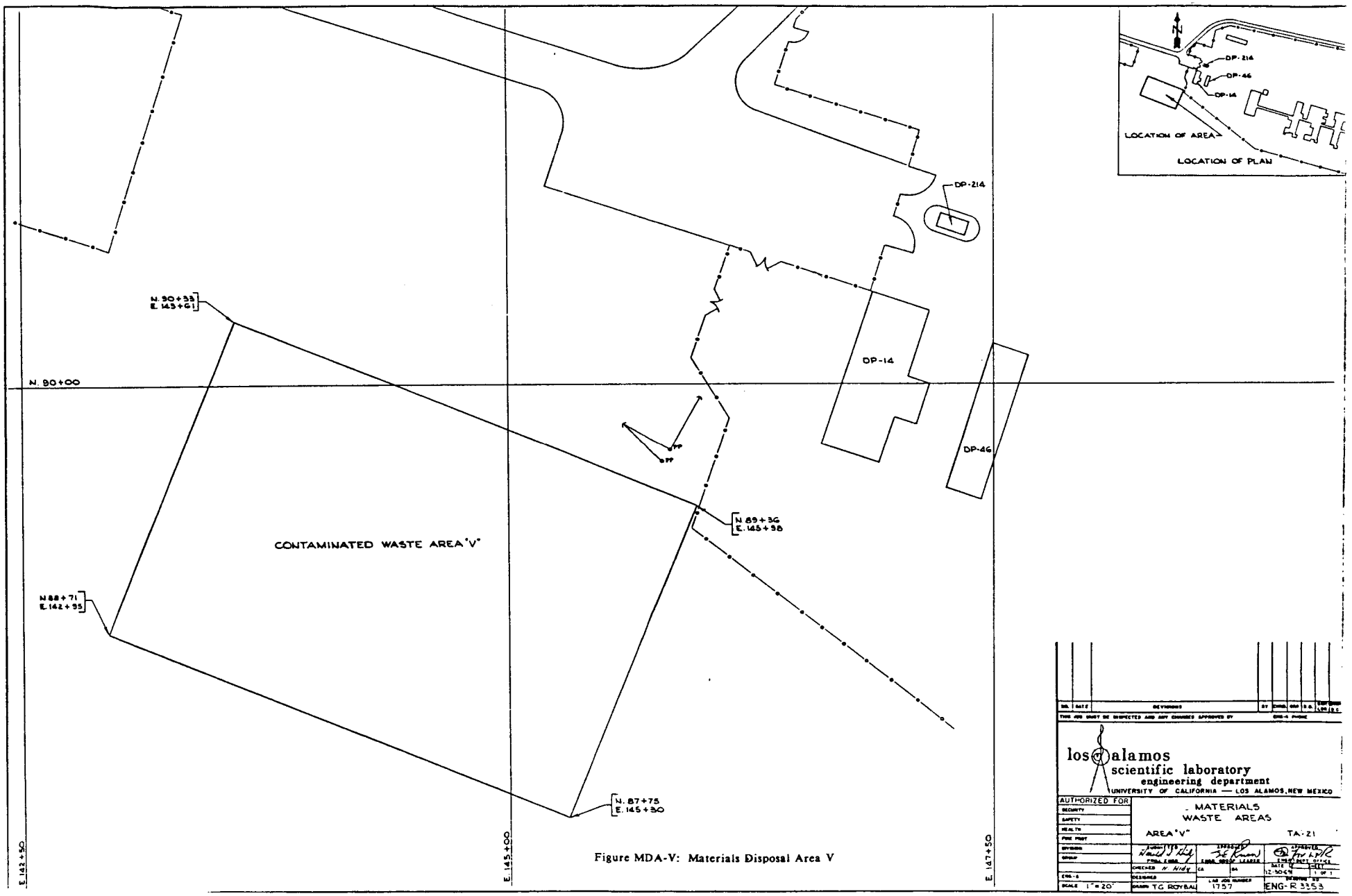
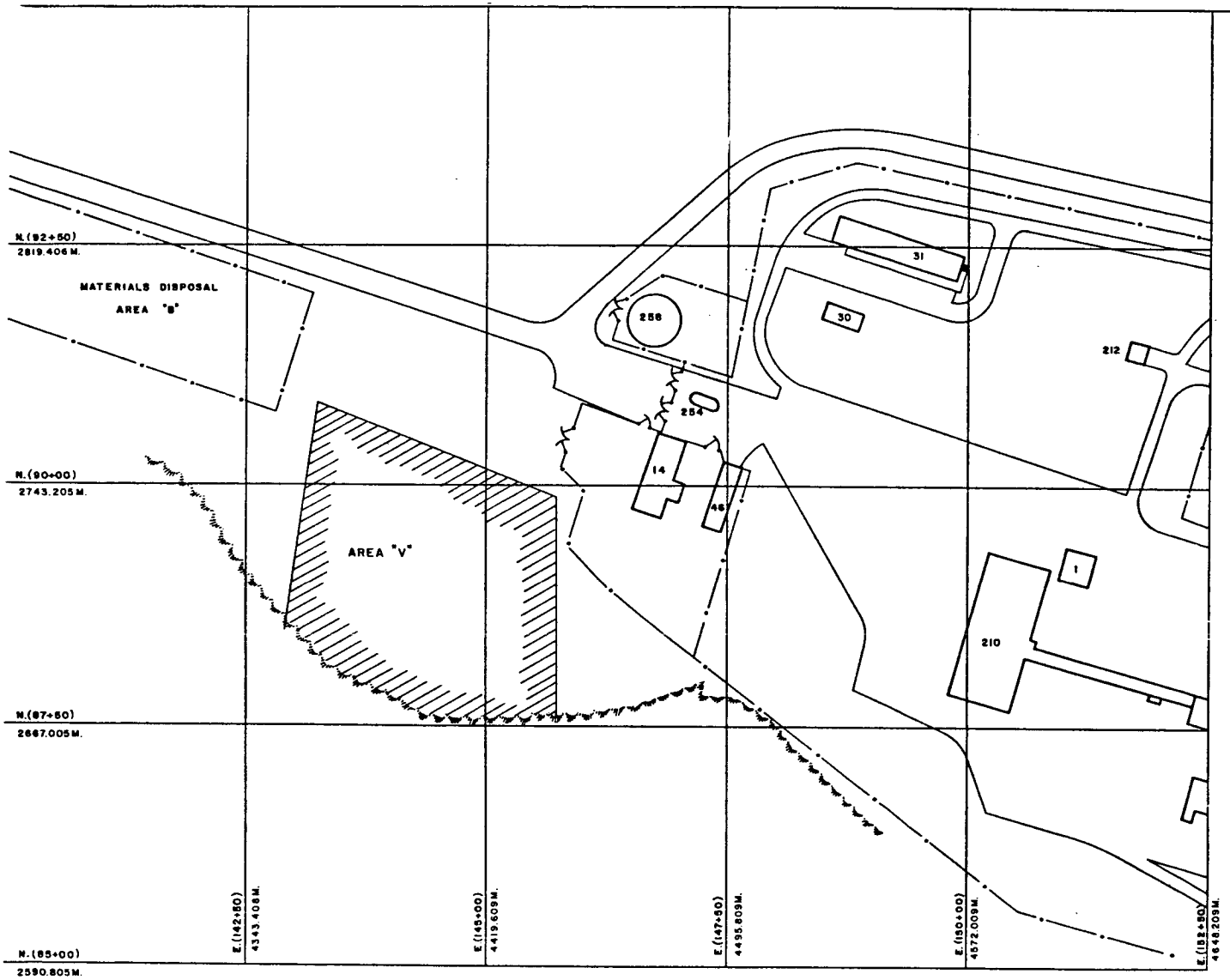
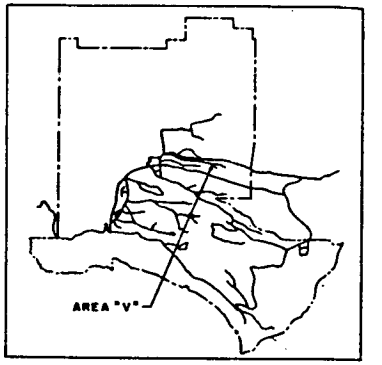


Figure MDA-V: Materials Disposal Area V





LOCATION PLAN

50 25 0 50 100

SCALE
1"=50' 1:600

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ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

AUTHORIZED FOR

MATERIALS DISPOSAL AREAS
AREA "V"
DP-SITE TA-21

DRAWN D K MINGO
LAB JOB NUMBER 1757-21
DATE 9-30-74
ENG-R 4477

Figure MDA-V: Materials Disposal Area V (cont)

MATERIAL DISPOSAL AREA W

DISCUSSION

Background--Inactive Material Disposal Area W is located at TA-35. It consists of between 500 and 650 lbs, approximately 80 gal, of sodium and NaK (a sodium-potassium alloy that was used as coolant for the Los Alamos Plutonium Research Experiment [LAMPRE] reactor) stored in two vertical stainless steel tubes 4 in. in diameter and 120 ft long. The stored materials contain trace amounts of fission products and plutonium-239. The exact amounts of the radioactive contaminants are not known, although the plutonium is estimated at less than 1 ppm. The reactor was shut down in 1963, and 19 months after shutdown, the coolant showed sodium-22, cesium-137, cobalt-58, and tantalum-182. Of these fission products, all would have decayed away by now except for the cesium-137. The storage tubes were placed in separate steel-cased drill holes 115 ft deep (Department of Energy 1979; Meyer 1972). The portions of the stainless steel tubing extending above the surface were entombed in a concrete structure in 1979. The structure's lid can be removed and it is marked with a brass plate describing the contents.

CERCLA Finding--Because of the status of activities (i.e., CEARP Phase V), CERCLA findings under FFSDIF, PA, and PSI and HRS/MHRS scoring are not appropriate.

Planned Future Actions--Area W is covered by routine LANL operations.

FIGURE

Figure MDA-W: Material Disposal Area W

REFERENCES

Department of Energy. 1979. "Final Environmental Impact Statement, Los Alamos Scientific Laboratory Site," Department of Energy report DOE/EIS-0018, December 1979.

Meyer, D. D. 1972. "Storage of AEC-Controlled Radioactively Contaminated Na and NaK," Los Alamos Scientific Laboratory memorandum to E. E. Wingfield, September 11, 1972.

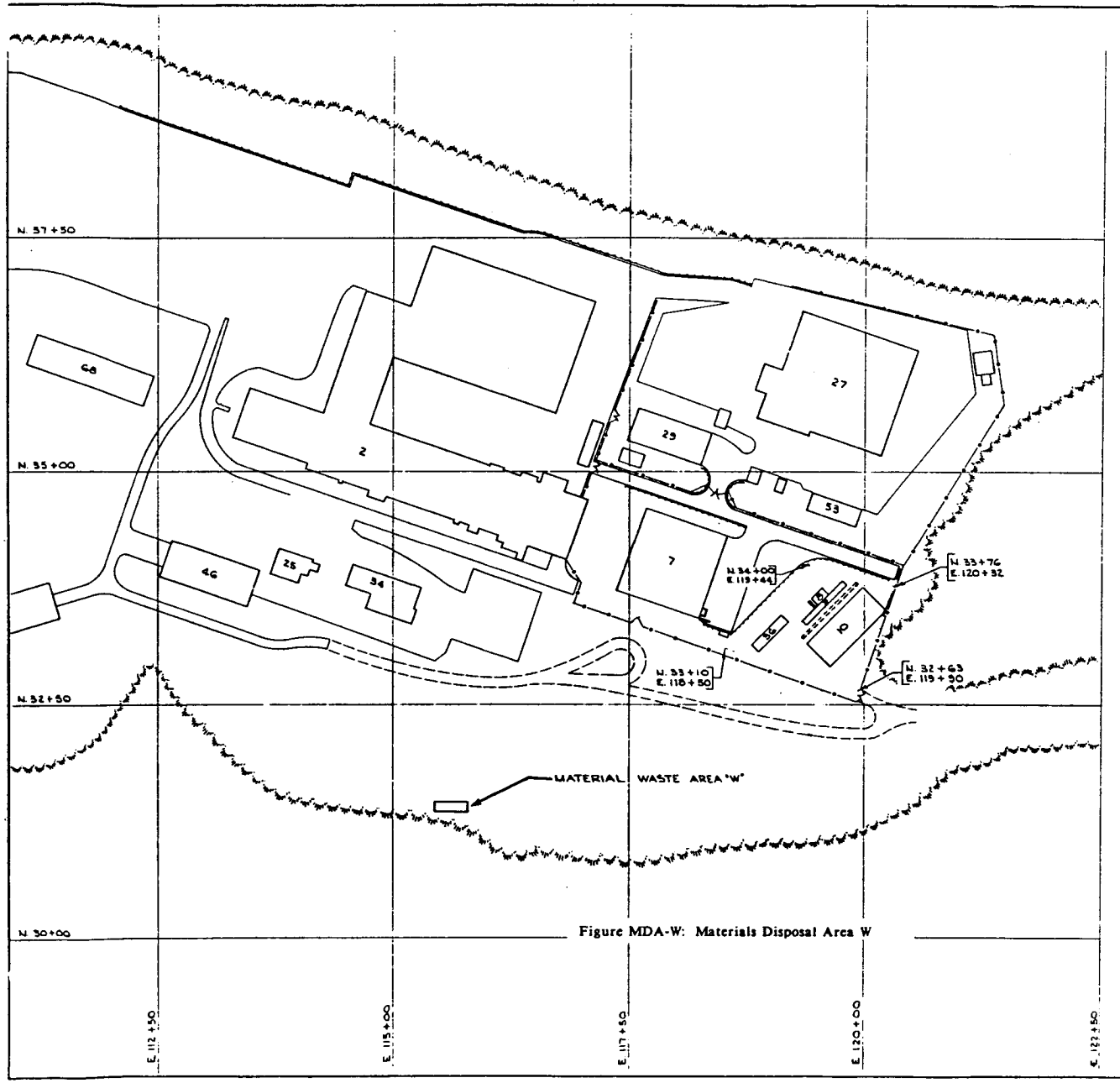


Figure MDA-W: Materials Disposal Area W

los alamos scientific laboratory
engineering department
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS
WASTE AREAS
TEN SITE AREA "W" TA-35

SCALE 1" = 50'
DRAWN TG ROYBAL
1757
ENG-R 3359

MATERIAL DISPOSAL AREA X

DISCUSSION

Background--Area X consists of the LAPRE II (Los Alamos Plutonium Reactor Experiment) reactor pressure vessel and associated piping and the remains of the associated pump pit (TA-35-28). The vessel contained a uranium solution for fuel, which has been removed. The area is located near the southeast end of TA-35-2. Presently the area is paved over and not marked.

Environmental dosimetry measurements in 1985 indicated that cesium-137 from Area X is causing radiation levels in the immediate area to be about 60% above local background levels (Environmental Surveillance Group 1985).

The remains of LAPRE II are on the list of Laboratory facilities to be decontaminated and/or decommissioned.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 7.7 (Appendix B).

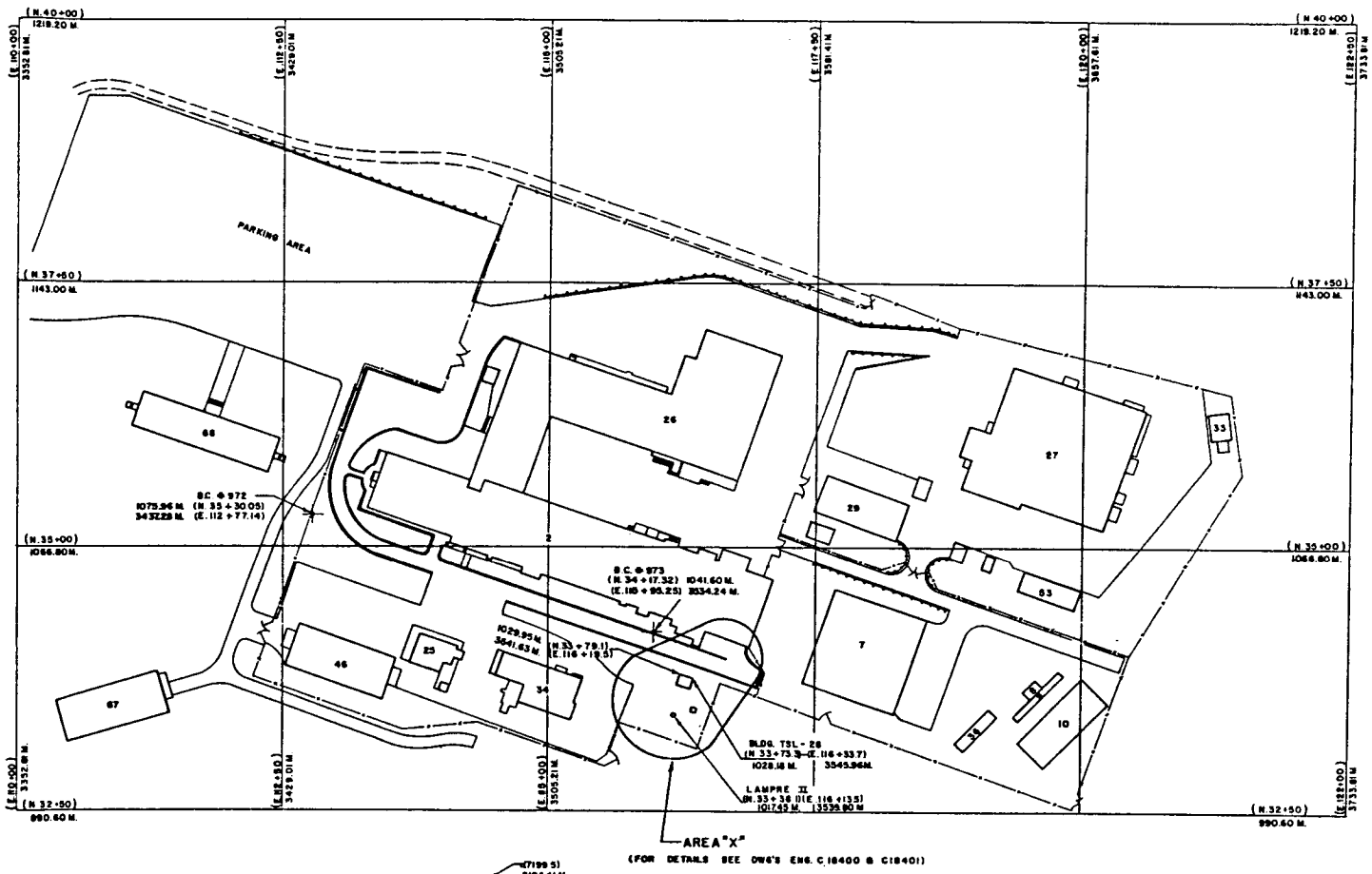
Planned Future Actions--The site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

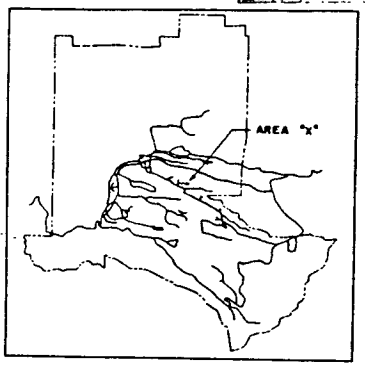
FIGURE

Figure MDA-X: Material Disposal Area X

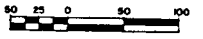
REFERENCE

Environmental Surveillance Group. 1985. "Environmental Surveillance Quarterly Report July-September 1985," Los Alamos National Laboratory document, October 1985.





LOCATION PLAN



SCALE: 1"=50'
1:600

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "X"
TEN SITE
TA - 35

ENG-R-4479

Figure MDA-X: Materials Disposal Area X

MATERIAL DISPOSAL AREA Y

DISCUSSION

Background--Inactive Material Disposal Area Y is located at TA-39. It is a long pit containing firing site debris such as cables, test stand remains, and other waste, such as packing boxes and office-type trash generated in normal activities at firing points (Employee Interviews 1985). The pit is full and has been covered over. A new pit has been started just south of Area Y. Area Y is the third pit used for such disposal. The first two pits are further south in Ancho Canyon.

Chemical wastes may have been disposed of in a pit at TA-39. However, it has never been a routine practice to put chemicals in pits at TA-39 (Employee Interviews 1985).

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 2.1 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area Y are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-Y: Material Disposal Area Y

REFERENCE

Employee Interviews. 1985. Information obtained through employee interviews by CEARP personnel, Los Alamos National Laboratory, 1985.

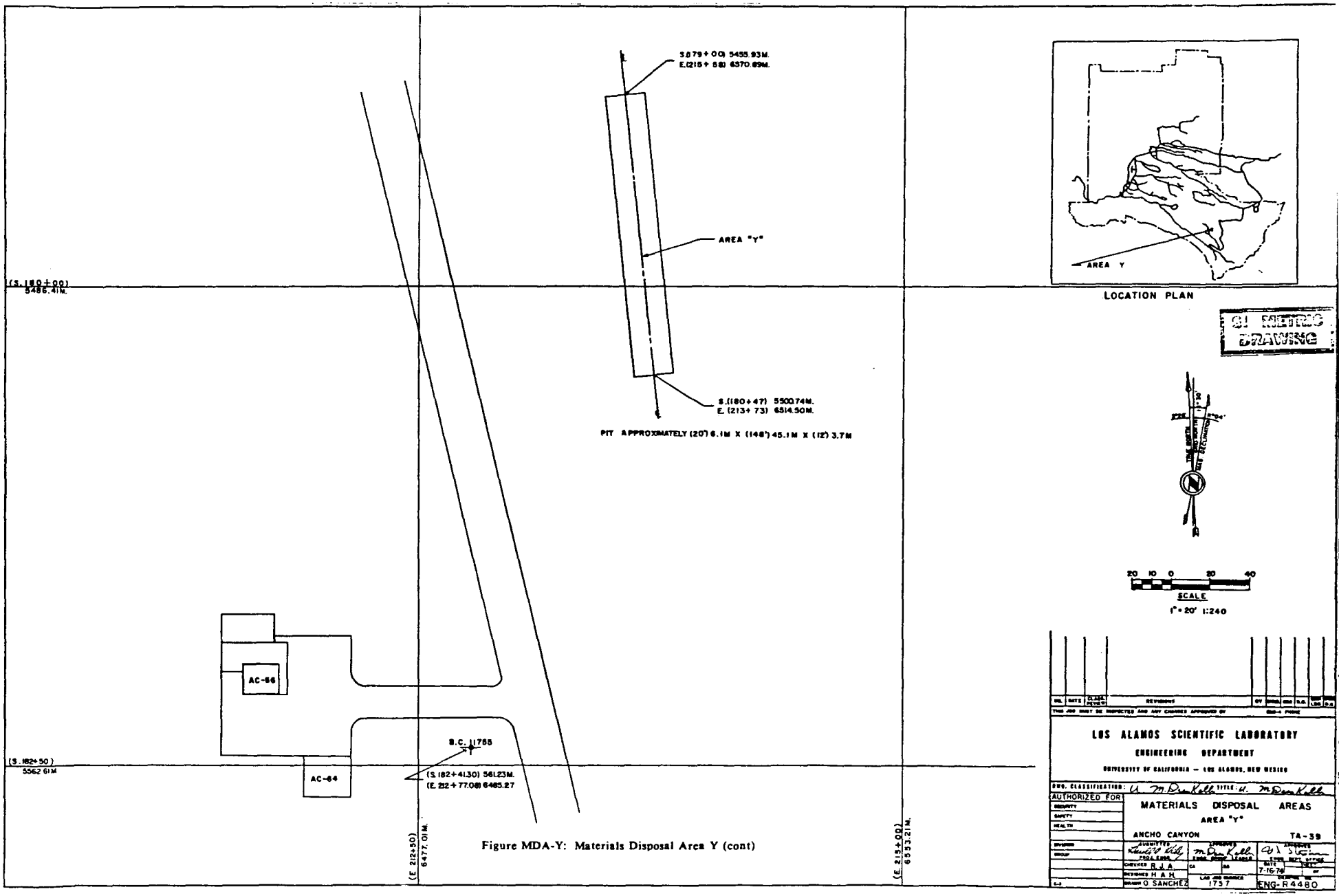


Figure MDA-Y: Materials Disposal Area Y (cont)

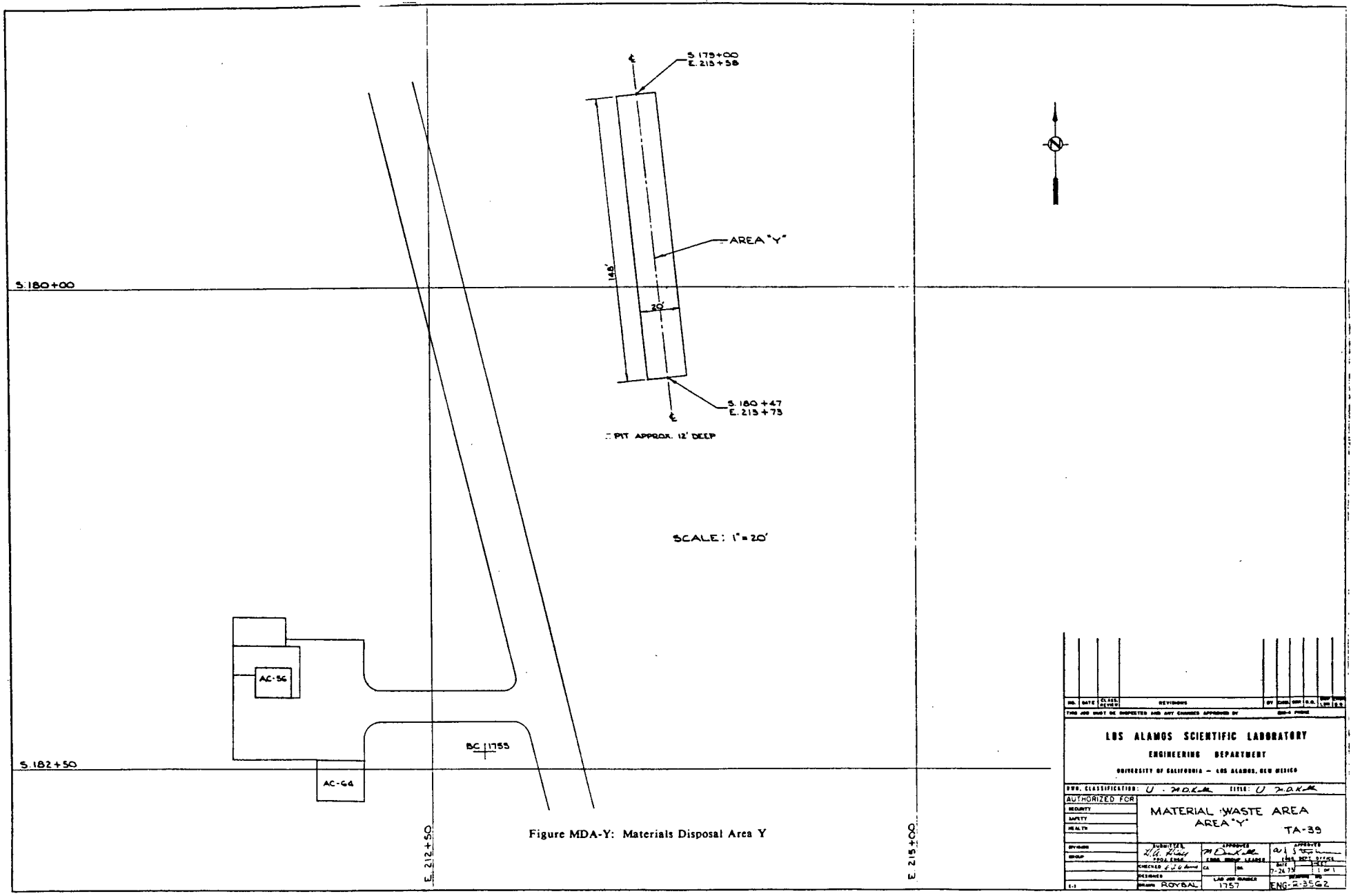


Figure MDA-Y: Materials Disposal Area Y

MATERIAL DISPOSAL AREA Z

DISCUSSION

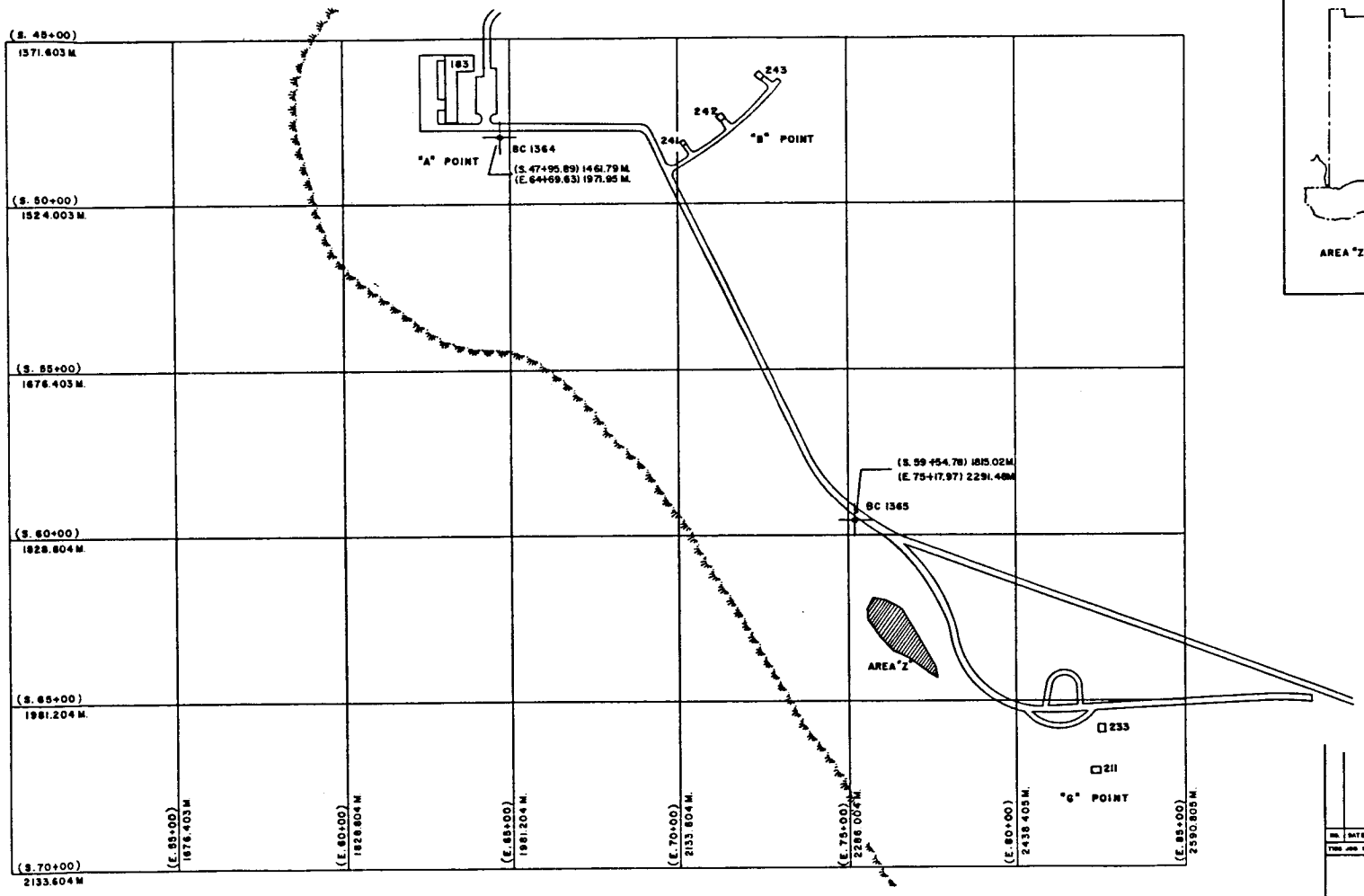
Background--Inactive Material Disposal Area Z, an area of a few acres where material has been pushed over a bank, is located southeast of TA-15-183. Some of the material is covered by soil, but inspection of the visible portions of the material indicated construction debris, sandbags, and heavy woven cables. The sandbags and woven cables are most likely protective shielding used in dynamic testing at the nearby PHERMEX (pulsed high energy machine emitting x-rays) facility. CEARP field reconnaissance during 1987 indicates uranium contamination. Employees recall that the area was used from 1965 to 1981; however, there is a fair amount of uncertainty about these dates. Employees recall that a great deal of rubbish was put there from construction activities in addition to many sandbags that were used to provide shielding on dynamic tests. These sandbags likely contain depleted uranium, beryllium, and lead contamination. Mercury was used in these tests but most was probably volatilized by the tests. No records were kept regarding disposal.

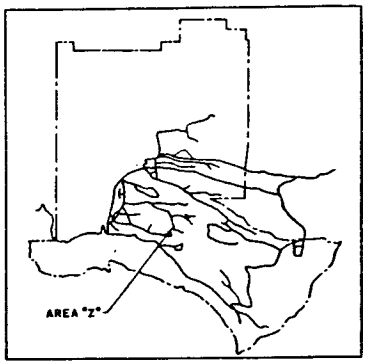
CERCLA Findings--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 2.1 (Appendix B).

Planned Future Actions--The site will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

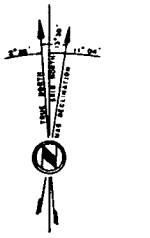
FIGURE

Figure MDA-Z: Material Disposal Area Z





LOCATION PLAN



SCALE
1"=150' 1:1800

Figure MDA-Z: Materials Disposal Area Z

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "Z"
R-SITE TA-15

LAB JOB NUMBER 1757-15
ENG-R 4481

MATERIAL DISPOSAL AREA AA

DISCUSSION

Background--Area AA is located near TA-36-12 in the portion of TA-36 known as Lower Slobbovia. Pits at Area AA were used to burn firing site debris that could have been contaminated with high explosive. Basically, the debris is cables, wooden tables (or portions thereof), and paper wipes used in shot preparation. The area presently contains one open pit that is currently being used. (The used pits have been covered over.) Burns are conducted about four times a year.

One memo states that the only contaminated waste burial sites in TA-36 are two small ones located in Potrillo Canyon near building TA-36-12 (Campbell 1956). It is indicated that these contain the ash from fires in which depleted uranium was burned. The fires were near the edge of a firing pad at TA-36-12 and were thus near Area AA. The depleted uranium was from parts deliberately damaged in drop tests.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 10.1 (Appendix B).

Planned Future Actions--As appropriate, disposal units within Area AA are covered by routine LANL operations or will be evaluated under CEARP Phase II to determine whether future action is warranted under CEARP Phase III.

FIGURE

Figure MDA-AA: Material Disposal Area AA

REFERENCE

Campbell, A. W. 1956. "Location of Contaminated Waste Burial Sites," Los Alamos Scientific Laboratory memorandum to Dean D. Meyer, June 14, 1956.

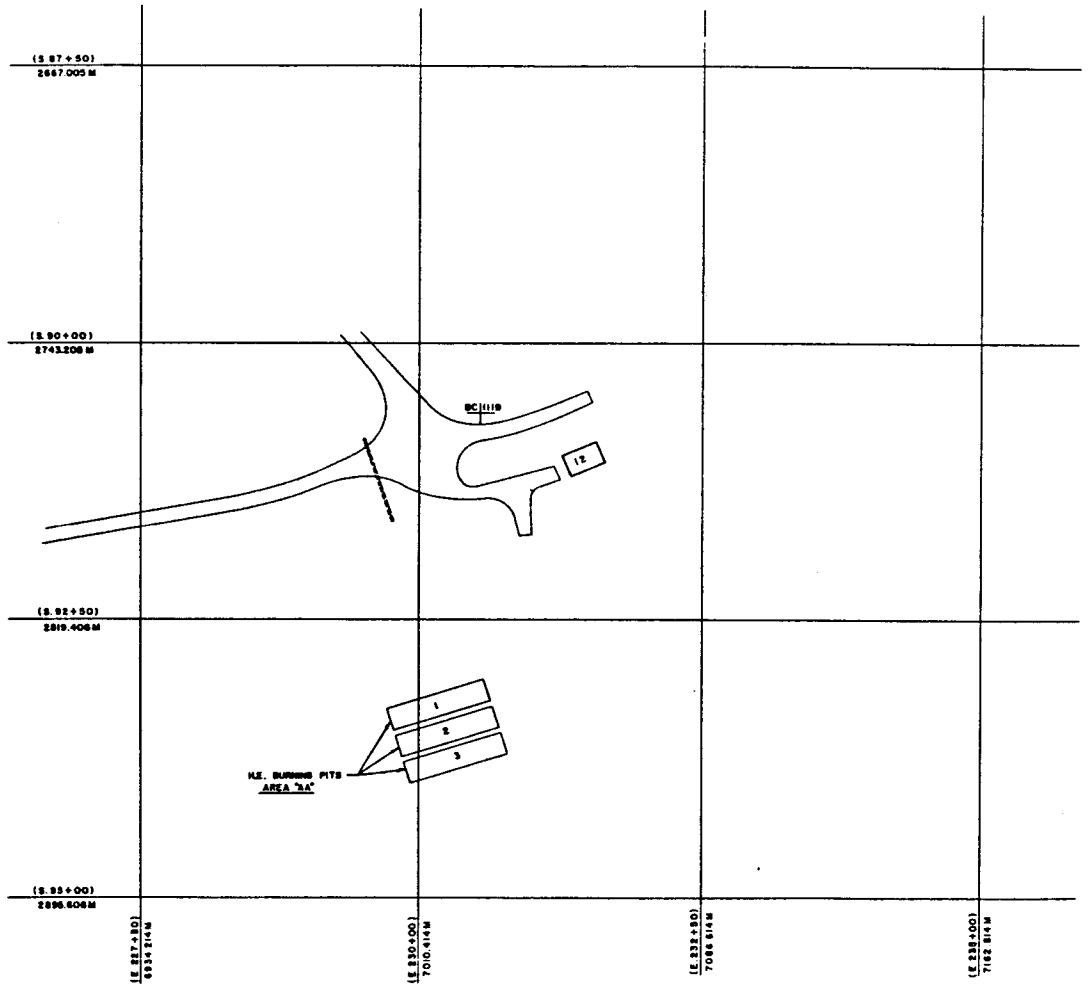
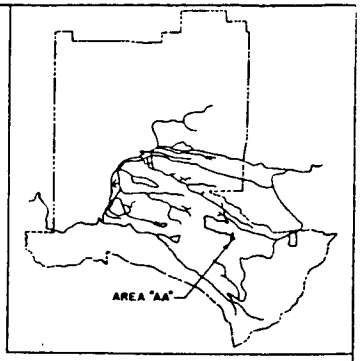
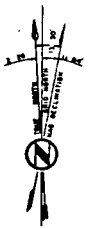


Figure MDA-AA: Materials Disposal Area AA



LOCATION PLAN



SCALE:
1" = 50' (1:600)

LOS ALAMOS SCIENTIFIC LABORATORY
ENGINEERING DEPARTMENT
UNIVERSITY OF CALIFORNIA — LOS ALAMOS, NEW MEXICO

MATERIALS DISPOSAL AREAS
AREA "AA"
KAPPA-SITE TA-36

ENG-R 4482

MATERIAL DISPOSAL AREA AB

DISCUSSION

Background--Area AB is located at TA-49. It consists of a series of 3-ft- and 6-ft-diam shafts ranging in depth from about 30 to 120 ft within experimental areas 1, 2 (including 2A and 2B), 3, and 4. The waste consists of the debris left in place after a series of hydronuclear and related experiments conducted in 1959 to 1961. The use of the area is discussed at greater length in the section on TA-49.

Most radioactive materials were left in the 31- to 108-ft deep holes in which the experiments were conducted. The principal radioactive materials of interest from an environmental standpoint include plutonium and uranium. A total of about 40.1 kg of plutonium, 93 kg of enriched uranium, and at least 82 kg of depleted uranium were used. A small amount of fission products (less than 1 mCi) would also be present. The principal nonradioactive materials include beryllium and lead. About 13 kg of beryllium was used. No estimate of the amount of lead left from the experiments is available, but engineering drawings will be reviewed during follow-up studies.

Other contaminated materials were also left in the experimental areas. One or more holes in each experimental area were used to permit expansion of gases passing through the sample collection devices and probably contain some particulate contamination. Some of the 6-ft-diam holes were used to dispose of pipes and other equipment contaminated during the experiments. Steel boxes buried adjacent to the experimental holes contained sample collection equipment and often became contaminated. These were filled with concrete and left in place.

CERCLA Finding--Positive for FFSDIF, PA, and PSI; HRS/MHRS Migration Mode Score is 6.7 (Appendix B).

Planned Future Actions--This site will be evaluated under CEARP Phase II to determine whether further action is warranted under CEARP Phase III.

FIGURE

Figure MDA-AB: Material Disposal Area AB (Note: same as Figure TA-49-1)

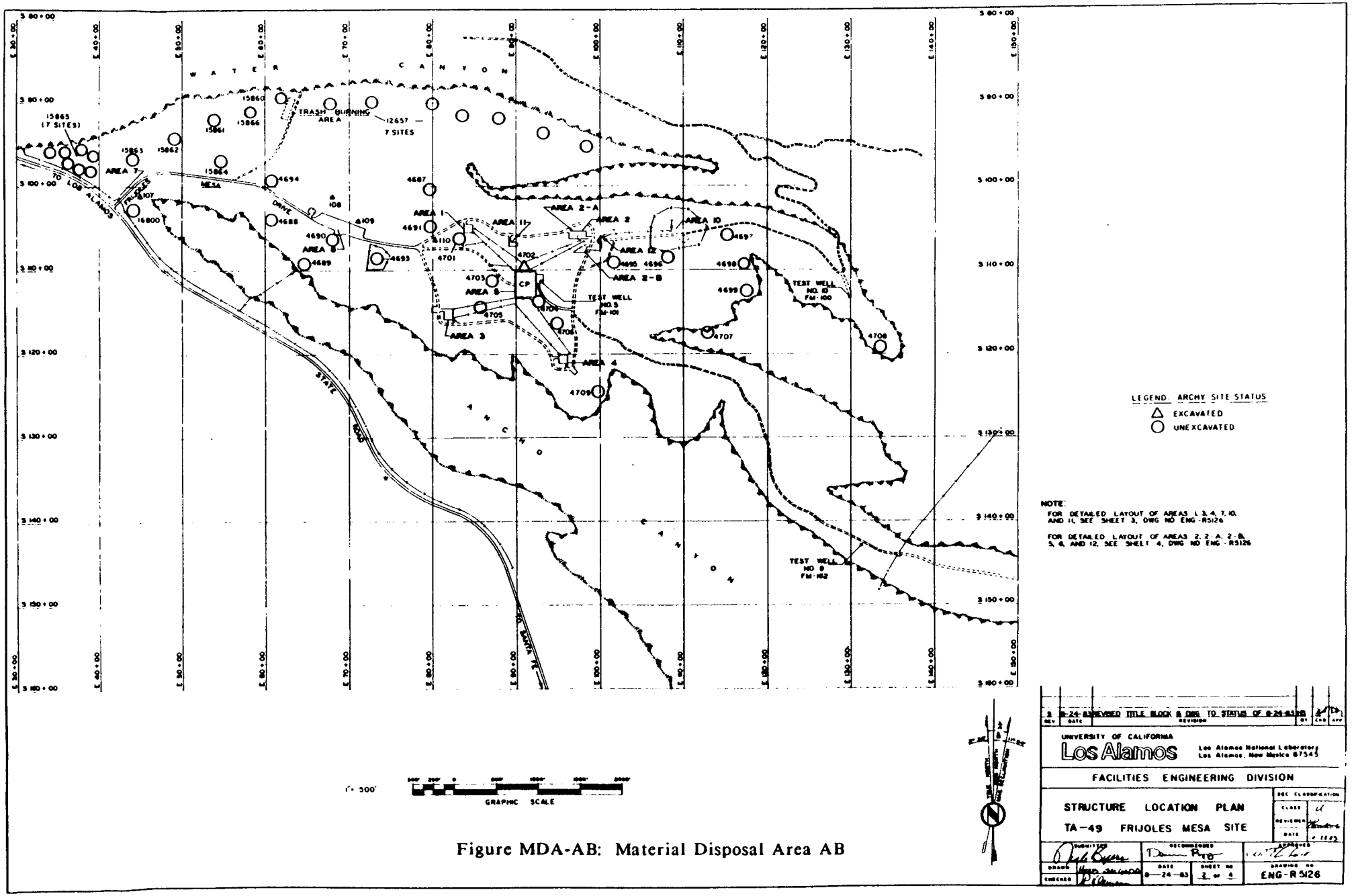
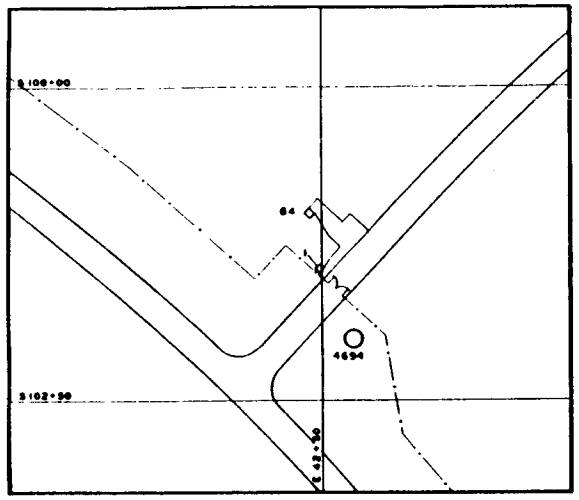
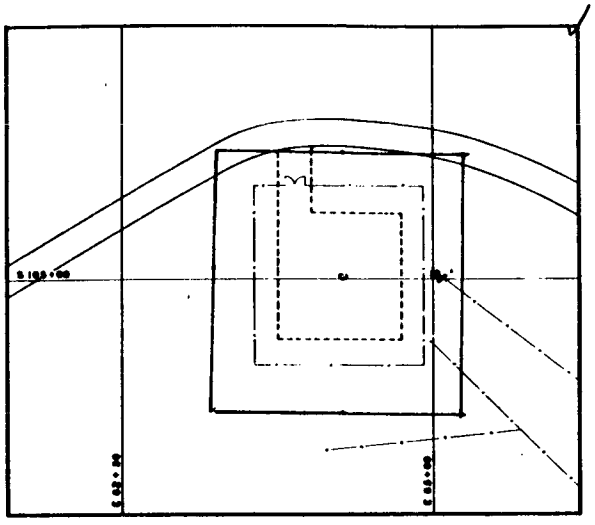
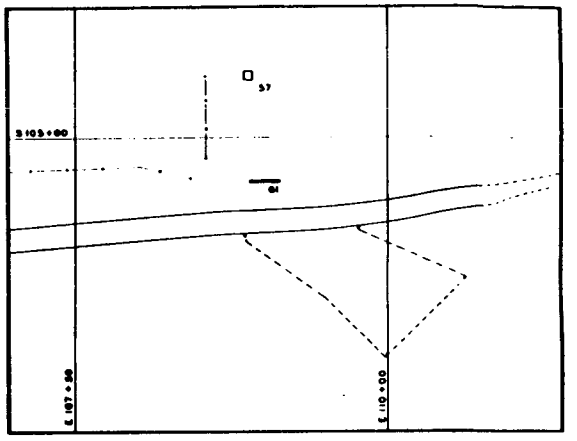
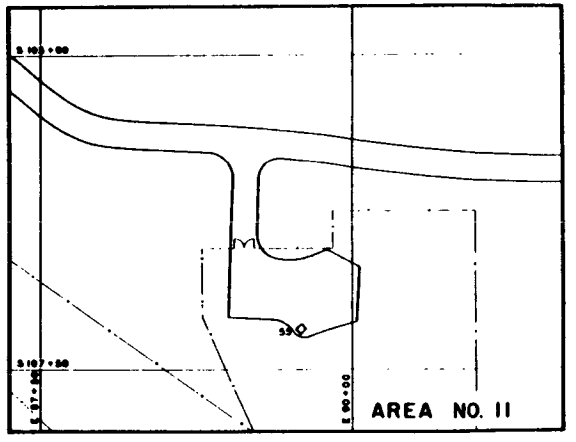


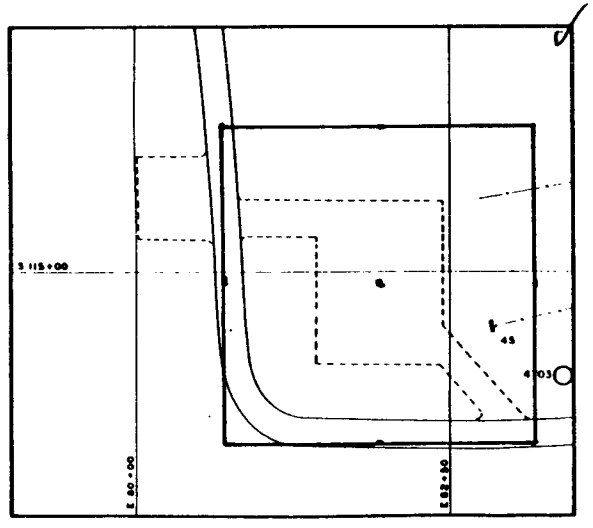
Figure MDA-AB: Material Disposal Area AB

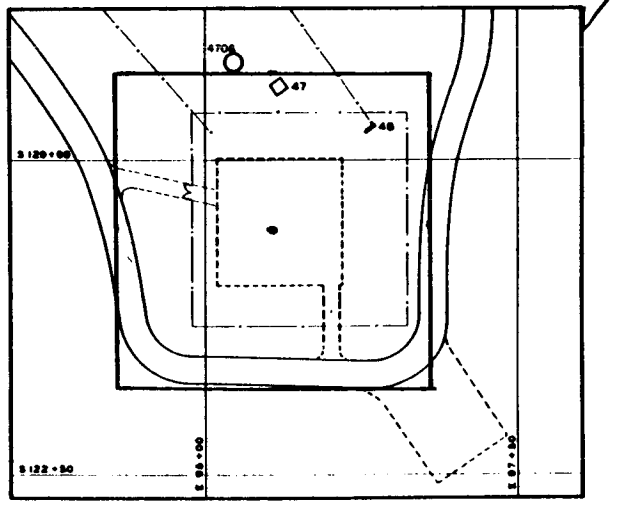












LEGEND: ARCHY SITE STATUS

△ EXCAVATED

○ UNEXCAVATED

NOTE FOR OVER-ALL SITE PLAN SEE SHEET 2, DWG NO ENG-R5126

GRAPHIC SCALE

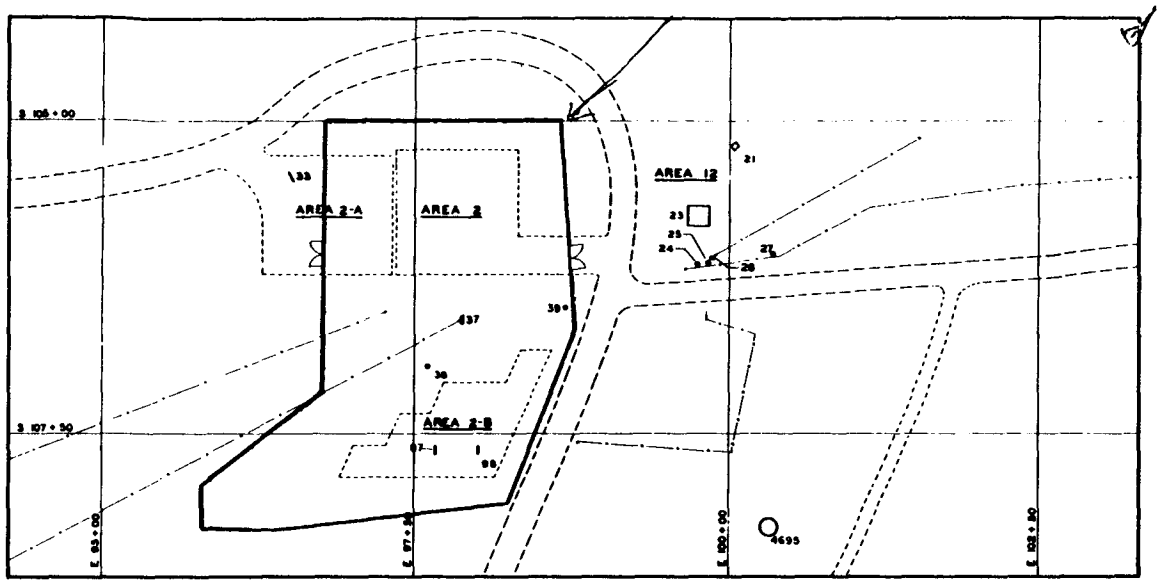
UNIVERSITY OF CALIFORNIA
Los Alamos
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

FACILITIES ENGINEERING DIVISION

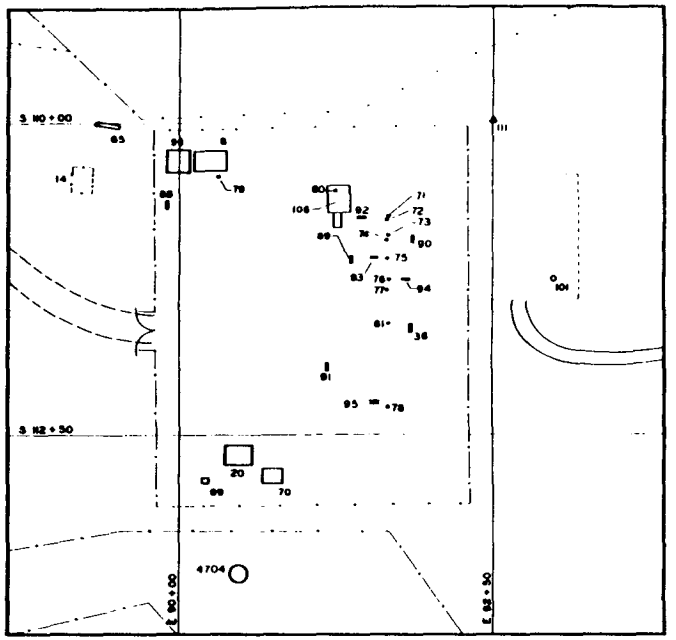
STRUCTURE LOCATION PLAN
TA-49 FRIJOLES MESA SITE

ENG-R5126

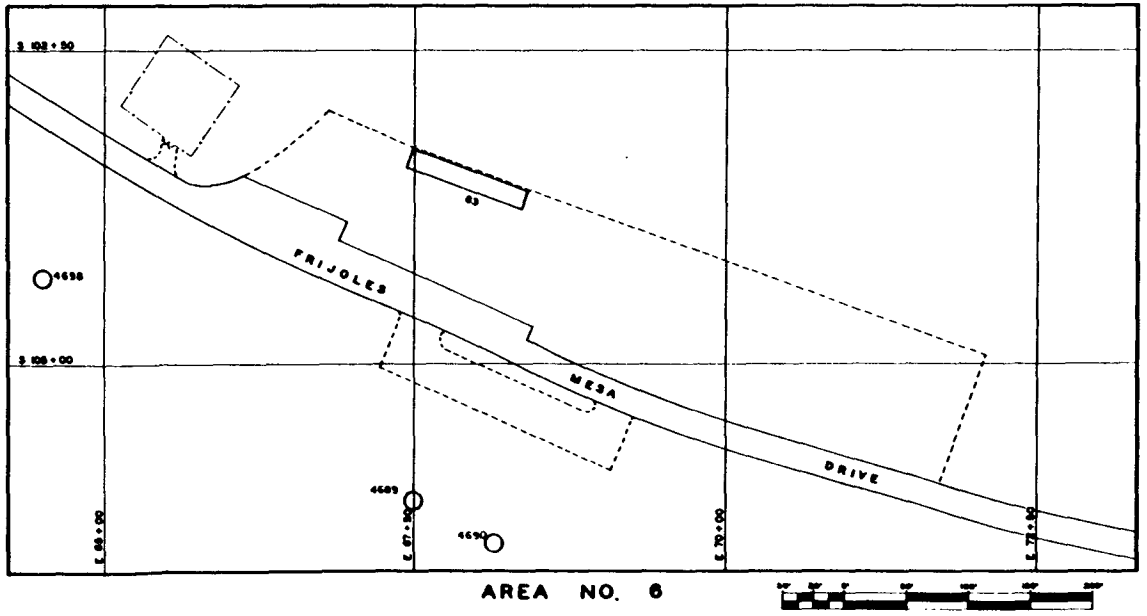
Figure MDA-AB: Material Disposal Area AB (cont)



AREAS NOS. 2, 2-A, 2-B & AREA NO. 12



AREA NO. 5



AREA NO. 6

LEGEND: ARCHY SITE STATUS

△ EXCAVATED

○ UNEXCAVATED

NOTE FOR OVER-ALL SITE PLAN SEE SHEET 2, DWG NO ENG-R5126

8	8-22-83	REVISED TITLE BLOCK & DWG TO STATUS OF 8-04-83	AC

UNIVERSITY OF CALIFORNIA
Los Alamos National Laboratory
Los Alamos, New Mexico 87545

Los Alamos

FACILITIES ENGINEERING DIVISION

STRUCTURE LOCATION PLAN
TA-49 FRIJOLES MESA SITE

SUBMITTED
RECOMMENDED
APPROVED
DRAWN
CHECKED
DATE 8-25-83
SHEET NO 4 OF 4
DRAWING NO ENG-R5126

Figure MDA-AB: Material Disposal Area AB (cont)

Sec V. C.

V.C. WASTE GENERATION, HANDLING, AND DISPOSAL

V.C.1. HAZARDOUS WASTES

Laboratory activities generate three types of hazardous wastes: (1) wastes from processing operations, (2) wastes from research and development (R&D) activities, and (3) high-explosive waste. Each of these general types has unique characteristics. Wastes from processing operations typically are significant volumes of material that contain a very limited number of contaminants. Wastes from R&D, however, are usually lesser volumes of a number of different laboratory reagents, chemicals, solvents, and other general laboratory wastes. In addition, the composition and concentration of contaminants in a given process waste are generally uniform, unless modifications to the process are made. Conversely, the waste species from R&D activities continually vary, depending on the nature of the rapidly changing R&D efforts at the Laboratory. High-explosive wastes consist of a fairly constant but narrow assemblage of chemicals in varying concentrations.

Los Alamos has developed procedures for the identification and segregation of hazardous wastes. When a waste is identified as hazardous, it is directed to the appropriate method of treatment or disposal based on its characteristics as determined by the Waste Analysis Plan. Presented below is a description of the types of RCRA wastes generated, treated, and stored at the Laboratory and those disposed of at an offsite permitted facility. The wastes are divided according to process or facility activities that generate the wastes. Table V.C.1 provides an abbreviated form of this information as well as representative estimates of waste volumes. The parameters for which each hazardous waste will be routinely analyzed and the rationale for the selection of these parameters are presented in Table V.C.2. The parameters for waste verification analysis, including the rationale for selecting these parameters and the frequency of analysis, are given in Table V.C.3. Table V.C.4 lists the test methods that will be used to test for the parameters. Table V.C.5 lists the methods that will be used to obtain representative samples. Table V.C.6 defines the frequency and rationale for routine analysis. Additional information on hazardous waste generated at LANL is provided in Appendix D.

V.C.1.a. Hazardous Waste Management Facilities

A schematic diagram of Los Alamos hazardous waste management is presented in Fig. V.C.1. The waste management facilities at Los Alamos that will be permitted under RCRA consist of the following: (1) TA-50 batch treatment system, container storage area, and chemical waste incinerator; and (2) TA-54 waste transfer, packaging, and storage facilities, and treatment tanks. Facilities used for both the open burning and the detonation of high-explosive waste are located at the Laboratory. Although these facilities are included in the Part A submission, they are not included in the Part B Permit Application because 40 CFR regulations for facilities of this nature have not been promulgated. This Part B Application will be amended when such regulations are in place.

TA-50 Batch Treatment System, Container Storage Area, and Chemical Waste Incinerator. The lower level of building 1 at TA-50 houses hazardous waste storage and treatment facilities for treating nonradioactive RCRA-regulated wastes. The treatment facility includes a versatile batch, wet chemical processing system designed to neutralize or treat cyanides, acids and bases, and heavy metal-containing solutions. Hazardous wastes are currently received in drums; however, connections and necessary equipment are in place for off- and on-loading trucks by vacuum. Drums are kept closed and stored on a pallet in the curbed storage area until their contents are transferred to the treatment system. Fifty-five-gallon steel drums are being used to store wastes at the TA-50 container storage area. These drums meet the U.S. Department of Transportation Specification No. 17C and 17H. Corrosive wastes will be stored in DOT 17C or 17H drums with polyethylene liners, if necessary, to prevent corrosion of the metal drums. The drums will be handled and transported in the batch treatment and storage areas by hand trucks or forklifts.

The chemical waste incinerator, located in building 37 at TA-50, is an extensively modified controlled-air incinerator rated at a nominal waste-feed throughput of 45 kilograms per hour. It is currently permitted to burn radioactively contaminated PCB materials. The incinerator burned RCRA hazardous wastes before November 1980 on an experimental basis in the form of mixed waste (i.e., radioactive and RCRA waste). The incinerator currently has interim status to burn hazardous waste, and the Laboratory is proposing to permit the incinerator under RCRA to provide for future operating flexibility and minimization of land disposal. The incinerator and

flue-gas treatment systems are capable of safely combusting (99.999 per cent) a variety of hazardous wastes, including low-level radioactive wastes and transuranic contaminated wastes. Wastes to be incinerated are stored at the Area L waste transfer, packaging, and storage facilities if storage for greater than 90 days is required. Wastes are transferred to building 37, TA-50, less than 90 days before they are scheduled for incineration. Because the incinerator is used for volume reduction of radioactive and hazardous waste, and the ash and scrub water effluent is considered to be potentially hazardous waste (40 CFR 261.3[c][2]) (NMHWMR 201.A.2.c[2]), the ash and scrub water effluent are checked for radioactive and hazardous waste contamination and handled appropriately.

TA-54 Waste Transfer, Packaging and Storage Facilities, and Treatment Tanks. The TA-54 waste transfer, packaging, and storage facilities are used to store and package or solidify hazardous chemical wastes. When ready, wastes are transported from the TA-54 facilities to onsite treatment facilities, or offsite for disposal or recycling at a licensed facility. Area L waste transfer, packaging, and storage facilities consist of a metal building and a roofed concrete pad.

These facilities are used to store 55-gallon drums of waste, including lab packs. Before the lab packs are put into the drums, the wastes are identified and appropriately segregated. This may involve placing small containers of waste in drums, pouring liquid waste into drums containing vermiculite, and transferring waste from one drum to another. All drums and containers are kept closed during storage and are opened only when chemicals are transferred from one container to another or when lab packs are prepared. A maximum of eight 55-gallon drums can be stored in the metal building.

A typical handling/storage load for the metal building consists of the following:

- four 55-gallon drums and
- twenty-five gallons of miscellaneous wastes in assorted small (5-gallon or less) containers.

A total of 304 55-gallon drums can be stored at the roofed concrete pad by using a forklift to stack drums on pallets in two layers. The 55-gallon drums meet the

DOT Specification No. 17C or 17H (small containers are also DOT approved). Corrosive wastes will be stored in DOT drums with polyethylene liners. Two 225-gallon polyethylene storage containers are also located on the pad. These containers are designed to be moved with a forklift truck and meet DOT Specification No. E9052. These polyethylene containers are compatible with any waste that will be stored in them, according to vendor chemical suitability data.

When a chemical waste is ready for treatment or disposal, personnel at the generating laboratory contact Group HSE-7. HSE-7 personnel then visit the generating site to package the waste for transport to the waste transfer, packaging, and storage facilities at Area L. The wastes are packaged and labeled in compliance with DOT and EPA requirements and are transported on a 3-ton flatbed truck.

Nine waste types at the waste transfer, packaging, and storage facilities can be stored at any one time--six on the concrete pad and three in the metal building.

Four 1,665-gallon 10-gauge carbon steel tanks are also located at TA-54, Area L. These tanks are used to neutralize, oxidize, and evaporate RCRA-regulated and non-RCRA-regulated wastes. The waste most commonly oxidized in these tanks is lithium hydride. Ammonium bifluoride (a "non-RCRA" waste) is the waste most commonly evaporated in the tanks. The specific gravity of any liquid placed in the tank may not exceed 1.5. Treatment chemicals and water are first added to a 210-gallon tank, mixed, and then pumped out into the treatment tank. Both liquid and solid wastes are then introduced to the treatment tanks through the open top. Grab samples are taken from tanks at least twice--before and after treatment of wastes--to confirm completeness of treatment before final removal.

V.C.1.b. Hazardous Waste Streams

V.C.1.b.1. Electrochemical Processing Wastes

Generation. The Electrochemistry Section of the Materials Technology Group (MST-6), located at TA-3-66, generates plating solutions containing chromates and cyanides that are listed as reactive and toxic wastes (codes F007 and F009 under RCRA). The Print Circuit Board Shop of the Electronics Technology Application

Group (E-5), located at TA-3-40, generates acid/base wastes that are heavily contaminated with copper. These wastes are considered to be hazardous because of their corrosivity (RCRA Code D002).

Handling and Disposal. All electrochemical wastes, including cyanide, chromate, or copper in an acid/base waste, must be neutralized before disposal. Waste from electrochemical processing is managed at the TA-50 batch treatment facility. If the wastes contain cyanide, alkaline chlorination is performed to destroy the cyanide. In either case, a heavy metal hydroxide sludge is formed during treatment, and the sludge is solidified with cement. This sludge was disposed of at Area L in TA-54 until November 8, 1985. At that time, interim status for land disposal of chemical wastes was lost because no groundwater monitoring system was physically in place, and a pending waiver that met RCRA regulations had not been approved. The Laboratory is working on an agreed-upon program with the EID for vadose zone monitoring. This program was developed in relation to the DOE application for a waiver from deep groundwater monitoring under a Compliance Order/Schedule issued by the EID in May of 1985. The sludges will be stored until a disposal method is determined. The liquid fraction from the treatment process that does not meet the definition of a hazardous waste is released directly to the environment through a permitted outfall or to the radioactive liquid waste treatment plant. The liquid that is still classified as hazardous waste is stored at Area L, TA-54, to await offsite disposal.

V.C.1.b.2. Wastes from Isotope Separation

Generation. The Isotope and Structural Chemistry Group (INC-4), located at TA-21, generates highly concentrated nitric and sulfuric acid wastes. Both are hazardous because of their highly corrosive characteristics (RCRA Code D002). Nitric acid is also considered hazardous because, depending on its concentration, it can be an oxidizer (RCRA Code D001). The Laboratory has made a decision, based on knowledge of the waste generation processes, that these wastes do not contain listed hazardous contaminants.

Handling and Disposal. The acid waste stream from this operation is generally 7N in concentration or higher. Neutralization is performed at TA-50 in the batch waste treatment facility. Neutralized wastes may be discharged to the effluent tanks

of the radioactive liquid waste treatment plant for discharge to the canyon through a permitted outfall.

V.C.1.b.3. Shops (Mechanical Fabrication Division)

Generation. The Mechanical Fabrication Division, located in TA-3-39, houses most of the highly versatile machine shops at LANL. The machining operations routinely generate waste lithium metal and lithium hydride, both of which are hazardous because of their reactivity (RCRA Code D003). Waste materials from machining operations are segregated by metal as they are generated. The Mechanical Fabrication Division also generates waste nonhalogenated solvents, halogenated degreasers, beryllium, and solvents (RCRA Codes F003, F001, and F002, respectively).

Handling and Disposal. Before November 1985, RCRA toxic wastes were packaged in secure drums for disposal at Area L or Area G at TA-54. Now, drums of most toxic wastes other than beryllium that are destined for disposal are put into storage. Ultimate disposition has not yet been determined and will depend on whether Los Alamos constructs a new RCRA-permitted hazardous waste disposal facility. Reactive wastes such as the lithium hydride are packaged, manifested, and shipped to an offsite treatment and disposal company. Laboratory employees have visited this company and determined that it has the appropriate permits to dispose of Laboratory reactive waste. Solvents and degreasers that were disposed of at Area L are now being stored at Area L to await approved offsite disposal.

V.C.1.b.4. Wastes from Basic and Applied Chemistry R&D Programs

Generation. Primary Laboratory sites for basic and applied chemistry R&D include the Chemistry and Metallurgy Research Building (TA-3-29), Radiochemistry Laboratory (TA-48), Sigma Building (TA-3-66), and the Health Research Laboratory (TA-43-1). Typical nonradioactive chemical wastes consist primarily of large quantities of small containers of laboratory reagents, solvents, test samples, and other laboratory wastes. Relatively small quantities of up to several hundred different acids, bases, organics, inorganics, reactive metals, and other chemicals require disposal. These R&D wastes represent a large percentage of the waste species included in the Laboratory's RCRA Part A Permit Application.

Handling and Disposal. Waste generators place small volumes of waste chemicals into special storage cabinets at multi-laboratory sites. Periodically, HSE-7 personnel sort, package, and transport all such collected wastes to the chemical storage site. Generally the wastes in small bottles, jars, and cans are packaged with vermiculite in metal drums for disposal. Wastes are sorted to assure that incompatible chemicals are not packaged in the same disposal container. Liquids in quantities greater than 1 gallon are absorbed in vermiculite. All nonreactive chemicals were disposed of at Area L, TA-54, before Area L lost interim disposal status. Currently, Area L is only used for storage of such materials.

V.C.1.b.5. Explosive Wastes

Generation. High-explosive waste is generated by the Dynamics Testing (M) and Design Engineering (WX) Division groups in the course of processing and testing various high explosives materials. Processing includes pressing, machining, and casting high explosives. Waste occurs as discrete pieces of high explosives, machine cuttings, and powder. The chips, cuttings, and powder are usually in the form of waterborne suspensions, collected in specially designed accumulating/settling sump tanks. Wastes also consist of materials contaminated with high explosives; the materials may include paper, oil, solvents, wood, machine tools, fixtures, etc. Chemically, the wastes consist of HMX, RDX (cyclonite), TNT (2,4,6-trinitrotoluene), PETN (pentaerythritol tetranitrate) ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders. Nearly all the high explosives waste substances are ignitable or reactive (RCRA Codes D001 and D003, respectively). The barium nitrate is extraction procedure (EP) toxic (RCRA Code D005). Residues from high explosives waste are generated by flashing or burning the waste at TA-16. These residues are typically present in the uppermost layer of sand covering the burn pad. The sand from the two pads used to burn high explosives waste is considered hazardous because of its barium content (RCRA Code D005).

Handling and Disposal. Thermal treatment or detonation of high-explosive wastes occurs at eight facilities in five technical areas. The firing site just south of TA-14-23 is used to detonate small pieces of scrap high explosive. Just southeast of the firing pad is a small wire cage used to burn paper, tape, cotton swabs, and other trash items that have come into contact with high explosive and are suspected of being contaminated.

At the end of TA-15-184 is a regular firing pad used for hydrodynamics tests. Unneeded classified shapes and scrap high explosive have also been detonated at this location.

At TA-36, scrap detonations occur west-southwest of TA-36-8 at Minie Site. This site has also been used for disposal of leaking gas cylinders or small volumes of residual laboratory chemicals in small packages. Forty-six different RCRA-regulated materials have been treated in this manner. (A list is provided in Table 9-2 of the Laboratory's RCRA Part B application.) The practice of detonating waste chemicals has been stopped until it can be determined whether or not the practice complies with RCRA. RCRA allows scrap high explosive to be disposed of by detonation and hazardous chemicals by thermal treatment in controlled-air incinerators, but it does not address disposal of hazardous waste by detonation.

Firing points 6 and 57 at TA-39, normally used for test detonations, have been used for high-explosive waste detonations.

TA-16 has three types of high-explosives disposal facilities. One type is a sand and fire-brick burn pan, which is covered and elevated. Waste explosives or explosive-contaminated equipment is placed on the sand in these pans and ignited with an electric-match firing device. A second type of facility is a large, sand-filled metal pan on which four smaller pans lined with fire brick are located. Fluids contaminated with high explosive are poured into the smaller pans and are ignited with an electric match. About 55 gallons of fluids are treated in this manner each month. The third type of facility is used to treat sludges and consists of cone-shaped steel vessels 8 ft in diameter filled with sand and gravel. Sludge is fed into the top of the cone onto the sand and gravel. The cone is then covered, and hot air is forced into it. The air dries the sludge, and liquids migrate downward through the sand and gravel into a drain connected to a lagoon. Effluent from this lagoon is regulated by the Laboratory's NPDES permit. When the remaining material is dry, the lid is removed, and the residue is remotely ignited with an electric match. About 750 lbs of waste explosive sludge is treated in this manner each week.

In some cases the burn pad sand or surface is contaminated by barium (RCRA Code D005), which is a constituent of some high explosives. Burn pad sand containing barium levels in excess of EP toxicity test limits is drummed, stored, and treated

as a hazardous waste. Equipment and other noncombustible materials (not RCRA wastes) still requiring administrative control are disposed of at Area J. Such material may include noncombustibles that have been flashed to remove high explosives contamination, but cannot be certified to be free of such contamination.

V.C.1.b.6. Chemically Contaminated Equipment

Generation. In addition to the wastes noted above, various laboratory items that contain chemical residues or are otherwise chemically contaminated may be considered hazardous waste. Empty drums, tanks, and gas cylinders are typical contaminated items. The Laboratory's facilities generate a wide variety of this type of hazardous waste.

Handling and Disposal. All equipment contaminated by hazardous wastes is either decontaminated or packaged and stabilized as necessary for disposal. Before November 8, 1985, such items were buried at either Area L or Area G. The Laboratory is now storing some of the wastes that, depending on level and type of contamination, are awaiting offsite disposal/treatment or resolution of the loss of interim status for Area L as a permitted burial ground. Reusable 55-gallon drums are retained for recycling.

V.C.2. RADIOACTIVE WASTE

V.C.2.a. Generation

Significant radioactive-waste-generating processes are concentrated in ten principal facilities in nine technical areas.

At TA-2, the Omega West Reactor operations generate small quantities of solid, liquid, and gaseous wastes contaminated with mixed fission and activation products. Gaseous effluents are monitored for radioactivity and vented to the atmosphere after an approximate 1-hr delay, which allows for decay of radionuclides with short half lives.

In TA-3, a number of operations are conducted at the Chemistry and Metallurgy Research Facility (TA-3-29). Examination of irradiated fuels generates varying quantities of gamma-active wastes that require special handling procedures. Examples

are small volumes of solutions from hot cells such as plutonium etchant, uranium fission product solutions, and reacted sodium solutions. Laboratories that carry out basic research on depleted and enriched uranium compounds and alloys, and a facility for treating and testing plutonium-238 oxide fuel spheres and samples generate their own wastes. Analytical chemical services on materials from research, production, and recycling operations also generate waste.

In the Sigma Complex (TA-3-66), wastes are generated from the electropolishing and acid etching of uranium and thorium isotopes. Wastes are also generated from metal processing (such as rolling, swagging, and extruding) of uranium and thorium. Large pieces of scrap are generated in the uranium foundry.

At TA-21, tritium wastes (mostly low-level) are associated with the operation of the Tritium Systems Test Assembly Building (TA-21-152). At TA-21-257, residues are generated by processing liquid wastes from operations at TA-21.

At TA-35, tritium is used to fill targets for laser fusion experiments. Wastes from these operations consist of paper towels, used molecular sieves and other equipment.

At TA-46, work associated with the uranium laser isotope separation program generates small quantities of waste.

At TA-48, the Radiochemistry Site, wastes are generated by the diagnostic testing of samples from underground nuclear tests and by purifying medical isotopes generated in targets bombarded with protons from the LAMPF accelerator. Wastes from the nuclear test samples are contaminated primarily with fission-product mixtures and small amounts of heavy elements. Wastes from the isotope purification have spallation product nuclides with mass numbers up to about 200.

At TA-53 is the Los Alamos Meson Physics Facility with its high-current proton accelerator. Radioactive solids, liquids, and gases requiring disposal are generated by proton and neutron spallation and by activation within accelerator-related materials (shielding, structural and experimental equipment, targets, beam stops, and associated water cooling systems.) Beam loss in accelerator structures and target areas gives rise to radioactive gases formed by the interaction of secondary particles in air. Beta-gamma emitter wastes come from several radiochemistry laboratories onsite.

Processing liquid radioactive wastes at TA-50 generates sludges and other wastes.

The plutonium facility at TA-55 generates wastes from R&D, oxide production, metal preparation, and fabrication and recovery work with plutonium-238 and plutonium-239.

V.C.2.b. Treatment Facilities

Radioactive liquid waste treatment facilities include a 250 gal./min chemical-treatment and ion-exchange plant and a 25 gal./min pretreatment plant at TA-50-1, a 125 gal./min chemical treatment plant at TA-21-257, and a large number of storage, neutralization, and/or pumping stations.

In the liquid treatment plant in TA-50-1, a sludge is created that is dewatered to 25-40 per cent solids. If the sludge activity is >100 nCi/g, it is placed in plastic-lined metal drums, which are placed in temporary storage for eventual retrieval for disposal at the Waste Isolation Pilot Plant (WIPP). If the transuranic (TRU) activity is <100 nCi/g, the sludge is placed in fiberboard or metal drums for disposal as low-level waste at Area G. The liquids from the treatment processes have been sufficiently neutralized and cleaned of radioactivity that they can be discharged to Mortandad Canyon. The nonradioactive constituents in the discharge are controlled under the NPDES permit (serial number 051). Starting in April 1983, liquid process wastes from TA-55 have gone through the pretreatment plant before entering the main treatment streams. This pretreatment has resulted in the removal of >99 per cent of the plutonium and americium in the waste stream. TRU contents of the treatment plant's sludge have declined, so that most sludge from the main treatment plant is now treated as nonretrievable low-level waste.

Treatment activities in TA-21-257 are being reduced as cleanup operations and the processing of a sludge backlog are completed.

Three solid waste treatment facilities are in use. A compactor-baler located at Area G, TA-54, is used to compact low-level solid waste. The Size Reduction Facility (TA-50-69) is designed to repackage and reduce the volume of TRU-contaminated

metallic waste items such as glove boxes, process equipment, and ductwork. A modified, controlled-air incinerator in the Treatment Development Facility (TA-50-37) was designed and constructed to reduce volume, stabilize chemical composition, and eliminate combustibility of defense TRU wastes.

Solid waste consisting of such trash materials as paper, plastic, rubber, and small items of glassware up to 1 gallon in size are fed into the Area G compactor, where a volume reduction of 5:1 is achieved. The plastic-wrapped bales from this operation are placed in a disposal pit at Area G.

Large metallic TRU waste items, such as glove boxes and ductware, are brought into TA-50-69, where the external packaging is removed and all combustible items are sorted and removed. In the cutting area, the material is cut into pieces by a plasma torch and the pieces are then packaged for retrievable TRU waste storage.

The controlled-air incinerator (CAI) in TA-50-37 was constructed to develop incineration methods to reduce volume, stabilize chemical composition, and eliminate combustibility of defense TRU wastes. The demonstration program for the controlled-air incinerator (CAI) was completed and the system has been subsequently modified to process other wastes, such as beta-gamma radioactive waste, ion exchange resins, carcinogens, and other hazardous chemical wastes, both liquid and solid. For TRU wastes, weight reduction factors of up to 40:1 have been achieved, together with volume reduction factors of 120:1. Current plans include incinerating a majority of both newly generated and stored combustible TRU waste. Work is under way to get an EID permit to burn waste organic chemicals. The CAI has been permitted by the EPA for burning radioactively contaminated PCBs.

V.C.2.c. Storage and Disposal Facilities

Currently, Area G at TA-54 is used to store and dispose of radioactive materials. The volumes and activities of low-level waste generated and disposed of are submitted annually as part of the DOE's Solid Waste Information Management System. Sometimes large variations in waste volumes and radioactive content occur because of program changes and facility decommissioning and decontamination (D&D) activities. Burial and storage facilities include pits, shafts, trenches, and pads, all of varying dimensions. No high-level waste has been disposed of at Los Alamos.

V.C.3. MIXED WASTE

V.C.3.a. Mixed Waste Management Facilities

A schematic diagram of Laboratory mixed waste management activities is presented in Fig. V.C.2. LANL has developed procedures for the identification and segregation of hazardous mixed wastes. Once a waste is identified as a hazardous mixed waste, it is directed to the appropriate treatment/disposal method based on its characteristics as determined by the Waste Analysis Plan. Presented below is a brief description of the types of hazardous mixed wastes generated, treated, stored, and disposed of at the Laboratory. Table V.C.7 provides an abbreviated form of this information.

The Laboratory Waste Analysis Plan was developed and implemented to permit proper storage, treatment and disposal of mixed wastes at Los Alamos. The methods used to characterize the waste depend on the type of waste considered. The Laboratory has determined the composition of individual containers of the three types of mixed wastes based on detailed knowledge of the processes and the properties of the materials. In the rare instances in which the composition of a container of waste is unknown, analyses are performed to determine the characteristics and/or composition of the waste material. For each general type of waste generated at Los Alamos, Table V.C.8 lists analysis parameters and selection rationale. Table V.C.9 presents the waste analysis parameters and the test methods used. Tables V.C.10 and V.C.11 list the methods used to sample hazardous mixed wastes and the frequency of waste analysis, including the rationale for that frequency, respectively.

V.C.3.b. Generation

Mixed waste (or hazardous mixed waste) has been defined in general terms as low-level radioactive waste having a component that meets the definition of hazardous waste under RCRA (40CFR261 and NMHWMR 210.A). However, there is no common agreement among various federal agencies on the exact definition of mixed waste. Laboratory activities generate four types of mixed wastes: (1) lithium hydride mixed wastes, (2) wastes generated in R&D laboratories, (3) scintillation cocktails, and (4) contaminated lead shielding. The lithium hydride waste has some surface contamination of depleted uranium. The contaminated lithium hydride is typically in 1-in.-

to 1-ft-diameter chunks, with a very limited volume of finer sized material. Lithium hydride wastes are hazardous because of their reactivity (RCRA Code D003).

Mixed waste is generated by basic and applied chemistry R&D operations dealing with radioactive material. It generally consists of small quantities of a large variety of laboratory reagents, solvents, test samples, and other wastes slightly contaminated with radioactive materials. In addition to the wastes noted above, various laboratory items that are chemically and radioactively contaminated, such as empty drums and tanks, may be considered hazardous mixed waste.

Scintillation cocktails are used to count various samples for radionuclide analysis. The most common cocktails are composed of mostly xylene and 1,2,4-methylbenzene and are mixed with samples in solution. The specific radionuclides and their concentration vary considerably; however, the most common radionuclides are tritium, carbon-14, phosphorus-32, and various plutonium isotopes. The waste cocktails with the radionuclides are generally contained in 1-fluid-oz plastic or glass vials. All scintillation cocktails are treated as mixed waste and are hazardous because of their ignitability (RCRA Code D001), even though they may not be contaminated by radionuclides.

Storage Facilities. Mixed wastes are being stored at Area L, pending resolution of issues surrounding their disposal. Issues include the exact definition of mixed waste and the lack of a RCRA permit to dispose of chemical waste at Los Alamos. Until May 1985, mixed wastes were disposed of at Area G as low-level radioactive waste.

V.C.4. OTHER WASTES

V.C.4.a. Asbestos Wastes

Generation. Asbestos is not a RCRA-regulated waste, but it has been proposed for listing as a hazardous constituent of waste in Appendix 8 of RCRA. It is a hazardous pollutant under the Clean Air Act. Pipe wrapping containing asbestos is

treated as a hazardous material, as is friable asbestos, defined as "any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry" (40 CFR 61.142). Asbestos wastes contaminated by chemicals or radioactivity are considered chemical or radioactive wastes.

Asbestos wastes have a wide variety of sources, including old pipe insulation, transite board, ceiling insulation, welding curtains, and welder's gloves. The Laboratory and Pan Am World Services intend to remove or encapsulate all exposed friable asbestos.

Handling and Disposal. Asbestos wastes are packaged in plastic bags or plastic-lined cardboard boxes for disposal at either Area L or Area G at TA-54. Friable asbestos is generally disposed of in Area G. Asbestos that is possibly contaminated with high explosives is sent to Area J. Asbestos possibly contaminated with chemicals was sent to Area L; however, it is no longer being disposed of, pending resolution of the issues associated with Area L. Asbestos is handled in accordance with NESHAPS regulations.

V.C.4.b. Waste Oil

Generation. Oil is used throughout the Laboratory in items ranging from thousand-gallon transformers to liter-sized pumps. Some of the oil is contaminated with polychlorinated biphenyls (PCBs). Of the oil disposed of in recent years (8,200 gal./yr), about 75 per cent was below concentrations regulated by TSCA (below 50 ppm PCBs), about 23 per cent was above 500 ppm PCBs, and the balance was between 50 and 500 ppm.

Handling and Disposal. Waste oils contaminated with PCBs are sent offsite for disposal/incineration. On May 21, 1984, the EPA approved operation of the controlled air incinerator at TA-50 to dispose of radioactive PCBs. On an EPA inspection in November 1984 these actions, with several minor exceptions, were determined to be in compliance with TSCA regulations. LANL received approval from EPA Region VI on June 5, 1980, to dispose of PCB-contaminated articles, oils, and materials in the chemical waste landfill located at TA-54, Area G.

V.C.4.c. **Biocides**

Generation. For fire, safety, and security reasons, vegetation must be controlled in a number of areas. For example, branches and weakened trees must be kept away from power lines, vision paths must be kept clear at road intersections, tree roots must be kept from damaging sewage lagoons, and areas around firing sites must be kept clear to avoid serious fires. In addition to removing vegetation by mechanical means, herbicides are used to help control vegetation growth. Use of herbicides calls for storage, correct application, and proper disposal of unused chemicals and contaminated containers and equipment.

Control of insects, rodents, and small animals such as snakes, skunks, and raccoons within or near Laboratory buildings is either necessary or desirable for health and safety reasons. These actions call for proper handling and disposal of unused pesticides and contaminated containers and equipment.

A Pest Control Oversight Committee is responsible for ensuring that biocides are used in accordance with proper regulations. The detailed policy of this committee was printed in June 1984.

Handling and Disposal. Wastes resulting from the use of herbicides and pesticides at the the Laboratory include unused and outdated chemicals, empty chemical containers, and chemically contaminated equipment. These were disposed of in Area L until November 1985, at which time the Laboratory started shipping materials offsite for disposal in accordance with FIFRA and New Mexico's pesticide regulations. An EPA FIFRA inspection in December 1984 identified no major discrepancies in regulations in the Laboratory's pesticide use procedures.

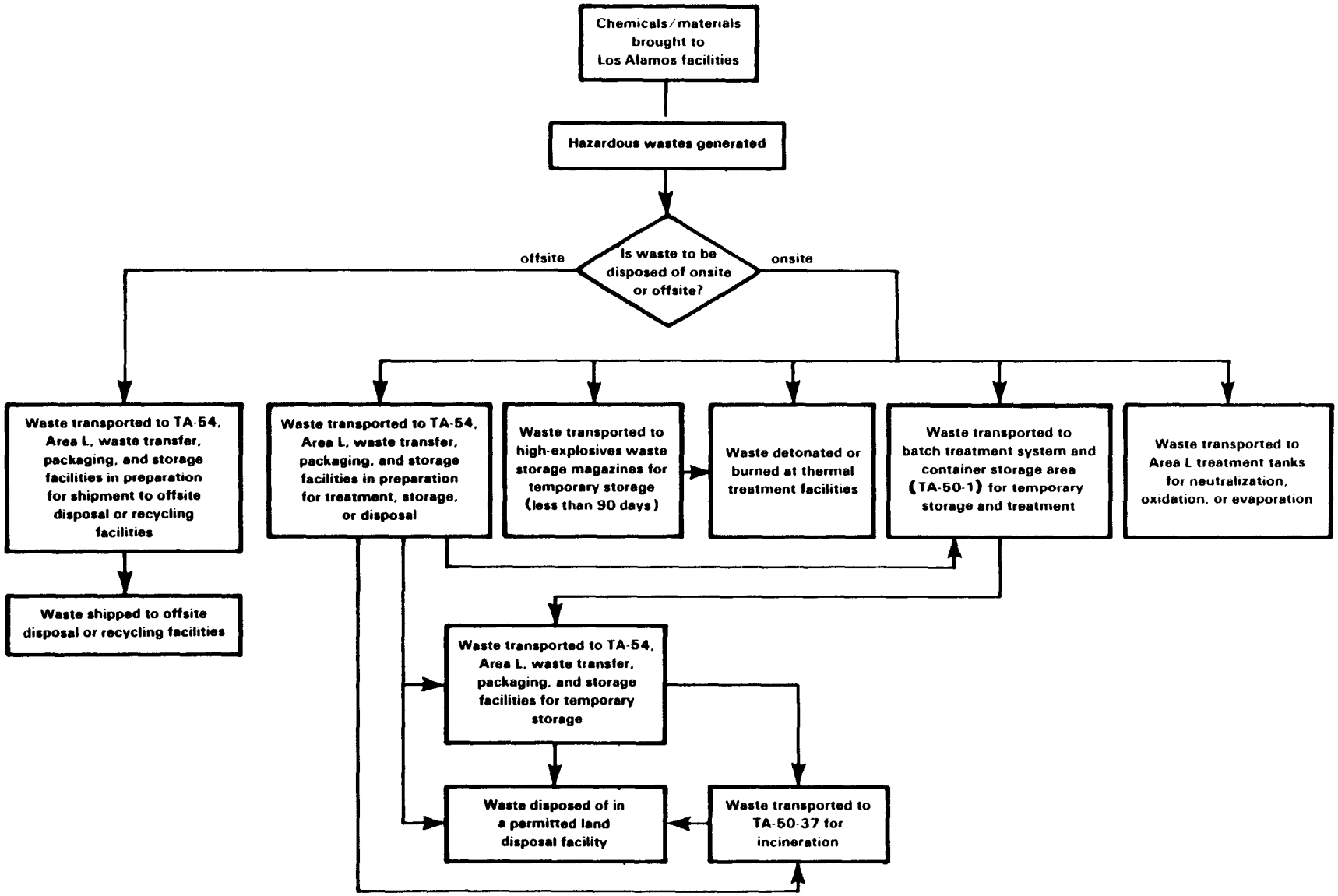


Figure V.C.1. Los Alamos hazardous waste management.

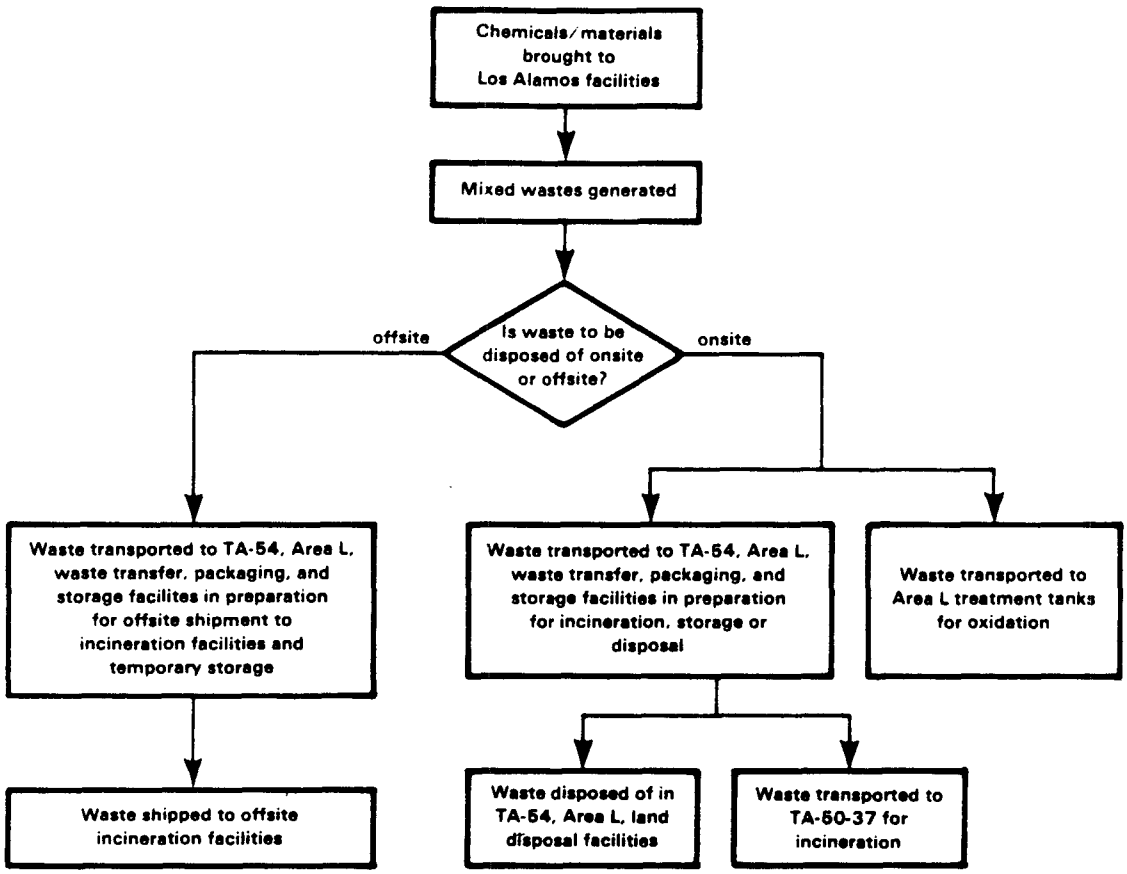


Figure V.C.2. Los Alamos mixed waste management.

Table V.C.1. Los Alamos Hazardous Wastes Identified by Generation Process and Waste Characterization

Process or Operation Generating Hazardous Wastes	Wastes Generated	Approx. Annual Volume (lb)	Hazard Code	EPA Hazardous Waste Number[a]
Basic and Applied Chemistry R&D Programs				
Chemistry and Metallurgy Research Building Radiochemistry Laboratory Health Research Laboratory	Numerous chemical wastes	Organic 50,000 Inorganic 40,000	Varies	Many--see Appendix D.
Electrochemistry Processing				
Materials Technology Group	Cyanide and chromate plating solutions	2,000	Toxic, reactive	F007, F009
Printed Circuit Board Shop	Acid/base copper etching/plating solutions	40,000	Corrosive	D002
Isotope Separation				
Isotope and Structural Chemistry Group	Concentrated nitric and sulfuric acid	80,000	Corrosive	D001, D002
Shops (Mechanical Fabrication Division)				
	Lithium hydride, lithium metal	3,500	Reactive	D003
	Halogenated solvents	<1,000	Toxic	F001, F002
	Nonhalogenated solvents	<1,000	Ignitable	F003

Table V.C.1. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Approx. Annual Volume (lb)	Hazard Code	EPA Hazardous Waste Number[a]
Explosives				
Dynamics Testing and Design Engineering	High explosives, potential for barium	50,000	Ignitable, reactive	D001, D003, D005, and K044
	Contaminated burn pad sand	10,000	EP toxic	D005
Chemically Contaminated Equipment				
LANL facilities	Empty drums, tanks, cylinders, etc.	12,000	Varies	Many--see Appendix D

[a] 40 CFR Part 261: identification and listing of hazardous wastes.

Table V.C.2. Hazardous Waste Analysis Parameters and Rationale for Their Selection

Process or Operation Generating Hazardous Wastes	Wastes Generated	Parameter(s)	Rationale
Basic and Applied Chemistry R&D Programs			
	Laboratory liquid wastes	Ignitability, reactivity, pH, EP toxicity, chemical composition	Analysis for selected parameters will be performed only for wastes that are unknown from laboratory process knowledge. The diverse nature of laboratory wastes precludes identification of all parameters for which each unknown waste will be analyzed; however, sufficient analysis will be performed on unknown wastes with volumes greater than 1 gal. to allow assignment of the appropriate EPA hazardous waste number.
		Heat value, organic chlorine, ash content, trichlorofluromethane, bromoform, dichlorodifluoromethane	Laboratory wastes are intended for incineration, if possible; thus, even if known from process knowledge, they will be analyzed for these incinerator parameters as part of the hazardous waste incinerator permit.
	Laboratory solid wastes	Ignitability, reactivity, EP toxicity, chemical composition	Analysis for selected parameters will be performed only for wastes that are unknown from laboratory process knowledge. The diverse nature of laboratory wastes precludes identification of all parameters for which each unknown waste will be analyzed;

Table V.C.2. (continued)

Process or Operation	Wastes Generated	Parameter(s)	Rationale
			however, sufficient analysis will be performed on unknown wastes with volumes greater than 1 gal. to allow assignment of the appropriate EPA hazardous waste number.
		Organic chlorine, trichlorofluoromethane, bromoform, dichlorodifluoromethane	Laboratory wastes are intended for incineration, if possible; thus, they will be analyzed for these incinerator parameters as part of the hazardous waste incinerator permit if process knowledge suggests the potential presence of organic chlorine and if a representative sample can be obtained.
Electrochemistry Processing			
Materials Technology Group	Cyanide and chromate plating solutions	Cyanide, chromate	Toxic contaminant concentration can vary widely, and proper treatment of waste is ensured by analysis.
Print Circuit Board Shop	Acid/base copper etching/ plating solutions	pH	This waste is listed as hazardous (corrosive, D002) because of its pH, and proper treatment of waste is ensured by analysis.

Table V.C.2. (continued)

Process or Operation	Wastes Generated	Parameter(s)	Rationale
Isotope Separation			
Isotope and Structural Chemistry Group	Nitric and sulfuric acid	pH	This waste is listed as hazardous (corrosive, D002) because of its pH. The composition of these wastes does not change significantly, and tests are performed to ensure proper treatment. Additional analyses will be performed if a process change is instituted.
Shops (Mechanical Fabrication Division)			
	Lithium hydride, lithium metal	None	Material properties are well known and process knowledge allows identification of material without analysis.
	Solvents, halogenated and nonhalogenated	None	Material properties are well known and process knowledge allows identification of material without analysis.

Table V.C.2. (continued)

Process or Operation	Wastes Generated	Parameter(s)	Rationale
Explosives			
Dynamics Testing and Design Engineering Groups	High explosives	None	This waste is listed as hazardous because of its reactivity and ignitability (K044). This material will not be analyzed because of safety considerations; however, process knowledge allows identification of the material.
	Contaminated burn pad sand	EP toxicity for metals	Sand has been found to contain EP-toxic barium; other high-explosive chemicals are decomposed.
Chemically Contaminated Equipment			
LANL facilities	Empty drums, tanks, gas cylinders, etc.	None	Contaminants are known, and contaminated equipment is treated with the same precautions as if it were the actual material.

Table V.C.3. Parameters for Waste Verification Analysis

Process or Operation Generating Hazardous Wastes	Wastes Generated	Parameter(s)	Frequency	Rationale
Basic and Applied Chemistry R&D Programs				
	Laboratory liquid wastes	pH, total metals, volatile and semivolatile organics, reactivity, and ignitability	1% of waste containers[a]	Analysis is conducted to determine contamination by chemicals at levels requiring changes in handling practices.
	Laboratory solid wastes	As for liquid laboratory wastes plus free liquids determination	1% of waste containers[a]	As for liquid laboratory wastes plus free liquids analysis to demonstrate suitability for landfill disposal.
Electrochemistry Processing				
Materials Technology Group	Cyanide and chromate plating solutions	pH, total metals, volatile and semivolatile organics, cyanide, and reactivity[b]	Annually, and if waste generation process changes	Analysis is performed to check for heavy metal and organic solvent contamination. Sulfide generation (reactivity) is determined to ensure safe treatment.
Printed Circuit Board Shop	Acid/base copper etching/plating solutions	As for cyanide and chromate plating solutions	Annually, and if waste generation process changes	As for cyanide and chromate plating solutions.

Table V.C.3. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Parameter(s)	Frequency	Rationale
Isotope Separation				
Isotope and Structural Chemistry Group	Nitric and sulfuric Acid	pH, total metals, volatile and semivolatile organics, cyanide, reactivity[b]	Annually, and if waste generation process changes	Analysis is performed to check for heavy metal and solvent contamination.
Shops (Mechanical Fabrication Division)				
	Lithium hydride, lithium metal	Total metals, volatile and semivolatile organics	Annually, and if waste generation process changes	Analysis is performed to check for regulated metal and solvent contamination.
	Halogenated solvents	Total metals, volatile and semivolatile organics, ignitability	Annually, and if waste generation proces changes	Analysis is performed to check for contamination by metals and regulated organic constituents. Ignitability is determined to ensure that handling practices are safe.

Table V.C.3. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Parameter(s)	Frequency	Rationale
Shops (cont)				
	Nonhalogenated solvents	As for halogenated solvents	Annually, and if waste generation process changes	As for halogenated solvents. The semivolatile and volatile organic analysis is adequate to determine the presence of halogenated solvents as well as most regulated organic constituents.
Explosives				
Dynamics Testing and Design Engineering Group	High explosives	None	None	This waste is listed as hazardous because of its reactivity and ignitability (K044)--due to safety considerations, it will not be analyzed. Process knowledge allows adequate identification for thermal treatment.

Table V.C.3. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Parameter(s)	Frequency	Rationale
Explosives (cont)				
	Contaminated burn pad sand	Total metals, volatile and semivolatile organics, cyanides, free liquids	Annually, and if waste generation process changes	Analysis is performed to check for contamination by regulated metals; organic and cyanide analyses are performed to determine if regulated constituents are formed by thermal treatment; free liquids are checked to confirm the adequacy of landfilling sand wastes.
Chemically Contaminated Equipment				
LANL Facilities	Empty drums, tanks, gas cylinders, etc.	None	None	There are no protocols for sampling contaminated equipment.

[a]One per cent of laboratory waste containers excludes laboratory chemicals in their original bottles if the bottles have not been opened, as indicated by an unbroken cap seal. These chemicals are disposed of at the end of their shelf life.

[b]Reactivity for these wastes is determined as cyanide and sulfide gas generation potential per NMHWMR 201.B.4.a.5.

Table V.C.4. Test Methods for Waste Analysis Parameters

Parameter	Test Method	Physical State	Protocol Number	Reference[a]
Ignitability	Pensky-Martens closed-cup method	L	1010	SW-846
		L	D93-80	ASTM
Reactivity	Numerous methods and tests[b]	L,S	Section 2.1.3	SW-846
pH	Electrometric	L	9040	SW-846
EP toxicity (Extraction)	Extraction procedure toxicity test method and structural integrity test	L,S	1310	SW-846
EP toxicity (Analysis)	Graphite furnace atomic absorption spectrophotometry			
Arsenic		L	7060	SW-846
Barium		L	7081	SW-846
Cadmium		L	7131	SW-846
Chromium		L	7191	SW-846
Lead		L	7421	SW-846
Selenium		L	7740	SW-846
Silver		L	7761	SW-846
Mercury	Manual cold-vapor technique	L,S	7470	SW-846
Organochlorine pesticides	Gas chromatographic method	L	8080	SW-846
Chlorinated herbicides	Gas chromatographic method	L	8150	SW-846
Chemical composition	Any method listed in this table plus the following:			
	1) chemical analysis for volatile organic compounds using gas chromatography/mass spectrometry and	L	8240	SW-846

Table V.C.4. (continued)

Parameter	Test Method	Physical State	Protocol Number	Reference[a]
	2) chemical analysis for semivolatile organic compounds, using gas chromatography/mass spectrometry			
	- packed column	L	8250	SW-846
	- capillary column	L	8270	SW-846
Heat value	Bomb calorimeter	L	A006 D240	EPA-600/8-84-002 ASTM
Organic chlorine	Halide titration of combustion residue	L,S	A004 D2361	EPA-600/8-84-002 ASTM
Trichlorofluoromethane, bromoform, dichlorodifluoromethane	Chemical analysis for volatile organic compounds using gas chromatography/mass spectrometry	L	8240	SW-846
Ash content	Residue after combustion in muffle furnace	L	A001 D482	EPA-600/8-84-002 ASTM
		S	A001 D3174	EPA-600/8-84-002 ASTM
Cyanide	Distillation and titration	L	9010	SW-846
Chromium	Colorimetric method for hexavalent chromium	L	7196	SW-846
Total metals	Digestion and inductively coupled plasma method	L	3020	SW-846

Table V.C.4. (continued)

Parameter	Test Method	Physical State	Protocol Number	Reference[a]
Barium		L	6010	SW-846
Beryllium		L	6010	SW-846
Cadmium		L	6010	SW-846
Chromium		L	6010	SW-846
Lead		L	6010	SW-846
Silver		L	6010	SW-846
Thallium		L	6010	SW-846
Zinc		L	6060	SW-846
Mercury	Manual cold-vapor technique	L	7470	SW-846
		S	7471	SW-846
Free liquids	Paint filter liquids test	S	9095	SW-846

[a]A: Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.

ASTM: American Society for Testing and Materials.

SW: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, EPA, July 1982, Rev. 1984.

L: liquid waste.

S: solid waste.

[b]Methods for cyanide and sulfide generation are pending. SW-846 methods will be used when they become available. Methods recommended by the USEPA will be used in the interim.

[c]If EP toxicity and other analyses do not permit identification of an unknown chemical waste, digested metal samples (test method 3020, SW-846) will be analyzed for the metals noted.

Table V.C.5. Sampling Methods for Hazardous Wastes to be Analyzed

Process or Operation Generating Hazardous Wastes	Wastes Generated	Sampling Method[a]	Description of Sampling
Basic and Applied Chemistry R&D Program			
	Laboratory liquid wastes	Coliwasa or disposable glass tubing, glass bottle	Samples of unknown wastes in larger containers (e.g., 5-gal. cans) are taken with coliwasa; wastes in smaller containers may be sampled by pouring a small quantity of fluid into a glass bottle.
	Laboratory solid wastes	Thief, trier	Thief or trier used for unknown wastes depending on the physical consistency of the wastes; in some cases (e.g., contaminated equipment), obtaining a representative sample may be impracticable.
Electrochemistry Processing			
Materials Technology Group	Cyanide and chromate plating solutions	Coliwasa or disposable glass tubing	Samples are taken from drums before solutions are transferred to batch treatment systems; samples can also be taken from treatment system tank.
Print Circuit Board Shop	Acid/base copper etching/ plating solutions	Coliwasa or disposable glass tubing	See above description.

Table V.C.5. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Sampling Method[a]	Description of Sampling
Isotope Separation			
Isotope and Structural Chemistry Group	Nitric and sulfuric acid	Coliwasa or disposable glass tubing	See above description.
Explosives			
Dynamics Testing and Design Engineering Groups	Contaminated burn pad sand	Thief	Samples taken from approximate center of recent explosives burn.

[a]Sampling methods are adopted from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, EPA, July 1982, Rev. 1984.

Table V.C.6. Frequency of Analysis and Rationale

Process or Operation Generating Hazardous Wastes	Wastes Generated	Analysis	Frequency	Rationale
Basic and Applied Chemistry R&D Programs				
	Laboratory liquid wastes	Ignitability, reactivity, pH, EP toxicity, chemical analysis	Each time an unknown waste requires disposal	Analysis for selected parameters will be performed for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash content, trichlorofluoromethane, bromoform, dichlorodifluoromethane	One incinerator feed-tank every three months	Analysis will be required by incinerator permit.
	Laboratory solid wastes	Ignitability, reactivity, pH, EP toxicity, chemical analysis	Each time an unknown waste requires disposal	Analysis for selected parameters will be performed for wastes that are unknown from laboratory process knowledge.
		Organic chlorine[a], trichlorofluoromethane, bromoform, dichlorodifluoromethane	One incinerator feed-tank every three months	Analysis will be required by incinerator permit.
Electrochemistry Processing				
Materials Technology Group	Cyanide and chromate plating solutions	Cyanide, chromium	Every batch	Toxic contaminants can vary widely, and proper treatment of waste is ensured by frequent analysis.

Table V.C.6. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Analysis	Frequency	Rationale
Print Circuit Board Shop				
	Acid/base copper plating solutions	pH	Every batch	Same as cyanide and chromium analysis above.
Isotope Separation				
Isotope and Structural Chemistry Group	Nitric and sulfuric acid	pH	Every batch	The compositions of these wastes do not change significantly--testing is performed to confirm composition; additional analysis will be performed if a process change should affect the waste characteristics--any such analysis may be conducted at the discretion of the group manager or regulatory agencies.
Shops (Mechanical Fabrication Division)				
	Lithium hydride, lithium metal	None	None	Process knowledge allows identification of material without analysis.
	Halogenated solvents	None	None	Process knowledge allows identification of material without analysis.

Table V.C.6. (continued)

Process or Operation Generating Hazardous Wastes	Wastes Generated	Analysis	Frequency	Rationale
	Non-halogenated solvents	None	None	Process knowledge allows identification of material without analysis.
Explosives				
Dynamics Testing and Design Engineering Groups	High explosives	None	None	Process knowledge allows identification of material without performing highly dangerous analysis of high explosives.
	Contaminated burn pad sand	EP toxicity for metals	Annually and if formulation of explosives change	Sand is assumed to be contaminated with EP-toxic barium.
Chemically Contaminated Equipment				
LANL facilities	Empty drums, tanks, gas cylinders, etc.	None	None	Contaminants are known, and contaminated equipment is treated with the same precautions as if it were the actual material.

[a]The nature of the waste (contaminated rags, tissues, etc.) may preclude analysis, and process knowledge will have to provide necessary information.

Table V.C.7. Mixed Wastes Generated, Treated, Stored, and Disposed of at Los Alamos[a]

Process or Operation Generating Mixed Wastes	Wastes Generated	Hazard	EPA Hazardous Waste Number[b]
Basic and Applied Chemistry R&D Programs			
Chemistry and Metallurgy Research Building Radiochemistry Laboratory Health Research Laboratory Plutonium Facility	Numerous chemical wastes contaminated with various radionuclides	Varies	Many--see Appendix D.
Scintillation Cocktails			
Health Research Laboratory Environmental and Bioassay Laboratories Plutonium Facility	Solvents, typically benzene, toluene, and xylene	Ignitable	D001
Shops (Mechanical Fabrication Division)			
	Lithium hydride, lithium metal contaminated with depleted uranium and barium	Reactive	D003/D005

[a]Chemical- and radionuclide-contaminated equipment generated during various LANL operations exhibits the same characteristics as hazardous material contaminants.

[b]40 CFR Part 261: identification and listing of hazardous wastes.

Table V.C.8. Mixed Waste Analysis Parameters and Rationale for Their Selection

Process or Operation Generating Mixed Wastes	Wastes Generated	Parameter(s)	Rationale
Basic and Applied Chemistry R&D Programs			
	Laboratory liquid mixed wastes	Ignitability, reactivity, pH, EP toxicity, chemical analysis	Analysis for selected parameters will be performed, if necessary, for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash content	These wastes are intended for incineration, if possible, and thus will be analyzed for these incinerator parameters as part of the hazardous waste incinerator permit.
	Laboratory solid mixed wastes	Ignitability, reactivity, EP toxicity, chemical analysis	Analysis for selected parameters will be performed, if necessary, for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash content	These wastes are intended for incineration, if possible, and thus will be analyzed for these incinerator parameters as part of the hazardous waste incinerator permit.

Table V.C.8. (continued)

Process or Operation Generating Mixed Wastes	Wastes Generated	Parameter(s)	Rationale
Scintillation Cocktails			
	Solvents	Ignitability, reactivity, pH, EP toxicity, chemical analysis	Analysis for selected parameters will be performed, if necessary, for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash content	These wastes are intended for incineration, if possible, and thus will be analyzed for these incinerator parameters as part of the hazardous waste incinerator permit.
Shops (Mechanical Fabrication Division)			
	Lithium hydride, lithium metal contaminated with depleted uranium	None	Material properties are well known, and process knowledge allows identification of material without analysis.
Chemical- and Radionuclide-Contaminated Equipment			
LANL facilities	Empty drums, tanks, gas cylinders, etc.	None	Contaminants are known, and contaminated equipment is treated with the same precautions as if it were the actual material.

Table V.C.9. Test Methods for Mixed Waste Analysis Parameters

Parameter	Test Method	Physical State	Protocol Number	Reference[a]
Ignitability	Pensky-Martens closed-cup method	L	1010	SW-846
		L	D93-80	ASTM
Reactivity	Numerous methods and tests[b]	L,S	Section 2.1.3	SW-846
pH	Electrometric	L	9040	SW-846
EP toxicity (Extraction)	Extraction procedure toxicity test method and structural integrity test	L,S	1310	SW-846
EP toxicity (Analysis)	Graphite furnace atomic absorption spectrophotometry			
Arsenic		L	7060	SW-846
Barium		L	7081	SW-846
Cadmium		L	7131	SW-846
Chromium		L	7191	SW-846
Lead		L	7421	SW-846
Selenium		L	7740	SW-846
Silver		L	7761	SW-846
Mercury	Manual cold-vapor technique	L,S	7470	SW-846
Organochlorine pesticides	Gas chromatographic method	L	8080	SW-846
Chlorinated herbicides	Gas chromatographic method	L	8150	SW-846
Heat value	Bomb calorimeter	L	A006	EPA-600/8-84-002
			D240	ASTM
		S	A006	EPA-600/8-84-002
			D2015	ASTM

Table V.C.9. (continued)

Parameter	Test Method	Physical State	Protocol Number	Reference[a]
Organic chlorine	Halide titration of combustion residue	L,S	A004 D2361	EPA-600/8-84-002 ASTM
Ash content	Residue after combustion in muffle furnace	L	A001 D482	EPA-600/8-84-002 ASTM
		S	A001 D3174	EPA-600/8-84-002 ASTM
Cyanide	Distillation and titration	L	9010	SW-846
Chromium	Colorimetric method for hexavalent chromium	L	7196	SW-846

[a]A: Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, February 1984.

ASTM: American Society for Testing and Materials.

SW: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, EPA, July 1982, Rev. 1984.

L: liquid waste.

S: solid waste.

[b]Methods for cyanide and sulfide generation are pending. SW-846 methods will be used when they become available. Methods recommended by the USEPA will be used in the interim.

[c]If EP toxicity and other analyses do not permit identification of an unknown chemical waste, digested metal samples (test method 3020, SW-846) will be analyzed for the metals noted.

Table V.C.10. Sampling Methods for Mixed Wastes

Process or Operation Generating Hazardous Wastes	Wastes Generated	Sampling Method[a]	Description of Sampling
Basic and Applied Chemistry R&D Programs			
	Laboratory liquid wastes	Coliwasa or disposable glass tubing, glass bottle	Samples of unknown wastes in larger containers (e.g., 5-gal. can) taken with coliwasa--wastes in smaller containers may be sampled by pouring a small quantity of fluid into a glass bottle.
	Laboratory solid wastes	Thief, trier	Thief or trier used for unknown wastes, depending on physical consistency of waste; in some cases (e.g., contaminated equipment) obtaining a representative sample may be impracticable.
Scintillation Cocktails			
	Solvents	Entire vial will be analyzed.	Scintillation vials have volumes of approximately 1 fluid oz.

[a]Sampling methods are adopted from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition, EPA, July 1982, Rev. 1984.

Table V.C.11. Frequency of Analysis and Rationale

Process or Operation Generating Mixed Wastes	Wastes Generated	Analysis	Frequency	Rationale
Basic and Applied Chemistry R&D Program				
	Laboratory liquid wastes	Ignitability, reactivity, pH, EP toxicity, chemical analysis	As required	Analysis for selected parameters will be performed for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash production trichlorofluoromethane, bromoform, dichlorodifluoromethane	One incinerator feed tank per month	Analysis will be required by incinerator permit.
	Laboratory solid wastes	Ignitability, reactivity, pH, EP toxicity, chemical analysis	As required	Analysis for selected parameters will be performed for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine[a]	One incinerator feed tank per month	Analysis will be required by incinerator permit.
Scintillation Cocktails				
	Solvents	Ignitability, reactivity, pH, EP toxicity, chemical analysis	As required	Analysis for selected parameters will be performed for wastes that are unknown from laboratory process knowledge.
		Heat value, organic chlorine, ash production	One incinerator feed tank per month	Analysis will be required by incinerator permit.

Table V.C.11. (continued)

Process or Operation Generating Mixed Wastes	Wastes Generated	Analysis	Frequency	Rationale
Shops (Mechanical Fabrication Division)				
Main Shops Department	Lithium hydride and lithium metal contaminated with depleted uranium	None	None	Process knowledge allows identification of material without analysis.
	Halogenated solvents			
	Nonhalogenated solvents			
Chemical- and Radionuclide-Contaminated Equipment				
LANL facilities	Empty drums, tanks, gas cylinders, etc.	None	None	Contaminants are known, and contaminated equipment is treated with the same precautions as if it were the actual material.

[a]The nature of the waste (e.g., contaminated rags, tissues, etc.) may preclude analysis, and process knowledge will have to provide necessary information.

Sec V.D

V.D. REGULATORY COMPLIANCE

Environmental standards and regulations applicable to Los Alamos are presented in Section IV of this report. This section provides an overview of regulatory compliance issues identified during the Phase I review by CEARP staff. The Laboratory is developing an environmental appraisal program to follow up on these general issues.

V.D.1. FEDERAL COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA)

Current CERCLA regulations address inactive waste sites from the standpoint of hazardous and toxic substances. Potential CERCLA sites at LANL are identified in Sections V.A and V.B of this report, and appropriate action is indicated under CEARP.

CERCLA also requires that the accidental or routine release to the environment of hazardous substances in amounts that exceed their reportable quantities be reported to the National Response Center. The Laboratory has instituted a process for reporting the accidental release of these substances and is developing a program to ensure that routine releases are also reported as required under CERCLA.

V.D.2. FEDERAL RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

DOE has submitted both Parts A and B of the RCRA application for LANL. The Laboratory is continuing to respond to requests for information on the Part B.

The status of LANL septic tanks and underground storage tanks (petroleum products, radioactive wastes, hazardous materials, and nonregulated substances) under RCRA is summarized in Tables V.D.1-V.D.5. Most underground storage tanks have been adequately addressed under RCRA. Some septic tank systems may receive hazardous waste and are being evaluated. Dry wells at LANL, which might receive hazardous waste, are also being evaluated as part of this process. Several outfalls should also be further evaluated, as indicated in Table V.D.6.

The status of container storage areas as identified in the DOE's RCRA Part A Permit application is addressed in Table V.D.7. However, there may be other satellite storage areas and less-than-90-day storage areas that require further evaluation. The status of LANL hazardous waste treatment facilities is addressed in Tables V.D.8 (Waste Treatment), V.D.9 (Thermal Treatment), and V.D.10 (Waste Disposal). The status of the Laboratory's firing sites is addressed in Table V.D.11. Each table identifies sites requiring further evaluation.

The DOE is currently discussing the definition of mixed waste with the EPA.

V.D.3. FEDERAL CLEAN AIR ACT (CAA) AND NEW MEXICO'S AIR QUALITY ACT

Currently, LANL has no major compliance problems concerning state and federal nonradioactive air pollutant regulations. Two air quality inspections conducted by the EID and EPA Region VI took place in FY 1985. No major compliance problems were found.

EID requires the permitting of all sources that emit on an uncontrolled basis any hazardous air pollutant regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAPS). Nonradioactive NESHAPS pollutants include asbestos, benzene, beryllium, inorganic arsenic, mercury, and vinyl chloride. These sources had not been permitted in the past. DOE is in the process of permitting or registering existing and planned sources of hazardous air pollutants. The NESHAPS regulations for radionuclides specify dose limits, and the Laboratory operates within these limits.

The DOE has instituted appropriate procedures for notifying the EID and for properly managing friable asbestos during demolition or renovation.

The Laboratory is adjacent to Bandelier National Monument. The wilderness portion of Bandelier is a Class I Area. This situation has major implications for the permitting of Laboratory sources and their emission control requirements. The Prevention of Significant Deterioration (PSD) provisions of the CAA have very stringent permitting, siting, and emission control requirements for major stationary sources sited near Class I Areas.

V.D.4. FEDERAL CLEAN WATER ACT (CWA)

The DOE has the appropriate NPDES permits for the Laboratory (NM0028355 and NM0028576), has satisfactorily responded to an Administrative Order regarding NPDES permit NM0028355, and is in the process of implementing a Federal Facility Compliance Agreement.

The status of NPDES outfalls is summarized in Table V.D.6. Although most outfalls have been identified and appropriately reported, several outfalls are identified as requiring evaluation under NPDES by LANL. Outfalls possibly associated with septic tanks, which require evaluation by LANL, are identified in Table V.D.5. No major problems with compliance were identified during the March 10, 1986, NPDES compliance evaluation inspection conducted by the EPA. But minor noncompliance discharge incidents occur (see Tables IV.4 and IV.5). During 1985, the Laboratory began to consider a Sanitary Wastewater Systems Consolidation (SWSC) project. The objective of the SWSC is to provide an integrated, area-wide wastewater treatment system for LANL. When constructed, the new consolidated wastewater system will enhance NPDES permit compliance. The design portion of the SWSC line-item request (submitted late 1986) has been approved by DOE. The project should come on line during the 1990-1991 time period.

V.D.5. NEW MEXICO'S WATER QUALITY CONTROL ACT

The regulations of the Water Quality Control Commission require a groundwater discharge plan for surface discharges having the potential to contaminate any present or future underground source of drinking water. A groundwater discharge plan for the Fenton Hill Geothermal Site was submitted to the Oil Conservation Division of the New Mexico Energy and Minerals Department (as required by regulation) because the geothermal site is an energy producing facility. A groundwater discharge plan has not been submitted for the Los Alamos National Laboratory because facilities in existence at the time that the regulation was enacted were not required to submit such a plan until directed to do so by the state. No such directive has been given to the Laboratory. However, the Laboratory must file a notice of intent to discharge before construction of any lagoon, dry well, or discharge that could affect

groundwater. The Laboratory fulfills notification requirements through NPDES-related correspondence. The Laboratory notifies the EID of all discharges added to or removed from the NPDES permit.

The Laboratory is also required to report any spill of oil or other water contaminant having the potential for significant environmental impact or injurious or detrimental effects on humans.

V.D.6. REGULATIONS FOR NEW MEXICO'S LIQUID WASTE DISPOSAL

These regulations are promulgated under the authority of the Environmental Improvement Act and are designed to prevent surface and groundwater contamination from small onsite liquid waste disposal practices. They are applicable to liquid waste systems that receive 2000 gal. or less of liquid waste per day (as designed) and are not subject to an NPDES permit or to a Groundwater Discharge Plan. The regulations apply to any septic tanks or other liquid waste disposal operations at the Laboratory that fall within the above criteria. Laboratory operations are being reviewed for compliance with these requirements.

V.D.7. FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)

FIFRA contains federal regulations governing the manufacture, use, application, and disposition of pesticides, herbicides, rodenticides, and other economic poisons. These regulations are pertinent to Los Alamos because of pesticide applications that occur on Laboratory property. The Laboratory's Pest Control Policy ensures that pesticide applications at the Laboratory conform to FIFRA regulations. Pan Am World Services, the support services subcontractor, maintains current certification of its applicators as required by FIFRA.

V.D.8. NEW MEXICO'S PESTICIDE CONTROL ACT

This act contains state regulations governing the manufacture, use, application, and disposition of pesticides. These regulations are consistent with the federal regulations found in FIFRA, and, like FIFRA, the state regulations are administered by the state's Department of Agriculture. The Laboratory's Pest Control Policy requires

that pesticide use at the laboratory conform to state regulations. Pan Am World Services maintains current certification of its applicators as required by state regulations.

V.D.9. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Administrative Requirement 9-2 of the Los Alamos National Laboratory's Health and Safety manual requires that Laboratory programs and activities comply with federal and state environmental protection regulations. This administrative requirement specifies the procedures and documents that are needed to comply with those regulations. The Laboratory initially prepares an Action Description Memorandum (ADM) as the first step in the NEPA process. The ADM addresses environmental impacts of proposed actions and allow determination of whether further environmental documentation is necessary.

Although the level of NEPA documentation appears to be adequate for Laboratory activities, there have been occasions on which action has been initiated on a project before completion of the NEPA process. Projects involving construction are routinely covered by the Laboratory process. However, a procedure for identifying new activities not involving construction at a sufficiently early stage to assure appropriate NEPA evaluation has not been established. The Laboratory is modifying its implementation of NEPA to ensure that projects are not begun until adequate NEPA-related documentation has been prepared.

V.D.10. SAFE DRINKING WATER ACT (SDWA)

The Laboratory monitors the quality of its drinking water supplies as required under SDWA and adheres to the Regulations Governing Water Supplies as established by the New Mexico EIB. The Laboratory collects and analyzes water from wells, one gallery, and locations in the distribution system to ensure that the municipal water supply is in compliance with chemical and radiochemical standards as required.

A Laboratory program ensures the separation of potable water supplies from the industrial water supply in situations where the potable water supply could possibly be exposed to contaminants. This program includes review of new construction/major modifications, minor modifications, and follow-up of complaints regarding the disagreeable taste, odor, or color of the potable water supply.

V.D.11. TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA-regulated polychlorinated biphenyls (PCBs) are used at LANL. Oils containing PCBs are found in many electrical transformers and capacitors, and these materials are handled and disposed of in accordance with TSCA regulations. The Laboratory instituted a major program during FY 1986 to remove excess capacitors and transformers. However, transformers and capacitors are still being improperly stored at the Laboratory.

LANL is currently sampling, inventorying, and marking articles with PCBs, such as transformers, capacitors, and hydraulic equipment. LANL marked and registered all (134) transformers with fire response personnel and building owners by December 1, 1985, as required by regulation. All proximal means of access to PCB transformers were also marked to aid fire response personnel, and a survey was made of combustible materials stored or located near PCB transformers. Visual inspections of PCB transformers are conducted at least quarterly, and inspection records maintained pursuant to the regulations.

LANL received approval from EPA Region VI on June 5, 1980, to dispose of PCB-contaminated articles, oils, and materials in the radioactive waste landfill located at TA-54, Area G. The approval requires semiannual reporting to EPA regarding the type and weight of the articles disposed of, and monitoring information regarding the chemical quality of storm water runoff and natural springs in the area.

A program is in place to comply with TSCA for containment upgrading or replacement of in-service transformers and other electrical equipment containing PCBs. Significant funding over several years will be required to complete this task.

Certain weapons components (test devices/prototypes) produced at LANL are fabricated from a diallyl phthalate resin that is reinforced with asbestos fiber. The

resin is received at the Laboratory in granulated form and already contains the asbestos. Free asbestos is not used in the fabrication, although there is some dust associated with the granulated resin. The applicability of TSCA to this process is not clear.

Table V.D.1. Underground Storage Tanks - Petroleum Products

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
TA-0	TA-0-195-1	Gasoline	2,000	3-25-85	Yes	21	--	RCRA
	TA-0-195-2	Gasoline	6,000	3-25-85	Yes	21	--	RCRA
	TA-0-195-3	Gasoline	4,000	3-25-85	Yes	13	--	RCRA
	TA-0-194-4	Gasoine	6,000	3-25-85	Yes	13	--	RCRA
	TA-0-195-5	Gasoline	300	3-25-85	Yes	14	--	RCRA
	TA-0-195-6	Fuel oil	4,000	3-25-85	No	29	--	RCRA
	TA-0-1051-1	Fuel oil	14,496	5-5-86	Yes	37	Passed	RCRA/CERCLA[b]
	TA-0-1051-2	Fuel oil	14,496	5-5-86	Yes	37	Passed	RCRA/CERCLA[b]
	TA-0-1051-3	Fuel oil	2,938	5-5-86	Yes	37	Failed	RCRA[b]/CERCLA[b]
TA-1	TA-1-240	Fuel	Unknown	NA	Unknown	Unknown	--	CERCLA[b]
	TA-1-442	Fuel	Unknown	NA	Unknown	Unknown	--	CERCLA[b]
	TA-1-443	Fuel	Unknown	NA	Unknown	Unknown	--	CERCLA[b]
	TA-1-444	Fuel	Unknown	NA	Unknown	Unknown	--	CERCLA[b]
TA-2	TA-2-1	Diesel	560	9-23-86	Yes	<1	--	RCRA

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-2-29	Fuel oil	1,000	NA	Removed 1959	NA	--	--
	TA-2-67	Unknown	Unknown	NA	Removed 1950	NA	--	--
TA-3	TA-3-36-1	Unleaded gasoline	10,152	5-5-86	Yes	6	Passed	RCRA
	TA-3-36-2	Unleaded gasoline	5,038	5-5-86	Yes	8	Passed	RCRA
	TA-3-36-3	Diesel	2,961	5-5-86	Yes	13	Failed	RCRA[b]/CERCLA[b]
	TA-3-93	Fuel oil	Unknown	NA	Removed 1966	NA	--	--
	TA-3-107	Dielectric oil	500	NA	Abandoned in place 1978	NA	--	CERCLA[b]
	TA-3-108	Dielectric oil	500	NA	Abandoned in place 1978	NA	--	CERCLA[b]
	TA-3-109	Dielectric	500	NA	Abandoned in place 1978	NA	--	CERCLA[b]
	TA-3-191	Unleaded gasoline	200	5-5-86	Yes	22	--	RCRA/CERCLA[b]

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-3-318	Diesel	4,000	5-5-86	Abandoned 1976	40	--	CERCLA[b]
	TA-3-1255	Diesel	4,030	5-5-86	Yes	6	Failed	RCRA[b]/CERCLA[b]
	TA-3-Tank Farm-1	Kerosene	10,152	5-5-86	Yes	4	--	RCRA
	TA-3-Tank Farm-2	Diesel	25,560	5-5-86	Yes	4	--	RCRA
	TA-3-Tank Farm-3	Unleaded gasoline	15,228	5-5-86	Yes	4	--	RCRA
	TA-3-Tank Farm-4	Unleaded gasoline	25,560	5-5-86	Yes	4	--	RCRA
	TA-3-Tank Farm-5	Unleaded gasoline	25,560	5-5-86	Yes	4	--	RCRA
	TA-3-Motor Pool-1	Unleaded gasoline	10,152	5-5-86	Yes	8	Passed	RCRA
	TA-3-Motor Pool-2	Diesel	10,152	5-5-86	Yes	8	Failed	RCRA[b]/CERCLA[b]
	TA-3-Motor Pool-3	Reclaimed oil	560	5-5-86	Yes	8	--	RCRA

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-3-Motor Pool-4	Reclaimed oil	560	5-5-86	Yes	8	--	RCRA
TA-6	TA-6-47	Fuel oil	Unknown	NA	Abandoned in place 1960	NA	--	CERCLA[b]
TA-8	TA-8-60	Diesel	Unknown	NA	Abandoned pre-1974	Unknown	--	CERCLA[b]
	TA-8-61	Fuel oil	Unknown	NA	Abandoned pre-1974	Unknown	--	CERCLA[b]
TA-15	TA-15-48	Fuel	Unknown	NA	Abandoned in place 1959	NA	--	CERCLA[b]
	TA-15-52	Fuel	Unknown	NA	Abandoned in place 1970	NA	--	CERCLA[b]
	TA-15-266	Fuel	Unknown	NA	Removed 1979		--	--
	TA-15-274	Gasoline	218	5-5-86	Yes	24	--	RCRA/CERCLA[b]
	TA-15-287	Dielectric oil	15,000	5-5-86	Yes	7	--	RCRA
TA-16	TA-16-16	Diesel	Unknown	TBD	NO	>35	--	RCRA/CERCLA
	TA-16-196	Gasoline	4,030	NA	No	Abandoned in place	--	CERCLA[b]

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-16-197	Unleaded gasoline	4,030	5-5-86	Yes	35	Passed	RCRA/CERCLA[b]
	TA-16-205	Diesel	560	5-5-86	Yes	2	Failed	RCRA[b]
	TA-16-543	Fuel oil	29,858	5-5-86	Yes	36	Passed	RCRA
	TA-16-544	Fuel oil	29,858	5-5-86	Yes	36	Passed	RCRA
	TA-16-545	Fuel oil	29,858	5-5-86	Yes	36	--	RCRA
	TA-16-546	Fuel oil	29,858	5-5-86	Yes	36	Passed	RCRA
	TA-16-1341	Gasoline	5,000	NA	Removed 1980	--	--	CERCLA[b]
	TA-16-1342	Gasoline	5,000	NA	Removed 1980	--	--	CERCLA[b]
TA-18	TA-18-PL-30	Diesel	560	9-23-86	Yes	<1	--	RCRA
	TA-18-PL-104	Fuel	Unknown	NA	Abandoned June 1966	NA	--	CERCLA[b]
TA-21	TA-21-3	Diesel	800	5-5-86	Abandoned 1985	20	--	RCRA[b]/CERCLA[b]
	TA-21-155	Diesel	3,008	5-5-86	Yes	7	Passed	RCRA
	TA-21-ATF-01	Fuel oil	21,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-21-ATF-02	Fuel oil	21,500	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-03	Fuel oil	26,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-04	Fuel oil	22,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-05	Kerosene	5,500	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-06	Kerosene	3,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-07	Kerosene	2,500	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-08	Kerosene	5,500	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-09	Fuel oil	25,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-10	Fuel oil	25,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-11	Diesel	38,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-21-ATF-12	Fuel oil	38,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-13	Gasoline	36,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-14	Fuel oil	26,500	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
	TA-21-ATF-17	Diesel	49,000	5-5-86	Abandoned 2/85	40	--	RCRA/CERCLA[b]
TA-22	TA-22-45	Fuel oil	6,000	NA	Removed 1984	NA	--	--
TA-35	TA-35-TSL-18	Diesel	Unknown	NA	Abandoned in place 1973	NA	--	CERCLA[b]
	TA-35-TSL-19	Fuel oil	Unknown	NA	Abandoned in place 1973	NA	--	CERCLA[b]
	TA-35-TSL-20	Fuel oil	Unknown	NA	Abandoned in place 1973	NA	--	CERCLA[b]
	TA-35-159	Dielectric oil	800	5-5-86	Yes	10	--	RCRA/CERCLA[b]
	TA-35-TSL-188-1	Dielectric oil	6,000	9-23-86	Yes	17	--	RCRA/CERCLA[b]

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
	TA-35-TSL-188-2	Dielectric oil	6,000	9-23-86	Yes	17	--	RCRA/CERCLA[b]
	TA-35-197	Dielectric oil	24,000	5-5-86	Yes	8	--	RCRA/CERCLA[b]
TA-41	TA-41-W2	Diesel	560	9-23-86	Yes	1	--	RCRA
TA-50	TA-50-37	Diesel	1,034	5-5-86	Yes	7	Passed	RCRA
TA-52	TA-52-12	Fuel	300	NA	Abandoned in place 1971-72	18	--	RCRA[b]/CERCLA[b]
TA-55	TA-55-15	Diesel	550	5-5-86	Yes	11	Passed	RCRA
	TA-55-16	Diesel	550	5-5-86	Yes	11	Failed	RCRA[b]/CERCLA[b]
	TA-55-17	Diesel	3,008	5-5-86	Yes	11	Passed	RCRA
	TA-55-M-4	Empty, planned for diesel	1,034	9-23-86	Yes	1	--	RCRA
	TA-55-PF-47	Diesel	100	9-23-86	Yes	2	Passed	RCRA

Table V.D.1. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Leak Test[a]	Applicable Regulation
TA-59	TA-59-6	Diesel	3,008	5-5-86	Yes	20	Passed	RCRA

[a]Leak Test - evaluation of underground storage tanks containing petroleum products, RCRA Phase I; volumetric testing using the Heath Petro TITE or Fluid-Static testing methods.

[b]Potential regulatory compliance issue; potential CERCLA site identification under potential CERCLA/RCRA sites, Section V.A.

NA: Not applicable.

TBD: To be determined.

Table V.D.2. Underground Storage Tanks - Radioactive Wastes

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Regulation
TA-2	TA-2-54	Mixed waste	1,200	5-5-86	Yes	23	RCRA
	TA-2-55	Mixed waste	1,200	5-5-86	Yes	23	RCRA
	TA-2-56	Mixed waste	1,200	5-5-86	Yes	23	RCRA
TA-3	TA-3-29-W2A	Mixed waste	5,000	5-5-86	Yes	27	RCRA
	TA-3-29-W3A	Mixed waste	5,000	5-5-86	Yes	27	RCRA
	TA-3-29-W4A	Mixed waste	5,000	5-5-86	Yes	27	RCRA
	TA-3-29-W5A	Mixed waste	5,000	5-5-86	Yes	27	RCRA
	TA-3-29-W7A	Mixed waste	5,000	5-5-86	Yes	27	RCRA
	TA-3-29-W2B	Mixed waste	5,000	([a])	Yes	27	RCRA
	TA-3-29-W3B	Mixed waste	5,000	([a])	Yes	27	RCRA
	TA-3-29-W4B	Mixed waste	5,000	([a])	Yes	27	RCRA
	TA-3-29-W5B	Mixed waste	5,000	([a])	Yes	27	RCRA
	TA-3-29-W7B	Mixed waste	5,000	([a])	Yes	27	RCRA
TA-3	TA-3-154HL-1	Mixed waste	10,000	5-5-86	Yes	27	RCRA
	TA-3-154HL-2	Mixed waste	10,000	5-5-86	Yes	27	RCRA
	TA-3-154LL-1	Mixed waste	5,000	5-5-86	Yes	27	RCRA

Table V.D.2. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Regulation
	TA-3-154LL-2	Mixed waste	5,000	5-5-86	Yes	27	RCRA
TA-21	TA-21-107	Acid mixed	Unknown	NA	Abandoned in place	NA	CERCLA[b]
	TA-21-108	Acid mixed	Unknown	NA	Abandoned in place	NA	CERCLA[b]
	TA-21-257-BS1	Mixed waste	412	5-5-86	Yes	20	RCRA
	TA-21-257-BS2	Mixed waste	412	5-5-86	Yes	20	RCRA
	TA-21-257-BS3	Mixed waste	1,740	5-5-86	Yes	20	RCRA
	TA-21-257-FL1	Mixed waste	3,980	5-5-86	Yes	20	RCRA
	TA-21-257-FM1	Mixed waste	123	5-5-86	Yes	20	RCRA
	TA-21-257-FS1	Mixed waste	5,900	5-5-86	Yes	20	RCRA
	TA-21-257-RWS1	Mixed waste	28,000	5-5-86	Yes	20	RCRA
	TA-21-257-RWS2	Mixed waste	28,000	5-5-86	Yes	20	RCRA
	TA-21-257-SS1	Mixed waste	4,200	5-5-86	Yes	20	RCRA
	TA-21-257-ST1	Mixed waste	18,000	5-5-86	Yes	20	RCRA
TA-35	TA-35-TSL-4	Acid mixed	600	NA	Yes	>30	CERCLA[b]
	TA-35-TSL-5	Acid mixed	600	NA	Yes	>30	CERCLA[b]

Table V.D.2. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Regulation
	TA-35-TSL-6	Acid mixed	600	NA	Yes	>30	CERCLA[b]
	TA-35-TSL-158	Acid mixed	Unknown	NA	Removed 1985	NA	CERCLA[b]
TA-41	TA-41-45	Mixed waste	Unknown	TBD	Yes	Unknown	RCRA[b]/CERCLA[b]
TA-50	TA-50-1-1	Mixed waste	2,000	5-5-86	Yes	25	RCRA
	TA-50-1-2	Mixed waste	5,000	5-5-86	Yes	25	RCRA
	TA-50-1-3	Mixed waste	5,000	5-5-86	Yes	25	RCRA
	TA-50-2-1	Mixed waste	75,000	5-5-86	Yes	25	RCRA
	TA-50-2-2	Mixed waste	25,000	5-5-86	Yes	25	RCRA
	TA-50-2-3	Mixed waste	25,000	5-5-86	Yes	25	RCRA
	TA-50-2-4	Mixed waste	25,000	5-5-86	Yes	25	RCRA
	TA-50-2-5	Mixed waste	25,000	5-5-86	Yes	25	RCRA
	TA-50-3-1	Mixed waste	5,000	5-5-86	Temporarily out of serv.	25	RCRA
	TA-50-3-2	Mixed waste	2,000	5-5-86	Temporarily out of serv.	25	RCRA
	TA-50-3-3	Mixed waste	1,000	5-5-86	Temporarily out of serv.	25	RCRA

Table V.D.2. (continued)

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Regulation
TA-53	TA-53-1	Mixed waste	3,000	5-5-86	Yes	16	RCRA
	TA-53-68	Mixed waste	2,500	5-5-86	Yes	16	RCRA
	TA-53-69	Mixed waste	2,500	5-5-86	Yes	16	RCRA
	TA-53-144	Mixed waste	4,000	5-5-86	Yes	16	RCRA
	TA-53-145	Mixed waste	4,000	5-5-86	Yes	16	RCRA
	TA-53-?	Mixed waste	2,200	5-5-86	No	13	CERCLA[b]
TA-54	TA-54-17	Mixed waste	600	5-5-86	Yes	10	RCRA

[a] A and B Tanks (e.g. TA-3-29 W2A and W2B) originally notified on 5-5-86 as being single tanks.

[b] Potential regulatory compliance issue; potential CERCLA site identification under CERCLA/RCRA sites, Section V.A.

NA: Not applicable.

TBD: To be determined.

Table V.D.3. Underground Storage Tanks - Hazardous Materials

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Issue
TA-3	TA-3-40	Chromic acid, mixed substances	300	5-5-86	Yes	3	RCRA/CERCLA[a]
	TA-3-66A	Acids	4,500	5-5-86	Yes	27	RCRA/CERCLA[a]
	TA-3-66C	Caustic solutions	4,500	5-5-86	Yes	27	RCRA/CERCLA[a]
TA-16	TA-16-215	Mixed substances	Unknown	TBD	Unknown	Unknown	RCRA[a]/CERCLA[a]
TA-21	TA-21-325	Nitric acid	5,200	5-5-86	Yes	Unknown	CERCLA[a]

[a]Potential regulatory compliance issue; potential CERCLA site identification under CERCLA/RCRA sites, Section V.A.

TBD: to be determined.

Table V.D.4. Underground Storage Tanks - Nonregulated Substances

Technical Area	Tank ID No.	Substance Stored	Capacity (gal.)	State Notification	Currently in Service	Tank Age (yr)	Applicable Regulation
TA-0	TA-0-1051	Boiler blowdown	Unknown	TBD**	Yes	Unknown	RCRA[a]/NPDES[a]
TA-3	TA-3-75	Asphalt emulsion	20,000	5-5-85	Yes	35	CERCLA[a]
	TA-3-76	Asphalt	20,000	5-5-85	Yes	35	CERCLA[a]
	TA-3-178	Asphalt emulsion	8,000	5-5-85	Yes	35	CERCLA[a]
	TA-3-335	Asphalt emulsion	13,500	5-5-85	Yes	35	CERCLA[a]
TA-15	TA-15-291	Ethylene glycol	1,200	NA	Yes	Unknown	
TA-16	TA-16-16	Unknown	Unknown	TBD	Yes	Unknown	RCRA[a]/CERCLA[a]
	TA-16-456	Boiler blowdown	Unknown	TBD	Yes	Unknown	RCRA[a]/NPDES[a]

[a]Potential regulatory compliance issue; potential CERCLA site identified under potential CERCLA/RCRA sites, Section V.A.

TBD: to be determined.

NA: not applicable.

Table V.D.5. Septic Tanks

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
TA-0	TA-0-7	ULR-7	Abandoned 1955	--	--
	TA-0-14	ULR-14	Active	--	--
	TA-0-69	ULR-69	Active	--	--
	TA-0-154	ULR-154	Active	RCRA[a]CERCLA[a]	May be contaminated with chemicals and solvents, should be evaluated for regulatory compliance.
	TA-0-190	ULR-190	Active	--	--
	TA-0-276	ULR-276	Active	--	--
TA-1	TA-1-34	TA-1-34	Decommissioned	CERCLA[a]	--
	TA-1-135	TA-1-135	Decommissioned	CERCLA[a]	--
	TA-1-137	TA-1-137	Decommissioned	CERCLA[a]	--
	TA-1-138	TA-1-138	Decommissioned	CERCLA[a]	--
	TA-1-139	TA-1-139	Decommissioned	CERCLA[a]	--
	TA-1-140	TA-1-140	Decommissioned	CERCLA[a]	--
	TA-1-141	TA-1-141	Decommissioned	CERCLA[a]	--
	TA-1-142	TA-1-142	Abandoned 1953	CERCLA[a]	--
	TA-1-268	TA-1-268	Decommissioned	CERCLA[a]	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-1-269	TA-1-269	Decommissioned	CERCLA[a]	--
	TA-1-275	TA-1-275	Decommissioned	CERCLA[a]	--
	TA-1-276	TA-1-276	Decommissioned	CERCLA[a]	--
TA-2	TA-2-43	TA-2-43	Decommissioned 1986	CERCLA[a]	Phase 1 cleanup efforts, 1986.
TA-3	TA-3-15	SM-15	Removed 1964	--	--
	TA-3-79	SM-79	Abandoned	--	--
	TA-3-272	SM-272	Abandoned	--	--
	TA-3-689	SM-689	Abandoned	--	--
	TA-3-1484	SM-1484	Active	RCRA[a]	Research and development (R&D) facility.
TA-5	TA-5-13	TA-5-13	Decommissioned	CERCLA[a]	Acid septic tank--chemical/toxic contamination.
TA-6	TA-6-40	TM-40	Active	--	--
	TA-6-41	TM-41	Decommissioned 1965	CERCLA[a]	Contaminated with high explosives--tank disposed of at Area P.
	TA-6-43	TM-43	Active	RCRA[a]	Shop building--potential solvent contamination.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-6	--	Active	--	Northeast corner of Anchor Ranch Road and Two-Mile Mesa.
TA-8	TA-8-59	AW-59	Abandoned 1967	CERCLA[a]	May contain significant amounts of toxic chemicals.
	TA-8-64	AW-64	Abandoned 1949	--	--
	TA-8-67	AW-67	Abandoned 1968	CERCLA[a]	May contain significant amounts of toxic chemicals.
TA-9	TA-9-48	AE-48	Uncertain	CERCLA[a]	Industrial waste effluents joined outflow from tank and were routed to an outfall to canyon.
	TA-9-81	AE-81	Abandoned 1970	--	--
	TA-9-105	AE-105	Active	--	--
	TA-9-106	AE-106	Active	--	--
	TA-9-107	AE-107	Active	RCRA[a]/CERCLA[a]	May be contaminated with toxic chemicals, should be evaluated for regulatory compliance.
	TA-9-108	AE-108	Active	RCRA[a]/CERCLA[a]	R&D--may contain chemicals and other materials, should be evaluated for regulatory compliance.
	TA-9-109	AE-109	Active	--	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-9-110	AE-110	Active	--	--
	TA-9-203	AE-203	Abandoned 1965	CERCLA[a]	Contaminated with high explosives.
	TA-9-211	AE-211	Abandoned 1986	--	--
TA-10	TA-10-38	BAYO-38	Uncertain	CERCLA[a]	--
	TA-10-39	BAYO-39	Uncertain	CERCLA[a]	--
	TA-10-40	BAYO-40	Uncertain	CERCLA[a]	--
TA-11	TA-11-20	K-20	Active	RCRA[a]/CERCLA[a]	Potentially contaminated with high explosives, should be evaluated for regulatory compliance.
	TA-11-43	K-43	Active	RCRA[a]/CERCLA[a]	Potentially contaminated with high explosives, should be evaluated for regulatory compliance.
TA-13	TA-13-12	P-12	Removed 1951	--	--
TA-14	TA-14-19	Q-19	Active	RCRA[a]/CERCLA[a]	Potentially contaminated with chemicals, should be evaluated for regulatory compliance.
TA-15	TA-15-51	R-51	Active	RCRA[a]/CERCLA[a]	Potentially contaminated with chemicals, should be evaluated for regulatory compliance.
	TA-15-61	R-61	Active	--	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-15-62	R-62	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Affidavit of no discharge and discontinuance of NPDES Permit (1975)--possible chemical contamination, should be reevaluated for regulatory compliance.
	TA-15-63	R-63	Active	--	--
	TA-15-67	R-67	Renumbered TA-36-61	--	--
	TA-15-72	R-72	Inactive	CWA-NPDES[a]	Affidavit of no discharge and discontinuance of NPDES Permit (1975), should be reevaluated for regulatory compliance.
	TA-15-80	R-80	Abandoned 1980	--	--
	TA-15-147	R-147	Abandoned 1965	--	--
	TA-15-195	R-195	Active	RCRA[a]	Serves a laboratory--chemical contamination likely, should be evaluated for regulatory compliance.
	TA-15-205	R-205	Active	RCRA[a]	R&D discharge--potential chemical and solvent contaminants, should be evaluated for regulatory compliance.
	TA-15-282	R-282	Active	--	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-15-284	R-284	Active	--	--
	TA-15-286	R-286	Active	RCRA[a]	Serves shop building--potential contamination with solvents, should be evaluated for regulatory compliance.
TA-16	TA-16-173	16-173	Abandoned 1971	--	--
	TA-16-174	16-174	Decommissioned	--	--
	TA-16-175	16-175	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975)--R&D--potential chemical contaminants, should be evaluated for regulatory compliance.
	TA-16-176	16-176	Removed	--	--
	TA-16-177	16-177	Decommissioned	--	--
	TA-16-178	16-178	Active	--	--
	TA-16-179	16-179	Decommissioned	--	--
	TA-16-371	16-371	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Affidavit of no discharge and discontinuance of NPDES permit--R&D--potential chemical contaminants, should be evaluated for regulatory compliance.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-16-381	16-381	Active	CWA-NPDES[a]/RCRA[a]	R&D--potential chemical contaminants, should be evaluated for regulatory compliance.
	TA-16-385	16-385	Active	CWA-NPDES[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975), should be reevaluated for regulatory compliance.
	TA-16-420	16-420	Abandoned 1962	--	--
	TA-16-486	16-486	Removed 1951	--	--
	TA-16-504	16-504	Removed 1960	--	--
	TA-16-527	16-527	Inactive, formerly V-12	--	--
	TA-16-1132	16-1132	Removed 1956	--	--
TA-18	TA-18-39	PL-39	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Affidavit of no discharge and discontinuance of NPDES permit--potential radiological contaminants, should be evaluated for regulatory compliance.
	TA-18-40	PL-40	Decommissioned	--	--
	TA-18-41	PL-41	Decommissioned	--	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-18-42	PL-42	Active	RCRA[a]	Potentially contaminated with radionuclides, should be evaluated for regulatory compliance.
	TA-18-43	PL-43	Removed	--	--
	TA-18-120	PL-120	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Potentially contaminated with radionuclides and oil. Affidavit of no discharge and discontinuance of NPDES permit--should be evaluated for discontinuance regulatory compliance.
	TA-18-152	PL-152	Abandoned	--	--
TA-19	TA-19-6	EGL-6	Abandoned	CERCLA[a]	Potential for contamination exists.
TA-21	TA-21-53	DP-53	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo--listed 10 possibly contaminated septic tanks.
	TA-21-55	DP-55	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-56	DP-56	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-62	DP-62	Decommissioned 1965	--	--
	TA-21-106	DP-106	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-21-124	DP-124	Abandoned 1955	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-125	DP-125	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-142	DP-142	Decommissioned 1965	--	Included in LASL 1977b memo.
	TA-21-163	DP-163	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-181	DP-181	Abandoned 1965	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-194	DP-194	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-219	DP-219	Abandoned 1966	CERCLA[a]	Included in LASL 1977b memo.
	TA-21-225	DP-225	Decommissioned 1966	--	--
TA-22	TA-22-42	TD-42	Abandoned 1952	CERCLA[a]	Potentially contaminated with radionuclides and high explosives.
	TA-22-50	TD-50	Active	NPDES[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975), should be reevaluated for regulatory compliance.
	TA-22-51	TD-51	Active	NPDES[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975), should be reevaluated for regulatory compliance.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
TA-25	TA-25-2	V-12	Abandoned	CERCLA[a]	Possible high explosive or chemical contamination.
TA-26	TA-26-5	D-5	Unknown	CERCLA[a]	Fate of tank needs to be determined.
TA-31	TA-31-7	31-7	Abandoned	CERCLA[a]	Possible oil or chemical spills may have drained into tank.
TA-32	TA-32-7	32-7	Abandoned	CERCLA[a]	Low levels of radionuclides.
	TA-32-8	32-8	Abandoned	CERCLA[a]	Low levels of radionuclides.
TA-33	TA-33-31	HP-31	Active	RCRA[a]/CERCLA[a]	Tank serves several laboratory buildings--possible chemical contamination, should be evaluated for regulatory compliance.
	TA-33-32	HP-32	Decommissioned 1975	--	--
	TA-33-33	HP-33	Active	NPDES[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975), should be reevaluated for regulatory compliance.
	TA-33-93	HP-93	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975)--radionuclides suspected in tank and drainage field, should be evaluated for regulatory compliance.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-33-96	HP-96	Active	RCRA[a]/CERCLA[a]	Septic tank serves a laboratory--possible chemical contamination, should be evaluated for regulatory compliance.
	TA-33-121	HP-121	Active	--	--
	TA-33-161	HP-161	Active	--	--
TA-35	TA-35-14	TSL-14	Abandoned 1975	CERCLA[a]	Leach field potentially contaminated with oil.
	TA-35-44	TSL-44	Active	--	--
	TA-35-65	TSL-65	Active	RCRA[a]	Tank currently serves a laboratory building--potential chemical contamination, should be evaluated for regulatory compliance.
	TA-35-76	TSL-76	Abandoned 1975	CERCLA[a]	Contamination uncertain.
TA-36	TA-36-17	KAPPA-17	Active	RCRA[a]	Tank currently serves a laboratory building--potential chemical contamination, should be evaluated for regulatory compliance.
	TA-36-61	KAPPA-61	Active	RCRA[a]/CERCLA[a]	Potential radionuclide and high explosive contamination, should be evaluated for regulatory compliance.

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
TA-37	TA-37-28	MAC-28	Active	--	--
TA-39	TA-39-12	AC-12	Abandoned 1986,	--	--
	TA-39-12	AC-12	New tank installed, same designation no. assigned.	--	--
TA-40	TA-40-22	DF-22	Abandoned	--	--
	TA-40-24	DF-24	Active	--	--
	TA-40-25	DF-25	Active	CWA-NPDES[a]/RCRA[a]/CERCLA[a]	Tank serves a research and development lab building--potential chemical contamination of septic system--1975 affidavit of no discharge and discontinuance of NPDES permit--system has history of daylighting, should be reevaluated for regulatory compliance.
TA-41	TA-41-11	W-11	Abandoned 1953	CERCLA[a]	Potential radionuclide contamination.
TA-42	TA-42-4	DS-4	Decommissioned 1978	CERCLA[a]	Potential radionuclide contamination.
TA-46	TA-46-8	WA-8	Abandoned 1973	CERCLA[a]	1972 memo indicates potential radioactive contamination of tanks WA-8, WA-22, WA-49, WA-53, and WA-46. All
	TA-46-22	WA-22	Abandoned 1973	CERCLA[a]	
	TA-46-49	WA-49	Abandoned 1973	CERCLA[a]	

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-46-53	WA-53	Abandoned 1973	CERCLA[a]	possibly contaminated with organics,
	TA-46-66	WA-66	Abandoned 1973	CERCLA[a]	inorganics, and beryllium.
	TA-46-94	WA-94	Abandoned 1972	CERCLA[a]	--
	TA-46-?		Active	RCRA[a]	--
TA-48	TA-48-5	RC-5	Abandoned 1986	--	--
	TA-48-29	RC-29	Active	--	--
TA-49	TA-49-?	Not assigned	Active	--	--
	TA-49-?	Not assigned	Active	--	--
TA-50	TA-50-10	WM-10	Decommissioned 1983	Uncertain	--
TA-51	TA-51-4	REF-4	Active	--	--
	TA-51-9	REF-9	Active	--	--
	TA-51-30	REF-30	Active	--	--
TA-52	TA-52-3	RD-3	Active	CWA/RCRA[a]	Potentially contaminated with chemicals and solvent from R&D facility, should be evaluated for regulatory compliance.
	TA-52-2	--	Active	--	--
	TA-52-4	--	Active	--	--

Table V.D.5. (continued)

Technical Area	Structure No.	Tank Designation	Tank Status	Applicable Regulation (potential issue[a])	Comments
	TA-52-34A	RD-34A	Active	--	--
	TA-52-34B	RD-34B	Active	--	--
	TA-52-?	Unknown	Active	--	--
TA-54	TA-54-16	MD-16	Active	--	--
	TA-54-?	MD-?	Active	--	--
TA-59	TA-59-4	OH-4	Decommissioned 1979	CERCLA[a]	Potentially contaminated with photographic chemical wastes.

[a]Potential regulatory compliance issue; potential CERCLA site identified under potential CERCLA/RCRA sites, Section V.A.

Table V.D.6. Status of LANL Outfalls

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-0	TA-0-1051	Industrial	Boiler blowdown chemicals	Inoperative	Yes	CWA-NPDES[a]	NPDES serial number 108, EPA ID number 02A.
	Pajarito Well #4	Industrial	Well backwash non-contact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 118, EPA ID number 04A.
	Pajarito Well #5	Industrial	Well backwash non-contact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 119, EPA ID number 04A.
TA-1							
TA1-4-CA-1-HW/RW	TA-1	Industrial	Chemical drain	Inactive	NA	CERCLA[a]	At TA-1, five buildings representing the major chemical facilities at the TA are connected to a chemical drain of the sewer line whose outfall led to a tributary of Pueblo Canyon. Liquid from sewer line was discharged untreated through a weir box.
TA1-5-ST-1-HW/RW	TA-1	Septic systems	Sanitary waste mixed with radionuclides	Inactive	NA	CERCLA[a]	Septic Tanks 2, 3, 4, and one unnumbered tank overflowed to Pueblo Canyon--suspected to have been contaminated with polonium and plutonium.
TA-2	Omega-44	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 019, EPA ID number 03A.
	Omega-45	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 020, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-2-3-0/CA-A/I		Industrial	Industrial waste including radionuclides and chemicals	Inactive	NA	CERCLA	Radioactive liquid effluent from deionizer and liquid waste discharged to creek bed.
TA-3	SM-22	Industrial	Power plant--spent demineralizer reagents, boiler blowdown, cooling tower blowdown, and diatomaceous earth filler backwash	Active	Yes	CWA-NPDES	NPDES serial number 002,003, and 005 have been combined with 001 and listed under EPA ID number 01A, as well as SM-25 and -28 NPDES serial number 004.
	SM-29	Industrial	Evaporative coolers--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 021, EPA ID number 03A.
TA3-1-CA-A/I-HW/RW	SM-31	Storm drain	Potential natural uranium	Inactive	NA	CERCLA[a]	Potential natural uranium contamination from washdown operations of the carboy wash platform--washdown discharged into nearby arroyo.
TA3-1-CA-A/I-HW/RW	SM-36	Storm drain	Spent coolants	Active	No	CWA-NPDES[a]	Spent coolants are emptied into storm drain. TA-3-36 also has sumps that connect to storm drain.
TA-3-6-CA/O-A/I-HW/RW	SM-38	Storm drain	Wash water from rack operations	Uncertain	No	CWA-NPDES[a]/RCRA/CERCLA[a]	Wash water may contain small quantities of lead, chromiumm, zinc, tin, copper, and nickel.
	SM-73	Industrial	Asphalt plant discharge	Active	Yes	CWA-NPDES	Submitted to EPA 12/78, NPDES serial number 109, EPA ID number 04A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	SM-73	Industrial	Noncontact cooling water--cooling water for batch plant operations	Active	Yes	CWA-NPDES	Submitted to EPA 12/78, NPDES serial number 110, EPA ID number 04A.
	SM-102	Industrial	Noncontact cooling water discharge	Active	Yes	CWA-NPDES	NPDES serial number 009, EPA ID number 04A.
	SM-105	Industrial	Noncontact cooling water discharge--treated cooling water	Eliminated	NA	--	NPDES serial number 023, EPA ID number 03A.
	SM-105	Industrial	Noncontact cooling water	Eliminated	NA	--	NPDES serial number 010, EPA ID number 04A--combined with NPDES serial number 023.
	SM-127	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 022, EPA ID number 03A.
	SM-156	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 023, EPA ID number 03A.
	SM-170	Industrial	Noncontact cooling water discharge	Active	Yes	CWA-NPDES	NPDES serial number 094, EPA ID number 04A.
	SM-170	Industrial	Paint stripping discharge--surfactents, phosphorus	Inoperative 1981	Yes	CWA-NPDES	NPDES serial number 095, EPA ID number 095.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	SM-187	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 024, EPA ID number 03A.
	SM-208	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 025, EPA ID number 03A.
	SM-208	Industrial	Cooling tower discharge--treated cooling water	Combined	NA	--	Combined with serial number 025, former number 026.
	SM-285	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 027, EPA ID number 03A.
	TA-3-STP	Sanitary waste treatment facility	Sanitary waste possibly including radionuclides, chemicals, and solvents	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 01S, EPA ID number SSS.
TA-4							
TA4-3-CA-I-HW/RW		Industrial	Photographic chemicals	Inactive	NA	CERCLA[a]	Fate of photographic chemicals and oxidizing agents uncertain, should be evaluated for potential environmental contaminants.
TA-5							
TA5-3-CA/O-I-HW/RW		Industrial	Photographic chemicals	Inactive	NA	CERCLA[a]	Fate of photographic chemicals and oxidizing agents uncertain, should be evaluated for potential environmental contaminants.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-5-8	Sanitary	Floor drain--radionuclides	Inactive	NA	CERCLA[a]	1985 Los Alamos site characterization program found storage building to be contaminated with uranium, and traces of uranium were found along the drainage pattern on the mesa sloping toward the canyon.
TA-6							
TA6-3-S-I-HW	TA-6-10	Sanitary	Drainline--nitrates	Inactive	NA	CERCLA[a]	Laboratory building 10 was used for PETN recrystallization; a drain line ran 170 yds from the building through an underground sump and then 30 yds east to southeast, where it opened at ground level.
TA6-5-ST/CA-A/1-HW	TA-6-40	Septic Tank	High explosives and chemicals	Inactive	NA	CERCLA[a]	Potential high explosives and chemical contaminants.
TA-8	TA-8-21	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 075, EPA ID number 06A.
	TA-8-21	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 075, EPA ID number 06A.
	TA-8-22	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES-RCRA[a]	NPDES serial number 074, EPA ID number 06A.
	TA-8-22	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 074, EPA ID number 06A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-8-70	Industrial	Noncontact cooling water	Combined	--	--	NPDES serial number 076 combined with NPDES serial number 115, EPA ID number 04A.
	TA-8-70	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 115, EPA ID number 04A.
	TA-8-9-211	Sanitary	Oxidation pond	Active	Yes	CWA-NPDES	NPDES serial number 11S, EPA ID number SSS.
TA-9	TA-9-A	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 066, EPA ID Number 05A.
	TA-9-A	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 066, EPA ID number 05A.
	TA-9-A	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 066, EPA ID number 05A.
	TA-9-B	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 067, EPA ID number 05A.
	TA-9-B	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 067, EPA ID number 05A.
	TA-9-48	Industrial	High explosives	Active	Yes	CWA-NPDES	NPDES serial number 068, EPA ID number 05A.
	TA-9-48	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 068, EPA ID number 05A.
	TA-9	Sanitary	Oxidation pond	Active	Yes	CWA-NPDES	NPDES serial number 02S, EPA ID number SSS.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-10 TA10-2-S/ST/CA/O-I-RW/HW	TA-10-1	Sanitary	Drain line--radioactive waste	Inactive	NA	CERCLA[a]	Sanitary sewage lines, septic tanks, the outfall line from TA-10-1, and the disposal pit northeast of TA-10-21 may have received some contaminated liquid waste.
	TA-10-41 & -42	Sanitary	Radionuclides	Inactive	NA	CERCLA[a]	In 1974, the area around the old sanitary outfall to the creek was sampled, and levels of gross beta 3 to 20 times background were detected.
TA-11	TA-11-50	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 069, EPA ID number 05A.
	TA-11-51	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 096, EPA ID number 05A.
	TA-11-52	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 097, EPA ID number 05A.
TA-15	TA-15-40-W	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 102, EPA ID number 04A.
	TA-15-40-W	Industrial	Photographic chemicals	Eliminated	NA	CWA-NPDES	NPDES serial number 102, EPA ID number 04A.
	TA-15-40-E	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 103, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-15-R45	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 122, EPA ID number 04A.
	TA-15-62	Industrial	Septic system--possible chemical contaminants	Active	No	CWA-NPDES/RCRA[a]	Affidavit of no discharge and discontinuance of NPDES permit (1975).
	TA-15-63	Septic system	Sanitary waste	Inactive	No	CERCLA[a]	Overflow from septic tank appears to have gone to outfall as shown on ENG-R694, 1958.
	TA-15-138	Industrial	Noncontact cooling water	Eliminated	NA	CWA-NPDES	NPDES serial number 105, EPA ID number 04A.
	TA-15-R-183	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 123, EPA ID number 06A.
	TA-15-194	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 093, EPA ID number 04A.
	TA-15-202	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 028, EPA ID number 03A.
	TA-15-263	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 121, EPA ID number 04A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-16							
TA16-3-S1-A/I-HW		Industrial	High explosives	Inactive/ Active	NA	CWA-NPDES/ CERCLA[a]	Studies done on residual high explosives in drainage ditches adjacent to buildings housing high-explosive operations show typical concentrations of less than 5% high explosive by weight. Active lined pond receives liquid from the two filtration beds. When barrium nitrate levels have been reduced to less than 100 ppm, liquid is siphoned to canyon outfall.
TA16-5-S/O-A/I-HW/RW		Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a] CERCLA[a]	Before 1980 silver was not stripped from developer, and fixer solutions drained into the open ditch from building 222; current NPDES serial number 073, EPA ID Number 06A.
		Industrial	Cooling tower blowdown and waste from high-explosive operations at the 300 complex	Active	Yes	CWA-NPDES/RCRA[a]	Quantities of residual hazardous substances that may remain in the environment at these locations are unknown. NPDES serial number 007, EPA ID number 02A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-16-175	Septic system	Potential chemical contaminants	Active	NA	CWA-NPDES*/RCRA[a]	Research and development facility is served by this septic system--potential for chemicals and solvents likely; affidavit of no discharge and discontinuance of NPDES permit filed for this discharge (1975).
	TA-16-178	Septic system	Potential chemical contaminants	Active	NA	CWA-NPDES[a]/RCRA	Research and development facility is served by this septic system--potential for chemicals and solvents likely. Affidavit of no discharge and discontinuance of NPDES permit filed for this discharge (1975).
	TA-16-202	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 083, EPA ID number 04A.
	TA-16-220	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 070, EPA ID number 04A.
	TA-16-222	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 073, EPA ID number 06A.
	TA-16-260	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 056, EPA ID number 05A.
	TA-16-265/267	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 057, EPA ID number 05A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-16-280	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 061, EPA ID number 05A.
	TA-16-280	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 061, EPA ID number 05A.
	TA-16-300-Line	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 058, EPA ID number 05A.
	TA-16-300-Line	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 058, EPA ID number 05A.
	TA-16-300-Line	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 058, EPA ID number 05A.
	TA-16-340	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 054, EPA ID number 05A.
	TA-16-340	Industrial	Evaporative cooler--treated cooling water	Combined	Yes	CWA-NPDES	NPDES serial number 029, EPA ID number 05A--combined with NPDES serial number 054.
	TA-16-340	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 054, EPA ID number 05A.
	TA-16-340	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 054, EPA ID number 05A.
	TA-16-342	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 062, EPA ID number 05A.
	TA-16-370	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 092, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-16-370	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 092, EPA ID number 03A.
	TA-16-380	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 052, EPA ID number 05A.
	TA-16-400	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 063, EPA ID number 05A.
	TA-16-401/406	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 055, EPA ID number 05A.
	TA-16-410	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 053, EPA ID number 05A.
	TA-16-430	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 060, EPA ID number 03A.
	TA-16-430	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 071, EPA ID number 05A.
	TA-16-450	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 091, EPA ID number 04A.
	TA-16-460	Industrial	Noncontact cooling water	Combined	Yes	CWA-NPDES	NPDES serial number 059, EPA ID number 05A--combined with NPDES serial number 072.
	TA-16-460	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 072, EPA ID number 05A.
	TA-16-460	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 072, EPA ID number 05A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-16-540	Industrial	Boiler blow-down--water treatment chemicals	Eliminated	--	--	Formerly NPDES serial number 083, EPA ID number 02A.
	TA-16-STP	Sanitary	Sanitary waste	Active	Yes	CWA/NPDES	NPDES serial number 03S, EPA ID number SSS.
TA-18	TA-18-30 & 31	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 104, EPA ID number 06A.
	TA-18-39	Septic tank	Domestic waste and potential radionuclides	Active	No	CWA-NPDES/RCRA[a]/ CERCLA*	Potential radionuclide contaminants from upstream users; affidavit of no discharge and discontinuance of NPDES permit (1975).
	TA-18-40 & 43	Septic tank	Sanitary waste	Eliminated		--	--
	TA-18	Sanitary oxidation pond	Sanitary waste	Active	Yes	CWA-NPDES	NPDES serial number 04S, EPA ID number SSS.
TA-21	TA-21-2	Industrial	Evaporative cooler--treated cooling water	Inoperative	Yes	CWA-NPDES	NPDES serial number 030, EPA ID number 03A.
	TA-21-143	Industrial	Cooling tower discharage--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 031, EPA ID number 03A.
	TA-21-150	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 030, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-21-152	Industrial	Evaporative cooler--treated cooling water	Eliminated	--	--	--
	TA-21-166	Industrial	Evaporative cooler--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 034, EPA ID number 03A.
	TA-21-210	Industrial	Evaporative cooler--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 035, EPA ID number 03A.
	TA-21-220	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 036 EPA ID number 03A.
	TA-21-257	Industrial	Industrial waste	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 050, EPA ID number 050.
	TA-21-314	Industrial	Evaporative cooler--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 037, EPA ID number 03A.
	TA-21-357	Industrial	Boiler blow-down--water treat-ment chemicals	Eliminated	--	CERCLA[a]	Potential contamination from boiler blowdown con-taining chemicals.
TA21-3-CA/O-1-HW/RW	--	Industrial	Laundry facility	Inoperative	NA	CERCLA[a]	Seepage pits have become clogged, and effluent is collecting on the surface of the pits and draining into the canyon. Contaminants of concern are radionuclides.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-21-2	Acid sewer outlet	Industrial waste containing radionuclides	Inoperative	NA	CERCLA[a]	A 1956 engineering drawing (ENG-R1194) shows that a line came from the east side of building 2 and ran south across the road to a settling tank (TA-21-118). It extended over the canyon rim to the shelf below. This area received wastes containing radionuclides for years.
	TA-21-3 & 6	Storm drains	Uncertain	Inoperative	NA	CERCLA[a]	Engineering drawing ENG-R1194 shows that floor drains from buildings 3 and 6 went to the storm drains, which in turn drainedto the south rim of the canyon.
	--	Septic systems	Industrial and sanitary wastes	Inoperative	NA	CERCLA[a]	In early years, five septic tanks at DP Site drained their respective effluents to Los Alamos Canyon.
	--	Sewer drains	Effluent from various buildings potentially contaminated with radionuclides	Inoperative	NA	CERCLA[a]	Sewer drains from buildings 152 and 153 emptied into the canyon. Radionuclide contamination from the outfalls on the south rim was thought to be great enough to warrant fencing the area.
	TA-21-56	Septic system	Industrial and sanitary waste	--	--	--	--

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-22							
TA22-2-CA/O-A/I-HW		Industrial	Plating operations	Inactive	NA	CERCLA	Chemicals reported to have been used include sodium hydroxide, perchloroethylene, sodium thiosulfate, gold, hydrogen peroxide, cyanide, chromic acid, and nickel.
	TA-22-1	Industrial	High explosives	Inactive	NA	CERCLA	TA-22-1 was in active use for handling PETN, RDX, Tetryl, and PBX.
	TA-22-5	Industrial	Noncontact cooling water	Inactive	NA	CERCLA[a]	Possible chemical treatment of cooling water.
	TA-22-34	Industrial	Photographic chemicals	Inactive	NA	CERCLA[a]	Building 34 housed a photo laboratory with no silver recovery unit in its darkroom; the drains in the room connected through a settling basin to an outfall to the canyon north of the building.
	TA-22-1	Industrial	High explosives	Inoperative	--	---	NPDES serial number 065, EPA ID number 05A.
	TA-22-5 (north)	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 011, EPA ID number 04A.
	TA-22-5 (south)	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 084, EPA ID number 04A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-22-6	Industrial	Boiler blow-down water treatment chemicals	Eliminated		CERCLA[a]	NPDES serial number 008, EPA ID number 02A.
	TA-22-6	Industrial	Noncontact cooling water	Eliminated	--	--	NPDES serial number 085, EPA ID number 04A.
	TA-22-34	Industrial	High explosives	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 064, EPA ID number 05A.
	TA-22-34	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 078, EPA ID number 06A.
	TA-22-52	Industrial	Printed circuit board chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 077, EPA ID number 077.
TA-24							
TA24-2-S/UST-1-HW/RW	Uncertain	Spent photo solutions	Inactive	NA		CERCLA[a]	Uncertain whether spent photographic chemical solutions, beryllium residue, and solvent solutions drained to an open ditch or to septic tank.
TA-26							
TA26-2-O-1-RW	--	--	Inactive	N/A		CERCLA[a]	Three outfalls identified and listed as inactive; potential contamination with uranium and tritium.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-33 TA33-2-O/S-A/ I-HW/RW							
	Area 6	Unknown	Uncertain	Uncertain	Uncertain	CERCLA[a]	--
	TA-33-32	Septic system	Sanitary	Uncertain	Unknown	CWA-NPDES[a]/CERCLA[a]	--
	--	Hot change room	Industrial/sanitary runoff	Uncertain	Inactive	CERCLA[a]	The industrial waste line ran from the hot change room and the process room out to a tile field and collection system, which eventually daylighted a short distance from the canyon rim.
	TA-33-86	Industrial	Sanitary runoff	Uncertain	Uncertain	CERCLA[a]	At TA-33-86 extensive work with tritium was performed. Significant documented releases occurred during experimentation with this radioactive material in the 1970s. There is a high probability that other releases occurred. Drainage lines are assumed to be contaminated. To the east of this structure is an acid sewer line to an acid sump (TA-35-34), a contaminated sewer line to another acid sewer sump (TA-33-133), and a drain to daylight.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-33-39	Drains	Uncertain	Uncertain	Uncertain	CWA-NPDES/CERCLA[a]	Two dependent drains run a few feet to the east of building 39, the machine shop, to daylight. This building was used for uranium storage, and a lead furnace was housed here. It's possible that these drains contain uranium, lead and organics.
TA-35 TA35-4-O/CA-1-HW/RW & TA35-5-O-A-HW	TA-35 waste treatment plant	Radionuclides	Inactive	NA		CERCLA[a]	Accurate figures on what the TA-35 waste treatment plant discharged into the canyon are difficult to obtain.
	TA-35-25	Industrial	Nonradioactive chemicals	Inactive	NA	CERCLA[a]	A sewer drain went from building 25, the sodium building, to the edge of the canyon, but no record has been found listing the types of liquids discharged.
	TA-35-36	Unknown	Unknown	Inactive	NA	CERCLA[a]	Unknown what was discharged.
	TA-35-29	Industrial	Noncontact cooling water	Eliminated	--	--	Formerly NPDES serial number 116, EPA ID number 04A.
	TA-35-33	Industrial	Treated cooling water	Eliminated	--	--	Formerly NPDES serial number 039, EPA ID number 03A.
	TA-35-34	Industrial	Noncontact cooling water	Eliminated	--	--	Formerly NPDES serial number 089, EPA ID number 04A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-35-46	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 087, EPA ID number 04A.
	TA-35-67	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 012, EPA ID number 04A.
	TA-35-67	Industrial	Noncontact cooling water	Combined	Yes	CWA-NPDES	Formerly NPDES serial number 088, EPA ID number 04A--combined with NPDES serial number 012.
	TA-35-85	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 090, EPA ID number 04A.
	TA-35-213	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 127, EPA ID number 04A.
	TA-35-STP	Sanitary	Oxidation lagoons	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 105, EPA ID number SSS--potential chemical and solvent contaminants; design data indicate that all sink, laboratory, and shower drains are connected to the sanitary sewer.
TA-36 TA36-4-S/ST/O-A/I-HW/RW	Uncertain	Uncertain	Uncertain	Uncertain		CWA-NPDES/RCRA[a]/CERCLA[a]	Drains from building 1 are shown on engineering drawing R1363 as leading to outfalls to Pajarito Canyon. This facility has had a photo lab for a long time; in the early years, fixer was dumped into the drain system that discharges to the canyon.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-36-1	Uncertain	Uncertain	Uncertain	NA	CERCLA[a]	Potential waste solutions released to the drain included uranium-238. Whether they went to canyon outfalls or to septic tanks is not known.
	TA-36-1	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 106, EPA ID number 06A.
TA-40 TA40-6-CA/ ST/O-A-HW	--	Industrial	Noncontact cooling water	Active	Uncertain	CWA-NPDES[a]	During a field survey, laser cooling water was found to be discharging directly to the canyon.
	--	Industrial	Photographic chemicals and cooling water	Active	Uncertain	CWA-NPDES[a]/RCRA[a]	Engineering drawing 1474 indicates that buildings 15, 18, 9, 17, 4, and 16 have drains that discharge to canyon outfalls.
	TA-40-1	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 099, EPA ID number 06A.
	TA-40-4	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 079, EPA ID number 06A.
	TA-40-5	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 080, EPA ID number 06A.
	TA-40-8	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 081, EPA ID number 06A.
	TA-40-9	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 101, EPA ID number 06A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-40-12	Industrial	Photographic chemicals	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 082, EPA ID number 06A.
	TA-40-15	Industrial	Photographic chemicals	Eliminated	--	Uncertain	Formerly NPDES serial number 100, EPA ID number 06A.
TA-41							
TA41-3-CA/O-A/I-HW/RW	--	Sanitary	Sanitary waste	Active	Yes	CWA-NPDES/CERCLA[a]	The sanitary waste drains from TA-41 are routed to a small sewage plant at TA-41. In 1955 samples were taken of sewage entering tank TA-41-7 and the effluent from the chlorine contact tank. Gross alpha counts ranged from 216 to 244 dis/min/l.
TA-43							
TA43-3-CA/O-A/I-HW/RW	--	Sanitary	Industrial waste	Inactive	NA	CERCLA[a]	Before March 1963, when the TA-45 treatment plant was put into semiretirement, the industrial waste drains at TA-43 connected to the treatment plant, and the treated outfall went to Acid Canyon.
	TA-43-1	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 040, EPA ID number 041.
	TA-43-1	Industrial	Treated cooling water	Combined	--	--	Formerly NPDES serial number 041, EPA ID number 03A--combined with 040.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-45							
TA45-1-O/CA-I-HW/RW	--	Industrial	Untreated industrial waste	Inactive	NA	CERCLA[a]	During and immediately after the war years, most of the liquid effluents from industrial drains at the main technical areas were collected into a central collection system and discharged untreated into an outfall in a tributary of Pueblo Canyon; there was some concern about the quantity of radionuclides in the discharge.
	TA-45	Waste treatment plant	Treated liquid waste	Inactive	NA	CERCLA[a]	From start-up until mid-1953, the TA-45 plant treated liquid wastes from only the original main technical area, TA-1; starting in June 1953, this facility began receiving wastes from TA-3. The wastes included primary fission products, as reflected in the higher gross beta and gamma content of the TA-45 effluents from 1960-1963.
TA-46							
TA46-1-CA/O-I-HW/RW	--	Storm	Various contaminants	Inactive	NA	CERCLA[a]	During the 1950s various activities resulted in some contaminants moving into the environment in outfalls to the canyon or in storm drains.
	TA-46-1	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 042, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-46-24, 59-76	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 018, EPA ID number 04A.
	TA-46-30	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 013, EPA ID number 04A.
	TA-46-31	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 043, EPA ID number 03A.
	TA-46-41	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 117, EPA number 04A.
	TA-46-86	Industrial	Treated cooling water	Inoperative	Yes	CWA-NPDES	NPDES serial number 044, EPA ID number 03A.
	TA-46-88	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 014, EPA ID number 04A.
	TA-46-169	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 124, EPA ID number 03A.
	TA-46-	Sanitary	Oxidation pond sanitary waste	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 07S, EPA ID number SSS; chemicals and solvents have been noted as discharging to the sanitary waste system.
TA46-1-0-1-HW/RW	--	Storm drains	Cleaning solution of 50% hydrochloric acid and 50% nitric acid	Inactive	NA	CERCLA[a]	In 1958, a drain in building 24 serving a cleaning operation using 50% hydrochloric acid and 50% nitric acid drained to a storm sewer that went to a canyon.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	--	Ditch	Cooling water possibly contaminated with cesium	Inactive	NA	CERCLA[a]	Cells containing cesium metal were placed in a ditch near southwest corner of building 1, and a stream of water was run over the cells to remove the cesium.
	TA-46-81	Open concrete tank	Wash solutions	Inactive	NA	CERCLA[a]	A water-filled, open concrete tank, TA-46-81, was used to clean alkali metal containers and components in the area north of building 31. This tank was near the canyon wall--spent liquid may have discharged to the canyon.
TA-48							
TA48-3-O/SI-A-HW/RW	--	Industrial	Noncontact cooling water--cooling tower blowdown and other unknown liquid discharges	Active	Uncertain	CWA-NPDES/RCRA[a]	During a field survey, four liquid waste outfalls to Mortandad Canyon were noted. About 35 million gal. of water per year is thought to be discharged to the canyon from these outfalls.
	TA-48-1	Industrial	Noncontact cooling water	Combined	Yes	CWA-NPDES	NPDES serial number 015, EPA ID number 04A. Discharge combined with NPDES serial number 045.
	TA-48-1	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 016, EPA ID number 04A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-48-1	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 045, EPA ID number 03A.
	TA-48-1	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 045, EPA ID number 03A.
	TA-48-1	Industrial	Cooling tower discharge--treated cooling water	Combined	Yes	CWA-NPDES	NPDES serial number 046, EPA ID number 03A. Discharge combined with NPDES serial number 045.
	TA-48-5	Sanitary	Septic tank and sand filter	Combined	Yes	CWA-NPDES	NPDES serial number 085, EPA ID number SSS. Discharge combined with NPDES serial number 10S.
	TA-48-8	Industrial	Noncontact cooling water	Active	Yes	CWA-NPDES	NPDES serial number 126, EPA ID number 04A.
TA-50							
	TA-50-1	Industrial	Industrial waste	Active	Yes	CWA-NPDES	NPDES serial number 051, EPA ID number 051.
TA-51							
TA51-4-CA/O-A-HW	--	Industrial	Small quantities of chemicals in liquid effluent	Active	No	CWA-NPDES[a]/RCRA[a]	On one occasion, the field survey observed small quantities of such chemicals as strontium, which may be in the water. This water is discharged to the canyon.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
TA-52							
TA52-4-O-I-RW	TA-52-11	Uncertain	Uncertain	Inactive	NA	Uncertain	Q-6 did some experiments in which it ran water over simulated fuel rods and then discharged the water to a ditch outside TA-52-11.
TA-53							
	TA-53-2	Industrial	Noncontact cooling water	Combined	Yes	CWA-NPDES	NPDES serial number 017, EPA ID 04A. Discharge combined with NPDES serial number 114.
	TA-53-2	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 114, EPA ID number 03A.
	TA-53-28	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 1125, EPA ID number 03A.
	TA-53-60	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 047, EPA ID number 03A.
	TA-53-62	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 048, EPA ID number 03A.
	TA-53-64	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 049, EPA ID number 03A.
	TA-53-293 and 294	Industrial	Treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 113, EPA ID number 03A.

Table V.D.6. (continued)

Technical Area/CEARP Site	Facility Designation	Type of Outfall	Effluent Characteristics	Outfall Status	NPDES Permitted	Applicable Regulation (potential issue[a])	Comments
	TA-53	Sanitary	Oxidation lagoons	Active	Yes	CWA-NPDES/RCRA[a]	NPDES serial number 09S, EPA ID number SSS. Spent solvents, chemicals and radionuclides discharged into this facility drain or directly into lagoon system.
TA53-3-O-A-HW/RW	TA-53-19	Industrial	Noncontact cooling water	Active	No	CWA-NPDES	During a field survey, it was found that once-through, noncontact cooling water from TA-53-19 was not listed on the NPDES permit. This outfall discharges across a parking lot and joins the discharges from -293 and -294.
TA-57							
TA57-3-O-A-HW		Geothermal	Geothermal discharge	Active	Yes	CWA-NPDES	NPDES serial number 107, EPA ID number 107. Assigned NPDES Permit number NM0028576.
TA-59							
TA59-3-O-A-HW	TA-59-10	Industrial	Cooling tower discharge--treated cooling water	Active	Yes	CWA-NPDES	NPDES serial number 098, EPA ID number 03A

[a]Potential regulatory compliance issue; potential CERCLA site identified under potential CERCLA/RCRA sites, Section V.A.
NA: Not applicable.

Table V.D.7. Hazardous Waste Management Facilities--Container Storage

Technical Area Designation	Operational Status	Closure Plans & Status	Applicable Regulation (potential issue[a])	Comments
TA-3-40	Active	NA	RCRA[a]	Spent chemical solution storage (listed as <90-day storage).
TA-3-102	Active	Closure plans written September 1985 and submitted to state during February 1986. State Environmental Improvement Division (EID) approval pending.	RCRA	Facility operated under RCRA Interim Status. Permit is not being sought. Facility will be closed under Interim Status and operated as a <90-day storage facility. Facility used for the containerized storage of lithium hydride waste.
TA-9-39	Active	NA	RCRA[a]	Scrap high explosive and contaminated waste materials (listed as <90-day storage).
TA-14-35	Active	NA	RCRA[a]	Satellite storage facility for high-explosive-contaminated wastes that will receive thermal treatment.
TA-15-41	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive. Potentially contaminated waste materials.
TA-15-184	Active	NA	RCRA[a]	Satellite storage facility for high-explosive-contaminated wastes that will receive thermal treatment.

Table V.D.7. (continued)

Technical Area Designation	Operational Status	Closure Plans & Status	Applicable Regulation (potential issue[a])	Comments
TA-15-242	Active	NA	RCRA[a]	Satellite storage facility for high-explosive-contaminated waste materials.
TA-22-24	Inactive	Closure plans written September 1985, amended December 1985, and submitted to state February 1986. State EID approval pending.	RCRA	Container storage area for scrap high explosive and contaminated wastes. Facility operated under the Laboratory's RCRA Interim Status. A RCRA Part B permit was not sought for this facility. TA-22-24 has not received any materials since 1985.
TA-22-96-3	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive and contaminated waste materials.
TA-36-4, -5, -7, & -11	Active	NA	RCRA[a]	Satellite storage facility, container storage of scrap high explosive and high-explosive-contaminated waste materials.
TA-39-4	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive and high-explosive-contaminated waste materials.

Table V.D.7. (continued)

Technical Area Designation	Operational Status	Closure Plans & Status	Applicable Regulation (potential issue[a])	Comments
TA-40-2	Inactive	Closure plans written September 1985, amended December 1985, and submitted to state February 1986. State EID approval pending.	RCRA	Container storage area for high explosives and high-explosive-contaminated wastes. Container storage area operated under RCRA Interim Status; a Part B permit is not being sought for this facility. This facility will be closed under Interim Status.
TA-40-3	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive and contaminated waste materials.
TA-40-14	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive and contaminated waste materials.
TA-40-41	Active	NA	RCRA[a]	Satellite storage facility for scrap high explosive and contaminated waste materials.
TA-46	Active	NA	RCRA[a]	Listed as <90-day storage. Tank storage of nitric and sulfuric acid solutions.
TA-50-1	Active	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA[a]	Chemical-waste storage area located in same area housing the batch treatment system. Area is bermed and encompasses 16 square feet. Residence of wastes in drums at this area is generally only 30 to 60 days.

Table V.D.7. (continued)

Technical Area Designation	Operational Status	Closure Plans & Status	Applicable Regulation (potential issue[a])	Comments
TA-53	Active	NA	RCRA[a]	Listed as <90-day storage. Drum storage of solvents and acids.
TA-54, Area L	Active	Closure plans submitted to state January 1986 as part of Part B. State EID approval pending.	RCRA[a]	Wastes stored and treated under Interim Status. Laboratory wastes are sorted, packaged, and and prepared for transport to a RCRA-permitted facility for treatment or disposal.

[a]Potential regulatory compliance issues; potential CERCLA site identified under potential CERCLA/RCRA sites, Section V.A. Comprehensive programs (including recordkeeping) should be implemented to ensure compliance with RCRA <90-day and satellite storage requirements. RCRA permit not required for <90-day and satellite storage.

DEFINITIONS

Explosive Wastes: materials contaminated with high explosives; these materials may consist of paper, oil, solvents, wood, machine tools, fixtures, etc.

High Explosives: consist of HMX, RDC (cyclonite), TNT (2, 4, 6-trinitrotoluene), PETN (pentaerythritol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders.

Hazardous Wastes: as defined in 40 CFR Part 261.

Table V.D.8. Hazardous Waste Management Facilities--Waste Treatment

Technical Area Designation	Type of Hazardous Waste Treatment	Operational Status	Applicable Regulation	Regulatory Status	Comments
TA-50-1	Batch treatment system	Active	RCRA	Currently operating under RCRA Interim Status. Facility included in RCRA Part A/B submission.	Wastes treated at this facility include cyanide, chromate plating solutions, solutions of acids and bases, and heavy metals. Treatment consists of a versatile batch, wet chemical processing system designed to neutralize or treat listed wastes.
TA-50-37	Control-air incinerator	Active	RCRA	Facility permitted to burn radioactive and PCB-contaminated materials. Incinerator currently has Interim Status to burn hazardous wastes. At present, the Laboratory is seeking permitting under RCRA to provide flexibility and minimization of land disposal. Facility included in RCRA Part A/B submission.	Before November 1980, the incinerator burned RCRA hazardous wastes in the form of an ignitable mixed waste.

Table V.D.8. (continued)

Technical Area Designation	Type of Hazardous Waste Treatment	Operational Status	Applicable Regulation	Regulatory Status	Comments
TA-54 Area L	Tank treatment	Active	RCRA	Currently operating under RCRA Interim Status. Facility included in RCRA Part A/B submission.	Neutralization and solidification of hazardous chemical wastes. Four 1665-gal. ten-gauge carbon steel tanks are used to neutralize, oxidize, and evaporate RCRA-regulated and non-RCRA-regulated wastes.

Table V.D.9. Hazardous Waste Management Facilities--Thermal Treatment

Technical Area Designation	Operational Status	Closure Plans & Status[a]	Applicable Regulation (potential issue[b])	Comments
TA-14-23 TA14-3-IN-A-HW/RW[c]	Active	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/CERCLA[b]	Thermal treatment at this facility consists of detonating small pieces of scrap and high explosives, and incinerating burn paper, tape, cotton swabs, and other trash potentially contaminated with high explosives.
TA-15-184 TA15-13-I-A-HW	Active	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/CERCLA[b]	Hydrodynamic testing. Detonation of unneeded classified shapes and scrap high explosive.
TA-16-387, 388, 399 TA16-6-CA-A-HW	Active	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA	High-explosive disposal facility; ignition of waste explosives or explosive-contaminated equipment.
TA-16-394 TA16-6-CA-A-HW	Active	Closure plans submitted with RCRA Part B application; closure date is 2100.	RCRA	Ignition of fluids contaminated with high explosives.
TA-16-401 & 406 TA16-6-CA-A-HW	Active	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/NPDES	High-explosive waste sludge--thermally treated. Liquids filtered and drained to a lagoon regulated by the Laboratory's NPDES permit.

Table V.D.9. (continued)

Technical Area Designation	Operational Status	Closure Plans & Status[a]	Applicable Regulation (potential issue[b])	Comments
TA-36-8 (Minie site) TA36-1-CA-A-HW/RW	Active/Inactive	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/CERCLA[b]	Detonation of scrap high explosive. Disposal of leaking gas cylinders or small volumes of residual chemicals from research and development in small packages. Forty-six different RCRA-regulated materials are treated in this manner at this facility (list provided in Table 9-2 of the Laboratory's RCRA Part B application). Detonation method of disposal at this facility has stopped, pending RCRA issue determination.
TA-39 (Firing Points 6, -7, -8) TA39-1-CA-A/I-HW/RW	Active/Inactive	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/CERCLA[b]	Facility normally used for test detonations. Facility has been used for high-explosive-waste detonations.
TA-39 (Firing point 57)	Active/Inactive	Closure plans submitted with RCRA Part B permit application; closure date is 2100.	RCRA/CERCLA[b]	Normally used for test detonations--this facility has been used for high-explosive-waste detonation.

Table V.D.9. (continued)

Technical Area Designation	Operational Status	Closure Plans & Status[a]	Applicable Regulation (potential issue[b])	Comments
TA-40 (Scrap detonation site)	Active	Closure plans submitted September 1985, amended December 1985, and submitted February 1986. State EID approval pending.	RCRA/CERCLA[b]	High-explosive wastes. Site active as detonation site--inactive as scrap detonation site.

[a] Post-closure activities not required for thermal treatment facilities.
[b] Potential regulatory compliance issue; potential CERCLA site identified under potential CERCLA/RCRA sites, Section V.A.
[c] Site entries have the following designations: technical area (TA); identifcation number of site within the TA; solid waste management unit: contaminated area (CA) or incinerator (IN); status: active (A) or inactive (I); type of contamination: hazardous waste (HW) or radioactive waste (RW).

DEFINITIONS

Explosive Wastes: materials contaminated with high explosives; these materials may consist of paper, oil, solvents, wood, machine tools, fixtures, etc.

High Explosives: consist of HMX, RDX (cyclonite), TNT (2, 4, 6-trinitrotoluene), PENT (pentaerythritol tetranitrate), ammonium nitrate, barium nitrate, TATB (triaminotrinitrobenzene), nitrocellulose, tetryl, nitroguanidine, and various plastic binders.

Hazaradous Wastes: as defined in 40 CFR Part 261.

Table V.D.10. Hazardous Waste Management Facilities--Waste Disposal Sites

Technical Area Designation	Type of Facility	Operational Status	Applicable Regulation	Regulatory Status	Comments
TA-16					
Area P	Landfill	Inactive	RCRA	Before November 1985, facility operated under RCRA Part A Interim Status. Closure/post-closure plans submitted to state November 25, 1985. State EID approval pending.	Since the 1950s, Area P has been used as an industrial landfill for disposal of sand and residue from burning scrap high explosive, high-explosive-contaminated equipment, and building demolition debris.
TA-54					
Area G	Landfill	Inactive	RCRA	Area G operated under RCRA Part A Interim Status. Closure/post-closure plans submitted to state November 25, 1985. State EID approval pending.	TA-54 is the primary radioactive solid waste burial/storage facility operating at the Laboratory. Certain radioactive mixed and non-radioactive hazardous chemical wastes have been buried. Burial facility includes pits and shafts, all of varying dimensions.
Area H	Landfill	Inactive	RCRA	All shafts except No. 9 were taken out of service and capped prior to November 1980, the effective date of RCRA.	Area H used as a depository for classified waste materials. This facility is kept locked and is restricted. Only appropriate security clearance will allow access.

Table V.D.10. (continued)

Technical Area Designation	Type of Facility	Operational Status	Applicable Regulation	Regulatory Status	Comments
				Shaft No. 9 is still open, shaft will be closed by capping with concrete.	Shaft No. 9 has received 10 1/2 tons of mostly metallic nonhazardous waste. The extent of hazardous waste disposal is not fully known; however, only 15 lb of lithium hydride is believed to have been disposed of in shaft No. 9.
				Closure and post-closure plans for Area H submitted to state EID in January 1986. Approval pending.	
Area J	Landfill	Inactive/ Active	RCRA	Facility should be evaluated for RCRA regulatory compliance.	Disposal of equipment and other noncombustible non-RCRA materials still requires administrative control. Such material may include noncombustibles that have been flashed to remove high-explosive contamination, but cannot be certified to be free of such contamination.

Table V.D.10. (continued)

Technical Area Designation	Type of Facility	Operational Status	Applicable Regulation	Regulatory Status	Comments
Area L	Landfill	Inactive	RCRA	Area L landfill operated under Interim Status. In November 1985 Interim Status was terminated. Facility closure/post-closure plans submitted to state EID January 1986. Currently awaiting approval of closure/post-closure plans or resolution to loss of Interim Status, pending resolution of groundwater monitoring issues.	Land disposal facilities at Area L include 34 shafts. All shafts have been capped and are no longer in use. Each shaft was used for the disposal of a single category of chemical waste to ensure incompatible chemicals would not mix and react.

Table V.D.11. Firing Sites

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-3 TA3-7-CA-I-HW	Inactive	Explosive-forming facility (TA-3-159) and firing chamber (TA-3-160).	none	There is no indication of residual environmental contamination of concern
TA-3 TA3-1-CA-A/I-HW/RW	Inactive	Explosive manufacturing, testing, and firing sites.	CERCLA[a]	Potential residuals associated with explosives manufacturing, testing, and firing. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-4 TA4-1-CA-I-HW/RW and TA4-2-CA-I-HW/RW	Inactive	Firing pit and firing site.	CERCLA[a]	Potential environmental contaminants may consist of high explosives, natural and depleted uranium, beryllium, uranium, contaminated aluminum, or steel. Field surveys and interviews with past employees provided evidence that scrap from the firing pit at TA-4 was pushed north into Mortandad Canyon. Extent of residual environmental contamination will be determined during supplemental Phase I.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-5				
TA5-1-L-HW/RW and TA5-2-CA-I-HW/RW	Inactive	Firing site for medium- to large-size explosives.	CERCLA[a]	Potential exists for firing site residuals consisting of high explosives, uranium or depleted uranium, beryllium, uranium-contaminated aluminum, or steel. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-6				
TA6-1-CA-I-HW/RW	Inactive	Detonation site.	CERCLA[a]	Potential environmental contamination by high explosives and radioactivity. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-7				
TA7-1-CA-I-HW	Inactive	Two firing pits for small explosives involving radioactive materials that are believed to be short-lived.	CERCLA[a]	Potential environmental contamination by high explosives and radioactivity. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-8				
TA8-1-CA-I-HW/RW	Inactive	Gun-firing site at Anchor Site West.	none	There is no evidence of residual contamination of concern.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-9(AE)				
TA9(AE)-1-CA-I-HW/RW	Inactive	Field testing of explosives at firing sites AE-4 and AE-5.	CERCLA[a]	Potential environmental contamination by high-explosive residuals. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-10				
TA10-1-CA-I-HW/RW	Inactive	Detonation site.	CERCLA[a]	Shots fired included natural and depleted uranium surrounded by high explosives, with radioactive lanthanum acting as a source in most shots. Cleanup operations at this facility were conducted in 1963, with surface cleanup undertaken at periodic intervals. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-11				
TA11-1-CA-I-HW/RW	Inactive	Detonation site.	CERCLA[a]	Potential environmental contamination by high explosives, natural uranium, and aluminum. Extent of residual environmental contamination will be determined during supplemental Phase I.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA11-4-CA-I-HW/RW	Inactive	Acceleration and impact tests of explosive systems contained in impact-resistant vehicles (gun firing).	CERCLA[a]	Potential contamination by high explosives and other explosive testing residuals. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA11-5-CA-A-HW/RW	Active	Drop tower detonation.	RCRA[a]/CERCLA[a]	Contamination from high explosives (including barium residues) and any other materials used in explosive testing might extend from the firing pad outward into the surrounding soils. Extent of residual environmental contamination will be determined during supplemental Phase I.
TA-12				
TA12-1-CA-I-HW/RW	Inactive	Testing of explosive charges.	CERCLA[a]	Potential high-explosive contamination. Extent of residual contamination will be determined during supplemental Phase I.
TA-13				
TA13-1-CA-I-HW/RW	Inactive	X-ray work in connection with explosives experiments.	none	There is no evidence of residual environmental contamination of concern.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-14				
TA14-1-CA-A/I-HW/RW	Active/Inactive	Testing of explosives.	RCRA[a]/CERCLA[a]	Current operations include bullet firing and explosive testing to determine sensitivity and/or performance. Previous operations consisted of work on small explosive charges. Explosives used probably included pentolite, torpex, tamped tetryl, COMP-B, baronal, and TNT. Residuals from explosive testing may be present. Extent of residual environmental contamination from firing site activities will be determined during supplemental Phase I.
TA-15				
TA15-1-CA-I-HW/RW	Inactive	Firing points for explosive testing (A, B, C, D, E, F, G, H, I, J, R-44, and R-45).	CERCLA[a]	Materials used at the different firing points consist of steel, aluminum, lithium, hydride, uranium, mercury, lead, beryllium, boron, cadmium, gold, COMP B, HMX, RDX, TNT, PETN, cyclotol, and baratol. Extent of residual environmental contamination from firing site activities will be determined during supplemental Phase I.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA15-2-CA-A-HW/RW	Active	Firing facilities (Phermex and Ector) used for radiographic studies of explosives and explosive-driven metal systems.	RCRA[a]/CERCLA[a]	Materials studied include aluminum, copper, nickel, mercury, lead, thorium, uranium, and beryllium. Extent of residual contamination from firing-site activities at both Phermex and Ector to be determined during supplemental Phase I.
TA-16				
TA16-5-CA-I-HW	Inactive	High-explosive testing at two locations, P Site and K Site.	CERCLA[a]	Because some of the shots did not detonate completely, residual high explosive was scattered into the environs. Extent of residual contamination from testing activities will be determined during supplemental Phase I.
TA-18				
TA18-1-CA-I-HW/RW	Inactive	Firing site drop tower and ballistic testing.	CERCLA[a]	Materials used in tests included high explosives, natural uranium, aluminum, copper, lead, and cadmium. Extent of residual contamination from testing activities associated with the firing operations will be determined during supplemental Phase I.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-20				
TA20-2-CA-I-HW/RW	Inactive	Testing of initiators; other misc. testing.	CERCLA[a]	The Initiation Group, G-10, actively used Sandia Canyon Site as a proving ground for gadget indicators. Potential environmental contaminants include beryllium, nickel, strontium, radioisotopic tungsten, high explosives, and uranium. Environmental contamination will be determined during supplemental Phase I.
TA-23				
TA23-1-CA-I-HW/RW	Inactive	Testing of high explosives.	CERCLA[a]	Potential environmental contaminants from activities associated with high-explosive testing. Residual environmental contamination will be determined during supplemental Phase I.
TA-27				
TA27-2-CA-I-HW/RW	Inactive	Firing pits testing of high-explosive assemblies.	CERCLA[a]	Shots fired contained uranium or thorium, a stand-in for plutonium, and beryllium. Composition B was used as the high explosive. Potential environmental contamination from materials associated with testing activities exists. A supplemental Phase I investigation will be conducted to determine extent of residual environmental contamination.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-33				
TA33-4-CA-I-HW/RW	Inactive	Chamber testing.	CERCLA[a]	Known hazardous materials that made up the shots included high explosives and plutonium.
TA33-4-CA-I-HW/RW	Inactive	Full-scale and half-scale pad shot facilities.	CERCLA[a]	Potential contaminants include high explosives, beryllium, uranium, and, in one instance, tritium. A CEARP supplemental Phase I study will be conducted to determine the presence or absence of hazardous substances.
TA33-6-CA-I-HW/RW	Inactive	Gun firing area (three testing areas).	CERCLA[a]	Documented releases of beryllium, beryllium oxide, tritium, cobalt, polonium, and uranium at this site are due to gun testing. Other environmental contaminants may include high explosives, nickel, tungsten, and deuterium. During supplemental Phase I, the area around the three gun-firing sites will be surveyed for uranium and beryllium contamination.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-36				
TA36-1-CA-I/A-HW/RW	Active	Research of explosive phenomena.	RCRA[a]/CERCLA[a]	Materials included in shots have been uranium, beryllium, lead, copper, iron, aluminum, steel, and various types of plastics. Other types of explosives are reported to have been mixtures of nitric acid, nitrobenzene, and water; and liquid cyanogen, nitro-methane, and tetranitro-methane. A supplemental Phase I study will be conducted to determine the extent of environmental residual contamination associated with activities at this site.
TA36-2-CA-I-HW/RW	Inactive	Drop tower.	None	There is no indication of residual environmental contamination of concern.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA-39				
TA39-1-CA-A/I-HW/RW	Active/ Inactive	Firing chambers.	RCRA[a]/CERCLA[a]	Chambers 7 and 8 are inactive; 6, 57, and 88 are currently used as open-air detonation sites; and 56 is used for the enclosed light gas gun. Materials of concern that have been used or are being used now are beryllium, mercury, aluminum, copper, brass, iron, lead, steel, and stainless steel. Thallium, cadmium, chromium, and thorium have been included in shots. Supplemental Phase I study will be conducted to inventory and update listings of materials used and to determine the extent of residual environmental contamination.
TA-40				
TA40-2-CA-I-HW	Inactive	Firing pit.	CERCLA[a]	Disposal of scrap high explosive and detonators was accomplished by detonation. Samples were collected in 1985 on the hillside above the scrap pit and also on the pad. Test results indicated nondetectable levels of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. A Phase I reconnaissance investigation will be conducted for detonators and scrap high explosive.

Table V.D.11. (continued)

Technical Area Designation	Operational Status	Type of Operation	Applicable Regulation (potential issue[a])	Comments
TA40-3-CA-A-HW	Active	Experimental studies of the physics of detonation.	RCRA[a]/CERCLA[a]	Materials of potential environmental concern associated with testing activities at this site include thallium oxide, lead oxide, and diethanol amine. A supplemental Phase I study will be conducted to determine potential residual environmental contamination from testing activities associated with this site.
Pistol Range	Active		RCRA[a]/CERCLA[a]	Lead from spent ammunition--potential regulatory issue.
TA-0				
TA-0-1-CA-I-HW	Inactive	Firing range.	CERCLA[a]	1940s firing range that received extensive use before the new firing range was built in Sandia Canyon. Currently unknown if lead shots were ever removed. Supplemental Phase I study will be conducted to determine extent of residual contamination.

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Appendix A

APPENDIX A - PROFESSIONAL QUALIFICATIONS

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Appendix B

APPENDIX B

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM SCORES FOR POTENTIAL CERCLA SITES AT LOS ALAMOS NATIONAL LABORATORY

B.1. BACKGROUND

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) (P.L. 95-510) requires federal agencies to identify to the U.S. Environmental Protection Agency (EPA) inactive sites under their control that may be sources of environmental contaminants. Such sites could include inactive waste disposal sites, facilities, or other locations that were contaminated by hazardous waste in the past. As one means of establishing the relative importance of such sites, the EPA promulgated the Hazard Ranking System (HRS) as Appendix A of 40 CFR 300. The relative ranking of sites at various installations can serve to highlight particular problems or suggest priorities for further investigation.

The HRS was designed by the EPA to be used to "evaluate the relative potential of uncontrolled hazardous substance facilities to cause health or safety problems, or ecological or environmental damage" (Sec. 1.0, 40 CFR 300, App. A). The following excerpts from the regulation indicate some of the limitations of the system:

"The HRS is a means for applying uniform technical judgment regarding the potential hazards presented by a facility relative to other facilities. It does not address the feasibility, desirability or degree of clean up required."

"The HRS does not quantify the probability of harm from a facility or the magnitude of the harm that could result, although the factors have been selected in order to approximate both those elements of risk. It is a procedure for ranking facilities in terms of the potential threat they pose . . . ."

The HRS assigns three hazard mode scores to a site. These include: (1) a migration mode score that reflects the potential for harm to humans or the environment from migration of a hazardous substance by either groundwater, surface water, or air

pathways; (2) a fire/explosion score that reflects the potential for harm from substances that can explode or cause fires; and (3) a direct contact mode score that reflects the potential for harm from direct contact with hazardous substances at the site. The score for each mode is obtained by evaluating a series of factors that characterize the potential of the facility to cause harm. Each factor receives a numerical value according to a predetermined scale; the factor values are weighted and combined to yield final scores according to set rules. The migration score was used by the EPA in establishing the National Priorities List of facilities in the private sector for initial attention under CERCLA. The fire and explosion and direct contact mode scores are intended by the EPA to identify facilities requiring emergency action.

The migration mode score is a composite of the separate scores for each of the three migration routes: groundwater, surface water, and air. Each migration route score is calculated by multiplying selected factors for route characteristics, containment, and potentially affected targets to arrive at a value on a normalized 0 to 100 scale. The overall migration mode score is a root mean square of the three route scores, which emphasizes the highest scoring route, and is also on a 0 to 100 scale. Higher scores are expected to indicate a greater potential for problems. However, as suggested by the acknowledged limitations, the migration mode scores are useful principally for ranking sites for priority of follow-up actions and do not quantify risk.

The EPA's HRS, however, does not discriminate among different radionuclides relative to their potential risk at potential CERCLA sites. Therefore, DOE developed the Modified HRS (MHRS), which is a conceptually minor modification/addition to the HRS. The MHRS permits a better assessment of existing radiological risks. Therefore, potentially radioactive sites requiring HRS evaluation are scored with DOE's MHRS and EPA's HRS (HRS/MHRS), and nonradioactive sites requiring HRS evaluation are scored with the EPA's HRS.

B.2. HRS/MHRS SCORING RESULTS

Due to the large number of sites requiring HRS evaluation at Los Alamos, sites are grouped geographically by technical areas (TAs). The TAs are scored as follows: (1) nonradioactive sites are scored with the HRS, and (2) radioactive sites are scored with the HRS/MHRS. The LANL material disposal areas are scored individually as well as with their TA or TAs.

Individual hazard ranking evaluations were performed for 51 units: 27 Technical Areas (TA) and 24 Material Disposal Areas (MDA). The individual score sheets are included in this appendix. Some of the technical areas were combined because of common migration pathways and receptors and/or common activities at the sites. The scores are summarized in Table B.1. Potential CERCLA sites at LANL do not meet the EPA HRS scoring criterion (28.5) for inclusion on the National Priorities List (NPL). The Direct Contact Mode Scores for a majority of the individual sites were not applicable (no incident and occurrence). This would indicate adequate waste cover and site exclusion. The Fire/Explosion Mode Scores for all individual sites was not applicable indicating no apparent fire or explosion threat.

TA-49 (Frijoles Mesa Site) and TA-54 (Waste Disposal Site) were evaluated using material disposal area (MDA) units (i.e., MDA AB [TA-49] and MDAs G, H, J, and L [TA-54]). Scoring of Material Disposal Areas S and X was not appropriate as these sites are negative for preliminary CERCLA findings. Scoring sheets for these areas are, therefore, not included within this appendix.

Table B.1 HRS/MHRS Summary

Site	Migration Mode Score		Direct Contact Score		Fire/Explosion Score	
	Chem	Rad	Chem	Rad	Chem	Rad
Technical Areas						
1	9.0	NE	NA	NA	NA	NA
2,41	8.3	NE	NA	NA	NA	NA
3,59	12.4	NE	NA	NA	NA	NA
6,7,22,40	2.7	NE	0.0	NE	NA	NA
8,9,23	2.7	NE	0.0	NE	NA	NA
10	9.0	NE	37.5	NE	NA	NA
11,13,16,24,25	3.0	NE	8.3	NE	NA	NA
12	6.7	NE	NA	NA	NA	NA
14	7.0	NE	0.0	NE	NA	NA
15	9.9	NE	4.2	0.3	NA	NA
18,27	14.3	NE	NA	NA	NA	NA
19	7.0	NE	NA	NA	NA	NA
21	20.2	NE	NA	NA	NA	NA
26	0.0	NE	NA	NA	NA	NA
31	5.4	NA	NA	NA	NA	NA
32	5.2	NE	NA	NA	NA	NA
33	15.7	NE	12.5	NE	NA	NA
35,42,48,50,55	16.8	NE	62.5	NE	NA	NA
36	10.1	NE	4.2	NE	NA	NA
39	12.8	NE	0.0	NE	NA	NA
43	8.3	NE	NA	NA	NA	NA
45	4.4	NE	NA	NA	NA	NA
46	12.6	NE	NA	NA	NA	NA
51	14.1	NE	NA	NA	NA	NA
52,4,5	11.3	NE	NA	NA	NA	NA
53,20	12.6	NE	NA	NA	NA	NA
57	14.6	NA	NA	NA	NA	NA
Material Disposal Areas						
A	13.8	2.2	NA	NA	NA	NA
B	14.8	NE	NA	NA	NA	NA
C	17.4	14.0	NA	NA	NA	NA
D	7.1	NE	NA	NA	NA	NA
E	6.9	1.4	NA	NA	NA	NA
F	1.6	0.6	NA	NA	NA	NA
G	20.4	NE	NA	NA	NA	NA
H	14.9	NE	NA	NA	NA	NA
J	8.5	NA	NA	NA	NA	NA
K	10.2	3.1	NA	NA	NA	NA
L	19.3	NA	NA	NA	NA	NA

Table B.1. (continued)

Site	Migration Mode Score		Direct Contact Score		Fire/Explosion Score	
	Chem	Rad	Chem	Rad	Chem	Rad
M	0.5	NE	8.3	NA	NA	NA
N	3.7	NA	NA	NA	NA	NA
P	1.6	NA	8.3	NA	NA	NA
Q	2.1	NA	NA	NA	NA	NA
R	2.1	NA	NA	NA	NA	NA
T	9.7	6.0	NA	NA	NA	NA
U	NA	1.1	NA	NA	NA	NA
V	0.0	2.6	NA	NA	NA	NA
X	7.7	0.6	NA	NA	NA	NA
Y	2.1	0.3	4.2	0.3	NA	NA
Z	2.1	0.1	4.2	0.3	NA	NA
AA	10.1	NE	4.2	NE	NA	NA
AB	6.7	5.3	NA	NA	NA	NA

NE: Not evaluated.
NA: Not applicable.

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA A

SITE NAME: Area A, TA-21

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area A was opened in late 1944 or early 1945. The area includes three disposal pits and two buried 50,000 gallon steel tanks. Usage of this site ended in mid-1978.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	13.84	2.19	13.84
Sgw =	21.87	3.45	21.87
Ssw =	9.74	1.54	9.74
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area A, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1255 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Plutonium, americium, iodine.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				3	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		Distance to nearest supply well less than one mile.
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				12540	57330		
RADIOACTIVE				1980	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				21.87	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				3.45	100.00		
MAXIMUM Sgw =				21.87	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area A, TA-21

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Average terrain slope >8%. (ENG-R 5277/8)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Distance to nearest surface water less than one mile. (ENG-R 92)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Plutonium, americium, iodine.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine falcon habitat 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6270			
RADIOACTIVE				990			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				9.74	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				1.54	100.00		
MAXIMUM Ssw =				9.74	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA B

SITE NAME: Area B, TA-21

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area B is a 6 acre landfill located west of TA-21 along D.P. Road. It was used from 1946 to 1948 for radioactive and chemical wastes, gas cylinders and trash. It is unknown how many pits are in Area B, and where they are located. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	14.79	0.00	14.79
Sgw =	21.87	0.00	21.87
Ssw =	13.29	0.00	13.29
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area B, TA-21

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release..
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1240 ft. (LA-9957-MS, fig.4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Organics/solvents, perchlorates.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium, uranium, americium, curium, actinium. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		Distance to nearest supply well less than one mile.
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				12540	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				21.87	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				21.87	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area B, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed release. (LA-10721-ENV, pp.37,40,160)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Organics/solvents, perchlorates.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium, uranium, americium, curium, actinium. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine Falcon habitat 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8550			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				13.29	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				13.29	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA C

SITE NAME: Area C, TA-0

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area C is an inactive landfill which operated from 1948 to 1969. It consists of six radioactive and/or mixed waste pits, one chemical pit, and 107 shafts.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	17.40	14.01	17.40
Sgw =	29.93	24.18	29.93
Ssw =	3.15	1.82	3.15
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area C, TA-0

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1260 ft. (LA-9957-MS, fig.4; ENG-R 5277/9)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid and gas-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Pyrophoric metals, nickel carbonyl, organics, hydrides.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums as pit volumes exceed 2500 cubic yards. (Rogers 1977)
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	21	1	21	26		Plutonium, americium, strontium, tritium, fission products.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				26	26		
RADIOACTIVE				21	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs.5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		

6. CALCULATION

If Line 1 is 45, Multiply 1 x 4 x 5

If Line 1 is 0, Multiply 2 x 3 x 4 x 5

CHEMICAL	17160	57330
RADIOACTIVE	13860	57330

7. NORMALIZATION

Divide Line 6 by 57330 and Multiply by 100

CHEMICAL Sgw =	29.93	100.00
RADIOACTIVE Sgw =	24.18	100.00
MAXIMUM Sgw =	29.93	100.00

NOTE: NE means Not Evaluated.

SURFACE WATER ROUTE WORKSHEET Site: Area C, TA-0

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Average terrain slope >8%. (ENG-R 5277/8)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/8,9)
D. Physical State	0 1 2 3	3	1	3	3		Liquid and gas-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Pyrophoric metals, nickel carbonyl, organics, hydrides.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums as pit volumes exceed 2500 cubic yards. (Rogers 1977)
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	15	1	15	26		Plutonium, strontium, americium, trtium, fission products.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				15	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2028			
RADIOACTIVE				1170			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				3.15	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				1.82	100.00		
MAXIMUM Ssw =				3.15	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA D

SITE NAME: Area D, TA-33

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area D consists of two underground chambers for weapons design testing. The chambers were last used in the early 1950s.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	7.07	0.00	7.07
Sgw =	3.58	0.00	3.58
Ssw =	11.69	0.00	11.69
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area D, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 910 ft. (LA-9957-MS, fig. 4; ENG R-5277/18)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	2	1	2	3		Fine material assumed.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Integrity of containment unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2052	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				3.58	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area D, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%, terrain average slope >8%. (ENG-R 5277/18)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/18)
D. Physical State	0 1 2 3	2	1	2	3		Fine material assumed.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Integrity of containment unknown
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational and irrigational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	6	1	6	40		Irrigation from Cochiti Reservoir serves 6000 acres being equivalent to 9000 people. (USGS Report NM-85-1, p. 151)
TOTAL TARGETS SCORE				12	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				7524			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				11.69	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				11.69	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA E

SITE NAME: Area E, TA-33

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area E consists of one underground chamber and six pits and contains mainly classified debris.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	6.93	1.39	6.93
Sgw =	2.68	1.55	2.68
Ssw =	11.69	1.85	11.69
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area E, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 910 ft. (LA-9957-MS, fig. 4, ENG-R 5277/18)
B. Net Precipitation	0 1 2 3	0	1	0	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	11	1	11	26		Tritium, uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				11	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1539	57330		
RADIOACTIVE				891	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.68	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				1.55	100.00		
MAXIMUM Sgw =				2.68	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area E, TA-33

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%, terrain average slope >8%. (ENG-R 5527/18)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/18)
D. Physical State	0 1 2 3	2	1	2	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No Liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Tritium, uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational and irrigational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 / 12 16 18 20 / 24 30 32 35 40	6	1	6	40		Irrigation from Cochiti Reservoir serves 6000 acres being equivalent to 9000 people served. (USGS Report NM-85-1, p.151)
TOTAL TARGETS SCORE				12	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				7524			
RADIOACTIVE				1188			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				11.69	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				1.85	100.00		
MAXIMUM Ssw =				11.69	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA F

SITE NAME: Area F, TA-6

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 10, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area F consists of two fenced areas which may or may not represent burial areas. This site is no longer active.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	1.55	0.57	1.55
Sgw =	2.68	0.99	2.68
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area F, TA-6

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1400 ft. (LA-9957-MS, fig. 4, ENG-R 5277/4)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	7	1	7	26		Cesium, uranium.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				7	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1539	57330		
RADIOACTIVE				567	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.68	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.99	100.00		
MAXIMUM Sgw =				2.68	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area F, TA-6

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3-5%, terrain average slope 5-8%. (ENG-R 5277/4)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile. (ENG-R 5277/4)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				8	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	1	1	1	26		Cesium, uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				1	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA G

SITE NAME: Area G, TA-54

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area G has been the primary radioactive solid waste disposal and storage area at the Laboratory since 1975.

At one point Area G received chemical and mixed waste as well.

Computations are for buried wastes only and do not include stored TRU wastes awaiting shipment to WIPP.

Scoring for direct contact, and fire and explosion was not appropriate; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	20.40	0.00	20.40
Sgw =	10.61	0.00	10.61
Ssw =	21.82	0.00	21.82
Sa =	25.64	0.00	25.64
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area G, TA-54

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 880 ft. (LA-9957-MS, fig.4; ENG-R 5277/16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	0	1	0	3		Material is solid and stabilized.
TOTAL ROUTE CHARACTERISTICS SCORE				2	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Not all pits, shafts, or trenches are lined.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, PCBs.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium, uranium, strontium, tritium. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well greater than two miles. Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6084	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				10.61	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				10.61	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area G, TA-54

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed plutonium in one runoff event. (LA-10721-ENV, p.51)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, PCBs.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to tb greater than 10000 drums or 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium, uranium, strontium, tritium. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	3	2	6	6		Wetlands less than 1/4 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				12	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				14040			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				21.82	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				21.82	100.00		

AIR ROUTE WORK SHEET Site: Area G, TA-54

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE Date and Location: Sampling Protocol: If Line 1 is 0, the Sa = 0. Enter on Line 5 If Line 1 is 45, Then Proceed to Line 2.	0 — 45	45	1	45	45	5.1	Observed releases of tritium, plutonium-238, (LA-10721-ENV, p.28). Sampling is performed using an air sampler (approx. 4cfm) which is changed on a month schedule.
2. WASTE CHARACTERISTICS						5.2	
Chemical							
A. Reactivity and Incompatibility	0 1 2 3	0	1	0	3		No incompatible or reactive substances present.
B. Toxicity	0 1 2 3	0	3	0	9		
C. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums or 2500 cubic yards.
Radioactive	0 2 5 8 12 16 20	0	1	0	20		Plutonium, uranium, strontium, tritium. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				8	20		
RADIOACTIVE				0	20		
3. TARGETS							
A. Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	18	1	18	30		Population less than 10000 within a four mile radius.
B. Distance to Sensitive Environment	0 1 2 3	3	2	6	6		Wetlands less than 1/4 mile.
C. Land Use	0 1 2 3	1	1	1	3		Distance to residental area less than two miles.
TOTAL TARGETS SCORE				25	39		
4. CALCULATION Multiply 1 x 2 x 3							
CHEMICAL				9000	35100		
RADIOACTIVE				0	35100		
5. NORMALIZATION Divide Line 4 by 35100 and Multiply by 100							
CHEMICAL Sa =				25.64	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sa =				0.00	100.00		
MAXIMUM Sa =				25.64	100.00		

SUMMARY CALCULATION OF TOTAL MIGRATION SCORE

		CHEMICAL	RADIOACTIVE	
Ground Water Route	(Sgw)	10.61	0.00	
Surface Water Route	(Ssw)	21.82	0.00	
Air Route	(Sa)	25.64	0.00	
Sum of Squares		1246.11	0.00	
Square Root of Sum		35.30	0.00	
TOTAL MIGRATION SCORE	(Sm)	20.40	0.00	Square Root of Sum Divided by 1.73

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA H

SITE NAME: Area H, TA-54

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area H consists of nine shafts used to dispose mainly of metal parts. Some radioactive contamination may be present. Material may also be contaminated by high explosives, beryllium, and lithium. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	14.88	0.00	14.88
Sgw =	25.64	0.00	25.64
Ssw =	2.24	0.00	2.24
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area H, TA-54

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 940 ft. (LA-9957-MS, fig.4; ENG-R 5277/18)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Assume powder worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Lithium hydride, beryllium, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	7	1	7	8		Maximum quantity approx. total volume of shafts-2261 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Tritium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				25	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-MS, p.13; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				14700	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				25.64	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				25.64	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area H, TA-54

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 ... 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope 5-8% (ENG-R 5277/9)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile. (ENG-R 5277/9)
D. Physical State	0 1 2 3	2	1	2	3		Assume powder as worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				10	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Lithium hydride, beryllium, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	6	1	6	8		Maximum quantity approx. total volume of shafts-2261 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Tritium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				24	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands area within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1440			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				2.24	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				2.24	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA J

SITE NAME: Area J, TA-54

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area J consists of three pits and two shafts which contain equipment contaminated with high explosives.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	8.50	0.00	8.50
Sgw =	14.62	0.00	14.62
Ssw =	1.59	0.00	1.59
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area J, TA-54

RATING FACTOR	VALUE RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 930 ft (LA-9957-MS, fig. 4; ENG-R 5277/15)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	1	1	1	3		Assume powder form worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Shafts and pits unlined.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8379	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				14.62	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				14.62	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area J, TA-54

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 5-8%; Terrain average slope 5-8%. (ENG-R 5277/15)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile. (ENG-R 5277/15)
D. Physical State	0 1 2 3	2	1	2	3		Assume powder form worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				9	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Assume no liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands area within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1026			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				1.59	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				1.59	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA K

SITE NAME: Area K, TA-33

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 10, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area K consists of an active drain line from TA-33-86, the tritium processing building, and two inactive sumps.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	10.17	3.08	10.17
Sgw =	3.06	3.53	3.53
Ssw =	17.33	4.00	17.33
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area K, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 975 ft. (LA-9957-MS, fig. 4; ENG-R 5277/18)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	None.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Trichloroethane.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	15	1	15	26		Tritium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				15	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1755	57330		
RADIOACTIVE				2025	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.06	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				3.53	100.00		
MAXIMUM Sgw =				3.53	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area K, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No direct evidence of contaminant release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8% (ENG-R-5277/18)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than one mile. (ENG-R 5277/18)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	None.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Trichloroethane.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Tritium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational and irrigational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	16	1	16	40		Irrigation from Cochiti Reservoir serves 6000 acres being equivalent to 9000 people served. (USGS Report NM-85-1, p.151)
TOTAL TARGETS SCORE				22	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11154			
RADIOACTIVE				2574			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				17.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				4.00	100.00		
MAXIMUM Ssw =				17.33	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA L

SITE NAME: Area L, TA-54

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

This site was the main chemical disposal area after Area C was closed. Area L was used for approximately twenty years. It consists of three pits and several shafts. Wastes were seperated by types before shaft disposal. Scoring for air route, direct contact, and fire and explosion is not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	19.33	0.00	19.33
Sgw =	33.33	0.00	33.33
Ssw =	2.67	0.00	2.67
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area L, TA-54

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 860 ft. (LA-9957-MS, fig. 4; ENG-R 5277/16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons worst case.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Maximum quantity approx. total volume of pits and shafts greater than 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				19110	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				33.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				33.33	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area L, TA-54

RATING FACTOR	-----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope 5-8%. (ENG-R 5277/16)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile. (ENG-R 5277/16)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons worst case.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Maximum quantity approx. total volume of pits and shafts greater than 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands area within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1716			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				2.67	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				2.67	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA M

SITE NAME: Area M, TA-8

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area M is an open surface landfill that was used for construction debris disposal. However, inadvertent disposal has resulted in deposits of hazardous materials.

Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	0.52	0.00	0.52
Sgw =	0.89	0.00	0.89
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

GROUND WATER ROUTE WORKSHEET Site: Area M, TA-8

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1290 ft. (LA-9957-MS, fig.4; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	1	1	1	3	3.3	Pile uncovered, waste unstabilized.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				513	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				0.89	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				0.89	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area M, TA-8

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	1	1	1	3	4.3	Pile uncovered, waste unstabilized.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium contamination possible.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: Area M, TA-8

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No observed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Uncovered pile.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Asbestos.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium possible contaminant. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Less than 1000 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical habitat within one mile.
TOTAL TARGETS SCORE				8	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1800	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				8.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				8.33	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA N

SITE NAME: Area N, TA-15

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area N is a slit trench that may contain construction debris from TA-15.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	3.72	0.00	3.72
Sgw =	2.68	0.00	2.68
Ssw =	5.85	0.00	5.85
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area N, TA-15

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1300 ft. (LA-9957-MS, fig. 4; ENG-R 5277/5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1539	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.68	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				2.68	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area N, TA-15

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/5)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				6	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				3762			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				5.85	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				5.85	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA P

SITE NAME: Area P, TA-16

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area P is a partially covered landfill on the side of a canyon. Contents of this landfill is mainly construction debris from TA-16, sand from the S Site burning pads, and discarded flashed equipment. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	1.63	0.00	1.63
Sgw =	2.83	0.00	2.83
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

GROUND WATER ROUTE WORKSHEET Site: Area P, TA-16

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1150 ft. (LA-9957-MS, fig. 5; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Partially covered, unconsolidated waste, inadequate diversion.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, high explosives, halogenated hydrocarbons, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1620	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.83	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				2.83	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area P, TA-16

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Partially covered, unconsolidated waste, inadequate diversion.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, high explosives, halogenated hydrocarbons, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: Area P, TA-16

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incidents.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Site only partially covered.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Asbestos, high explosives, halogenated hydrocarbons, barium.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Less than 1000 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical environments within one mile.
TOTAL TARGETS SCORE				8	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1800	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				8.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				8.33	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area K, TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No direct evidence of contaminant release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8% (ENG-R-5277/18)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than one mile. (ENG-R 5277/18)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	None.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Trichloroethane.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Tritium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational and irrigational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	16	1	16	40		Irrigation from Cochiti Reservoir serves 6000 acres being equivalent to 9000 people served. (USGS Report NM-85-1, p.151)
TOTAL TARGETS SCORE				22	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11154			
RADIOACTIVE				2574			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				17.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				4.00	100.00		
MAXIMUM Ssw =				17.33	100.00		

GROUND WATER ROUTE WORKSHEET Site: Area K, TA-33

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 975 ft. (LA-9957-MS, fig. 4; ENG-R 5277/18)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	None.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Trichloroethane.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	15	1	15	26		Tritium.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				13	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				15	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1755	57330		
RADIOACTIVE				2025	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.06	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				3.53	100.00		
MAXIMUM Sgw =				3.53	100.00		

GROUND WATER ROUTE WORKSHEET Site: Area L, TA-54

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 860 ft. (LA-9957-MS, fig. 4; ENG-R 5277/16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons worst case.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Maximum quantity approx. total volume of pits and shafts greater than 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				19110	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				33.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				33.33	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA L

SITE NAME: Area L, TA-54

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

This site was the main chemical disposal area after Area C was closed. Area L was used for approximately twenty years. It consists of three pits and several shafts. Wastes were seperated by types before shaft disposal. Scoring for air route, direct contact, and fire and explosion is not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	19.33	0.00	19.33
Sgw =	33.33	0.00	33.33
Ssw =	2.67	0.00	2.67
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA M

SITE NAME: Area M, TA-8

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area M is an open surface landfill that was used for construction debris disposal. However, inadvertent disposal has resulted in deposits of hazardous materials. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	0.52	0.00	0.52
Sgw =	0.89	0.00	0.89
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

SURFACE WATER ROUTE WORKSHEET Site: Area L, TA-54

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope 5-8%. (ENG-R 5277/16)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile. (ENG-R 5277/16)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons worst case.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Maximum quantity approx. total volume of pits and shafts greater than 2500 cubic yards.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands area within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1716			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				2.67	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				2.67	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area M, TA-8

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	1	1	1	3	4.3	Pile uncovered, waste unstabilized.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium contamination possible.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

GROUND WATER ROUTE WORKSHEET Site: Area M, TA-8

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1290 ft. (LA-9957-MS, fig.4; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	1	1	1	3	3.3	Pile uncovered, waste unstabilized.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				513	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				0.89	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				0.89	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA N

SITE NAME: Area N, TA-15

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area N is a slit trench that may contain construction debris from TA-15.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	3.72	0.00	3.72
Sgw =	2.68	0.00	2.68
Ssw =	5.85	0.00	5.85
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

DIRECT CONTACT WORKSHEET Site: Area M, TA-8

RATING FACTOR	VALUE RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No observed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4 If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Uncovered pile.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Asbestos.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium possible contaminant. Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Less than 1000 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical habitat within one mile.
TOTAL TARGETS SCORE				8	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5 If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1800	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				8.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				8.33	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area N, TA-15

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/5)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				6	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				3762			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				5.85	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				5.85	100.00		

GROUND WATER ROUTE WORKSHEET Site: Area N, TA-15

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1300 ft. (LA-9957-MS, fig. 4; ENG-R 5277/5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1539	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.68	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				2.68	100.00		

GROUND WATER ROUTE WORKSHEET Site: Area P, TA-16

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1150 ft. (LA-9957-MS, fig. 5; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				3	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Partially covered, unconsolidated waste, inadequate diversion.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, high explosives, halogenated hydrocarbons,
B. Hazardous Waste	0 1 2 3 4 5	2	1	2	8		barium.
Quantity	6 7 8						Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1620	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				2.83	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				2.83	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA P

SITE NAME: Area P, TA-16

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area P is a partially covered landfill on the side of a canyon. Contents of this landfill is mainly construction debris from TA-16, sand from the S Site burning pads, and discarded flashed equipment.

Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	1.63	0.00	1.63
Sgw =	2.83	0.00	2.83
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

DIRECT CONTACT WORKSHEET Site: Area P, TA-16

RATING FACTOR	VALUE/RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 — 45	0	1	0	45	8.1	No confirmed incidents.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 — 15	15	1	15	15	8.3	Site only partially covered.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Asbestos, high explosives, halogenated hydrocarbons, barium.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Less than 1000 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical environments within one mile.
TOTAL TARGETS SCORE				8	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1800	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				8.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				8.33	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area P, TA-16

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	1	1	1	3		Unconsolidated solid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Partially covered, unconsolidated waste, inadequate diversion.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Asbestos, high explosives, halogenated hydrocarbons,
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		barium. Quantity assumed to less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA Q

SITE NAME: Area Q, TA-8

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area Q is a pit which may contain gun parts and old ammunition.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.07	0.00	2.07
Sgw =	3.58	0.00	3.58
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area Q, TA-8

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed releases.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1320 ft. (LA-9957-MS, fig. 5; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Powder.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2052	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				3.58	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area Q, TA-8

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	0	1	0	3		Facility slope >8%; Terrain avrage slope <3%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water approx. 2400 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	2	1	2	3		Powder.
TOTAL ROUTE CHARACTERISTICS SCORE				7	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA R

SITE NAME: Area R, TA-16

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 11, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Little is known about Area R with regards to its contents.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.07	0.00	2.07
Sgw =	3.58	0.00	3.58
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area R, TA-16

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1300 ft (LA-9957-MS, fig. 4; ENG-R 5277/2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	2	1	2	3		Powder assumed worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner assumed.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Worst case assumed-contents unknown.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2052	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				3.58	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area R, TA-16

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed releases.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/2)
D. Physical State	0 1 2 3	2	1	2	3		Powder assumed worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner assumed.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Worst case assumed-contents unknown.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA T

SITE NAME: Area T, TA-21

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area T contains 4 absorption beds used between 1945 and 1952 for disposal of untreated liquid wastes from plutonium processing. Shafts at Area T once contained concrete mixed with plutonium and americium. These shafts were excavated in 1986 and are presently awaiting off-site shipment.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	9.68	5.98	9.68
Sgw =	9.21	6.91	9.21
Ssw =	13.99	7.69	13.99
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area T, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1265 ft. (LA-9957-MS, fig.4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CRR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	0	1	0	3		Material is solid and stabilized.
TOTAL ROUTE CHARACTERISTICS SCORE				2	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Possible disposal of tributylphosphate in kerosene.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		No observed release.
B. Maximum Potential	0 1 3 7 11 15 21 26	15	1	15	26		Plutonium, uranium, americium, strontium, cesium.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				20	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				15	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				5280	57330		
RADIOACTIVE				3960	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				9.21	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				6.91	100.00		
MAXIMUM Sgw =				9.21	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area T, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed plutonium in surface water samples (LA-10721-ENV, p.160)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Possible disposal of tributylphosphate in kerosene.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	1	1	1	26		Plutonium.
B. Maximum Potential	0 1 3 7 11 15 21 26	11	1	11	26		Plutonium, uranium, americium, strontium, cesium.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				20	26		
RADIOACTIVE				11	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine falcon habitat 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				9000			
RADIOACTIVE				4950			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				13.99	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				7.69	100.00		
MAXIMUM Ssw =				13.99	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA U

SITE NAME: Area U, TA-21

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area U is a 0.3 acre area containing two adsorption beds used for subsurface disposal of contaminated liquid wastes between 1945 and 1968.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	0.00	1.14	1.14
Sgw =	0.00	1.38	1.38
Ssw =	0.00	1.40	1.40
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area U, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1250 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.27)
D. Physical State	0 1 2 3	0	1	0	3		Material is stabilized and consolidated.
TOTAL ROUTE CHARACTERISTICS SCORE				2	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		No known chemical disposal.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Actinium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				3	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, fig.10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0	57330		
RADIOACTIVE				792	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				1.38	100.00		
MAXIMUM Sgw =				1.38	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area U, TA-21

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Average terrain slope >8%. (ENG-R 5277/8)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/8)
D. Physical State	0 1 2 3	0	1	0	3		Material is consolidated and solid.
TOTAL ROUTE CHARACTERISTICS SCORE				10	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		No known chemical disposal.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Actinium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine Falcon habitat 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				900			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				1.40	100.00		
MAXIMUM Ssw =				1.40	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA V

SITE NAME: Area V, TA-21

(AFTER KEYING IN SITE NAME, PRESS "ALT" & "A" KEYS SIMULTANEOUSLY)

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager

U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: June 12, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area V is a 0.35 acre site located on the rim of Los Alamos canyon. It consists of three adsorption beds designed to receive waste water from a laundry handling radioactively contaminated clothing. It operated between 1945 and 1961.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	0.00	1.45	1.45
Sgw =	0.00	1.38	1.38
Ssw =	0.00	2.10	2.10
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area V, TA-21

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1280 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	0	1	0	3		Material is solid and stabilized.
TOTAL ROUTE CHARACTERISTICS SCORE				2	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		No known chemical disposal.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Plutonium, strontium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				3	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0	57330		
RADIOACTIVE				792	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				1.38	100.00		
MAXIMUM Sgw =				1.38	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area V, TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed plutonium in surface water. (LA-10721-ENV, p. 160)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		No known chemical disposal.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Plutonium, strontium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine Falcon habitat 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				1350			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				2.10	100.00		
MAXIMUM Ssw =				2.10	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA X

SITE NAME: Area X, TA-35

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area X consists of a buried reactor.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	7.72	0.59	7.72
Sgw =	13.27	1.02	13.27
Ssw =	1.58	0.12	1.58
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area X, TA-35

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1200 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Semi-solid/liquid form.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No lining outside reactor.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Sodium potassium alloy (NaK).
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	1	1	1	26		Plutonium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				1	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well less than two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-MS, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				7605	57330		
RADIOACTIVE				585	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				13.27	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				1.02	100.00		
MAXIMUM Sgw =				13.27	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area X, TA-35

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Average terrain slope >8% (ENG-R 5277/8)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/8)
D. Physical State	0 1 2 3	3	1	3	3		Semi-solid/liquid form.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No lining outside reactor.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Sodium potassium alloy (NaK)
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	1	1	1	26		Plutonium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				1	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Wetlands area within 1/4 to 1 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1014			
RADIOACTIVE				78			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				1.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.12	100.00		
MAXIMUM Ssw =				1.58	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA Y

SITE NAME: Area Y, TA-39

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area Y consists of two slit trenches mainly containing shot debris from firing site activities.

Scoring for air route, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.07	0.33	2.07
Sgw =	3.58	0.57	3.58
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	4.17	0.28	4.17

GROUND WATER ROUTE WORKSHEET Site: Area Y, TA-39

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 540 ft. (LA-9957-MS, fig. 4; ENG-R 5277/17)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	2	1	2	3		Powder, fine material worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives, mercury, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				3	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2052	57330		
RADIOACTIVE				324	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.57	100.00		
MAXIMUM Sgw =				3.58	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area Y, TA-39

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%; Average terrain slope >8%. (ENG-R 5277/17)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/17)
D. Physical State	0 1 2 3	2	1	2	3		Powder, fine material worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives, mercury, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA Z

SITE NAME: Area Z, TA-15

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area Z is a surface landfill on a small canyon side. This landfill mostly contains shot debris from Phermex.

Scoring for air route, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.07	0.11	2.07
Sgw =	3.58	0.19	3.58
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	4.17	0.28	4.17

GROUND WATER ROUTE WORKSHEET Site: Area Z, TA-15

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1300 ft. (LA-9957-MS, fig. 4; ENG-R 5277/6)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Unstabilized solid.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Partially covered, unstabilized, no run-on diversion.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, high explosives, lead, mercury.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	1	1	1	26		Uranium.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				1	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2052	57330		
RADIOACTIVE				108	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				3.58	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.19	100.00		
MAXIMUM Sgw =				3.58	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area Z, TA-15

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Terrain average slope >8%. (ENG-R 5277/6)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/6)
D. Physical State	0 1 2 3	2	1	2	3		Unstabilized solid.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Partially covered, unstabilized, no run-on diversion.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, high explosives, lead, mercury.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	1	1	1	26		Uranium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				1	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake for three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: Area Z, TA-15

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Site only partially covered.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Beryllium, high explosives, lead, mercury.
Radioactive	0 1 2 4 6 9 12 15	1	1	1	15		Uranium.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	1	4	4	20	8.5	Less than 100 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical environment within one mile.
TOTAL TARGETS SCORE				4	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				900	21600		
RADIOACTIVE				60	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				4.17	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.28	100.00		
MAXIMUM Sdc =				4.17	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA AA

SITE NAME: Area AA, TA-36

(AFTER KEYING IN SITE NAME, PRESS "ALT" & "A" KEYS SIMULTANEOUSLY)

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager

U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Area AA is a series of trenches used for disposal of test shot debris.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	10.11	0.00	10.11
Sgw =	17.50	0.00	17.50
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	4.17	0.00	4.17

GROUND WATER ROUTE WORKSHEET Site: Area AA, TA-36

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 760 ft. (LA-9957-MS, fig. 4; ENG-R 5277/16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Assume powder worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				10032	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				17.50	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				17.50	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area AA, TA-36

RATING FACTOR	-VALUE- -RANGE-	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Both facility slope and terrain average slope >8% (ENG-R 5277/16)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	2	2	4	6		Nearest surface water less than one mile away. (ENG-R 5277/16)
D. Physical State	0 1 2 3	2	1	2	3		Powder worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				10	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liner.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No critical environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: Area AA, TA-36

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incidents.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facitiy boundary fence only. Guard controlled facility access.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Open trench.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	High explosives.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium possible contaminant. Insufficient data for analysis.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	1	4	4	20	8.5	Less than 100 people.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No critical environments within one mile.
TOTAL TARGETS SCORE				4	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				900	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				4.17	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				4.17	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

MATERIAL DISPOSAL AREA AB

SITE NAME: Area AB, TA-49

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: February 17, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The main concern at this area is beryllium, lead, high explosives, and radioactive material in shafts.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	6.67	5.26	6.67
Sgw =	11.53	9.11	11.53
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: Area AB, TA-49

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1200 ft (LA-9957-MS, fig. 4; ENG-R 5277/6)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2")
D. Physical State	0 1 2 3	2	1	2	3		Powder.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liners.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	15	1	15	26		Plutonium, uranium, americium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				15	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well less than three miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6612	57330		
RADIOACTIVE				5220	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				11.53	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				9.11	100.00		
MAXIMUM Sgw =				11.53	100.00		

SURFACE WATER ROUTE WORKSHEET Site: Area AB, TA-49

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed release. (WDP 1983)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Assume quantity less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	3	1	3	26		Plutonium, uranium, americium.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				3	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 1

SITE NAME: TA-1

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-1 was the main technical area at the Laboratory from its inception until 1965. A decontamination/decommissioning project for radioactive constituents was undertaken at the area in 1975 and 1976. Scoring for air route, direct contact, and fire and explosion not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	8.97	0.00	8.97
Sgw =	15.51	0.00	15.51
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-1

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1260 ft. (LA-9957-MS, fig.4; ENG-R 92)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine materials.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed since clean up project. Some material may still be present. Uranium, plutonium, strontium, other possible contaminants in small, insignificant quantities. Insufficient data for analysis.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8892	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				15.51	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				15.51	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-1

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Terrain average slope >8%. (ENG-R 92)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig.8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 92)
D. Physical State	0 1 2 3	2	1	2	3		Fine materials.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed since clean up project. Some material may still be present. Uranium, plutonium, strontium,
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		other possible contaminants in small, insignificant amounts. Insufficient data for analysis.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environment within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 2 AND 41

SITE NAME: TA-2, TA-41

FIELD OFFICE: Los Alamos National Laboratory

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 4, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Technical Areas 2 and 41 were scored collectively because they share a common drainage area within Los Alamos Canyon.

Main activities at these sites include nuclear reactor research and weapons subsystems design.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	8.33	0.00	8.33
Sgw =	14.42	0.00	14.42
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-2, 41

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 915 ft (LA-9957-MS, fig.4; ENG-R 5277/4,8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid/slurry-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Mercury, beryllium oxide, potassium dichromate,
B. Hazardous Waste	0 1 2 3 4 5	1	1	1	8		trichlor-s-triazine trione.
Quantity	6 7 8						Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cesium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well less than three miles; Population served greater than 10000 (LA-9957-MS, figs. 5, 10; LA-10721-MS, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8265	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				14.42	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				14.42	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-2, 41

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	45	1	45	45	4.1	Observed release. (LA-10721-ENV, pp. 37, 40, 160)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Mercury, beryllium oxide, potassium dichromate,
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		tichlor-s-triazine trione. Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cesium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 3 AND 59

SITE NAME: TA-3, 59

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 6, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-3 (South Mesa Site) is now the main administrative area and one of the main technical areas at the Laboratory. It replaced TA-1 as such in the 1960s. During the war years South Mesa Site was a detonator test site. TA-59 is a small site mainly consisting of office and environmental laboratory space. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	12.42	0.00	12.42
Sgw =	20.41	0.00	20.41
Ssw =	6.71	0.00	6.71
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-3, 59

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1405 ft. (LA-9957-MS, fig. 4; ENG-R 5277/4)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons, metals, organics, asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-10721-ENV, p.13; LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11700	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				20.41	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				20.41	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-3, 59

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%; Terrain average slope >8%. (ENG-R 5277/4)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig.8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/4)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Halogenated hydrocarbons, metals, organics, asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	3	2	6	6		Wetlands within 100 ft.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				6	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				4320			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				6.71	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				6.71	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 6, 7, 22, AND 40

SITE NAME: TA-6, 7, 22, 40

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 4, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Technical Areas 6, 7, 22, and 40 were combined for scoring because of their close proximity to one another and their common historical use. These sites were all utilized for detonator development and testing. TA-6 is now mainly used for storage and office space. TA-7 was abandoned after the war. TA-22 and TA-40 are still used for detonator research. Area F is the only material disposal area in this grouping. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.72	0.00	2.72
Sgw =	4.71	0.00	4.71
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	12.50	0.00	12.50

GROUND WATER ROUTE WORKSHEET Site: TA-6,7,22,40

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1230 ft. (LA-9957-MS, fig. 4; ENG-R 5277/1,2,4,5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	None.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Cyanide, high explosives, chromates.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2700	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				4.71	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				4.71	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-6,7,22,40

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	1	1	1	3		Facility slope 3-5%; Average terrain slope <3%. (ENG-R 5277/1,2,4,5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300. App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Nearest surface water less than 1000 ft. (ENG-R 5277/1,2,4,5)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	None.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Cyanide, high explosives, chromates.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: TA-6,7,22,40

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility is fenced and guarded. Site is easily accessible.
3. CONTAINMENT	0 15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Cyanide, high explosives, chromates.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium possible contaminant.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	3	4	12	20	8.5	Population less than 3000.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No sensitive environments within one mile.
TOTAL TARGETS SCORE				12	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2700	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				12.50	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				12.50	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 8, 9, AND 23

SITE NAME: TA-8, 9, 23

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 5, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

The original technical areas here consisted of Anchor Ranch Site (TA-8, East and West) and Nu Site (TA-23). Old Anchor East, part of old Anchor West, and Nu Site were decontaminated and decommissioned in the 1950s and 1960s. All sites were involved in high explosives development. Work presently performed at TA-8 and TA-9 still revolves around this work. Material Disposal Areas Q and M are located in this vicinity. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.72	0.00	2.72
Sgw =	4.71	0.00	4.71
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

GROUND WATER ROUTE WORKSHEET Site: TA-8,9,23

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1285 ft. (LA-9957-MS, fig. 4; ENG-R 5277/1,2)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, silver, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				20	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2700	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				4.71	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				4.71	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-8,9,23

RATING FACTOR	·····VALUE····· ·····RANGE·····	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3-5%; Average terrain slope > 8%. (ENG-R 5277/1.2)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/1,2)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, silver, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: TA-8,9,23

RATING FACTOR	VALUE/RANGE		SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0	45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4								
If Observed Incident is Given a Score of 0, Proceed to Line 2								
2. ACCESSIBILITY	0 1 2 3		1	1	1	3	8.2	Facility boundary fenced only. Access controlled. Site readily accessible.
3. CONTAINMENT	0	15	15	1	15	15	8.3	None.
4. WASTE CHARACTERISTICS								
Chemical Toxicity	0 1 2 3		3	5	15	15	8.4	Asbestos, silver.
Radioactive	0 1 2 4 6 9 12 15		0	1	0	15		Uranium possible contaminant. Insufficient data for analysis.
5. TARGETS								
A. Population Within a 1-Mile Radius	0 1 2 3 4 5		2	4	8	20	8.5	Population less than 1000.
B. Distance to a Critical Habitat	0 1 2 3		0	4	0	12		
TOTAL TARGETS SCORE					8	32		
6. CALCULATION								
If Line 1 is 45, Multiply 1 x 4 x 5								
If Line 1 is 0, Multiply 2 x 3 x 4 x 5								
CHEMICAL					1800	21600		
RADIOACTIVE					0	21600		
7. NORMALIZATION								
Divide Line 6 by 21600 and Multiply by 100								
CHEMICAL Sdc =					8.33	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =					0.00	100.00		
MAXIMUM Sdc =					8.33	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 10

SITE NAME: TA-10

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Bayo Canyon Site was used mainly during the war years for firing site activities.

This site used decontaminated and decommissioned for radioactive constituents under FUSRAP in 1976.

Scoring for air route, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	9.04	0.00	9.04
Sgw =	15.51	0.00	15.51
Ssw =	1.95	0.00	1.95
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	37.50	0.00	37.50

GROUND WATER ROUTE WORKSHEET Site: TA-10

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 880 ft. (LA-9957-MS, fig. 4; ENG-R 5277/13,14)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed since clean up project. Some material may still be present. Uranium, lanthanum, strontium, other possible contaminants in small, insignificant quantities. Insufficient data for analysis.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8892	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				15.51	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				15.51	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-10

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3%; Terrain average slope 5-8%. (ENG-R 5277/13,14)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/13,14)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, high explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed since clean up project. Some material may still be present. Uranium, lanthanum, strontium, other possible contaminants in small, insignificant quantities. Insufficient data for analysis.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Peregrine Falcon habitat within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				1254			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				1.95	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				1.95	100.00		

DIRECT CONTACT WORKSHEET Site: TA-10

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	3	1	3	3	8.2	Site easily accessible.
3. CONTAINMENT	0 15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Beryllium, lead, high explosives.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium, lanthanum, strontium possible contaminants.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Population less than 1000.
B. Distance to a Critical Habitat	0 1 2 3	1	4	4	12		Peregrine Falcon habitat within one mile.
TOTAL TARGETS SCORE				12	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8100	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				37.50	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				37.50	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 11 AND 16

SITE NAME: TA-11, TA-16 (INC.)

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 5, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-11 and TA-16 (which incorporated TAs 13, 24, and 25 within it) were utilized for high explosives development, machining, and testing. Three sites, previously mentioned, were included as part of S-Site (TA-16) as it expanded. There are three Material Disposal Areas within these sites; two at TA-16 (P, R) and one at TA-11 (S). Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	2.99	0.00	2.99
Sgw =	5.18	0.00	5.18
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	8.33	0.00	8.33

GROUND WATER ROUTE WORKSHEET Site: TA-11, 16

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1330 ft. (LA-9957-MS, fig. 4; ENG-R 5277/2,3,5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid/slurry form-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	4	1	4	8		Quantity assumed to be less than 1000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cobalt, radium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				22	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2970	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				5.18	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				5.18	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-11, 16

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	1	1	1	3		Facility slope 3-5%; Average terrain slope 3-5%. (ENG-R 5277/2,3,5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig.8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/2,3,5)
D. Physical State	0 1 2 3	3	1	3	3		Liquid/slurry form-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	3	1	3	8		Quantity assumed to be less than 1000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cobalt, radium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				21	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 12

SITE NAME: TA-12

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Abandoned L Site (TA-12) was an experimental explosives test area during the war.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	6.67	0.00	6.67
Sgw =	11.53	0.00	11.53
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-12

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1270 ft. (LA-9957-MS, fig. 4; ENG-R 5277/5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A. figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Strontium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insuficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well two to three miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6612	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				11.53	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				11.53	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-12

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/5)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Strontium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 14

SITE NAME: TA-14

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 6, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

This site has been a firing site since its creation in 1944.

Scoring for air route, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	7.02	0.00	7.02
Sgw =	12.14	0.00	12.14
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-14

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1400 ft. (LA-9957-MS, fig. 4; ENG-R 5277/5)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material form.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well approx. three miles. Population served greater than 10000. (LA-10721-ENV, p.13; LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6960	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				12.14	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				12.14	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-14

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3-5%; Terrain average slope >8%. (ENG-R 5277/5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/5)
D. Physical State	0 1 2 3	2	1	2	3		Fine material form.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environment within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 15

SITE NAME: TA-15

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

R Site has been a firing site throughout its history. Material Disposal Areas N and Z are located at the technical area.

Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	9.91	0.00	9.91
Sgw =	17.14	0.00	17.14
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	4.17	0.28	4.17

GROUND WATER ROUTE WORKSHEET Site: TA-15

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1190 ft. (LA-9957-MS, fig. 4; ENG-R 5277/5,6,9,10)
B. Net Precipitation	0 1 2 3	0	1	0	3		Lessthan .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Powder or fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	3	1	3	8		Quantity assumed to be less than 500 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				21	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				9828	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				17.14	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				17.14	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-15

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%; Terrain average slope >8%. (ENG-R 5277/5,6,9,10)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/5,6,9,10)
D. Physical State	0 1 2 3	2	1	2	3		Fine material-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	3	1	3	8		Quantity assumed to be less than 500 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium contamination possible.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				21	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: TA-15

RATING FACTOR	VALUE RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	1	1	1	3	8.2	Facility boundary fenced only. Site access is controlled.
3. CONTAINMENT	0 15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	High explosives, beryllium, lead.
Radioactive	0 1 2 4 6 9 12 15	1	1	1	15		Uranium.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	1	4	4	20	8.5	Population less than 100.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No sensitive environments within one mile.
TOTAL TARGETS SCORE				4	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				900	21600		
RADIOACTIVE				60	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				4.17	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.28	100.00		
MAXIMUM Sdc =				4.17	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 18 AND 27

SITE NAME: TA-18, TA-27

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 5, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Pajarito Laboratory Site (TA-18) was first used as a firing site. "Far Site" firing point of TA-18 later was separated from that TA and was designated TA-27 (Gamma Site). The mission at TA-18 changed radically during the war as its work moved towards nuclear criticality experiments. Gamma Site was abandoned during the war. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	14.26	0.00	14.26
Sgw =	24.36	0.00	24.36
Ssw =	3.90	0.00	3.90
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-18, 27

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 880 ft. (LA-9957-MS, fig. 4; ENG-R 5277/15,16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, fig. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 1000 ft. Population served greater than 10000. (LA-10721-MS, p.13; LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				13965	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				24.36	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				24.36	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-18,27

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	1	1	1	3		Facility slope 3-5%; Average terrain slope 3-5%. (ENG-R 5277/2,3,5)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/2,3,5)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Wetlands area 100 feet to 1/4 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				4	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2508			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				3.90	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				3.90	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 19

SITE NAME: TA-19

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-19 was initially used for an electrical testing area. It was later utilized for animal irradiation experiments. The area was abandoned in the mid-1950s.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	6.97	0.00	6.97
Sgw =	11.97	0.00	11.97
Ssw =	1.45	0.00	1.45
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-19

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1150 ft. (LA-9957-MS, fig. 4; ENG-R 5277/14)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Toluene.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cobalt possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6864	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				11.97	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				11.97	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-19

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/14)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CRR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/14)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Toluene.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cobalt possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for anaylsis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Peregrine Falcon habitat within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				936			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				1.45	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				1.45	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 21

SITE NAME: TA-21

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

DP Site was initially used for plutonium chemistry and research. The site is now utilized by a variety of groups of varying functions. Some decontamination work has taken place at TA-21. There are five Material Disposal Areas (A,B,T,U,V) at this site.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	20.24	0.00	20.24
Sgw =	29.93	0.00	29.93
Ssw =	18.18	0.00	18.18
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-21

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1240 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, ethylene glycol, fluorine, asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, americium, strontium, actinium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, fig. 10; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				17160	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				29.93	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				29.93	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-21

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed release. (LA-10721-ENV, pp.37,40,160)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, ethylene glycol, fluorine, asbestos.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	8	1	8	8		Quantity assumed to be greater than 10000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		Plutonium, uranium, americium, strontium, actinium, tritium possible contaminants. Insufficient data for analysis.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				26	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Distance to nesting Peregrine Falcons 1/4 to 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				10	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11700			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				18.18	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				18.18	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 26

SITE NAME: TA-26

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 6, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-26 (D Site) was primarily used for storage of special nuclear material. The site was abandoned and demolished in the 1960s. Some of the debris was pushed over the canyon edge to the south and covered with soil. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	0.00	0.00	0.00
Sgw =	0.00	0.00	0.00
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-26

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1250 ft. (LA-9957-MS, fig. 4; ENG-R 5277/14)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Piles partially covered, stability of waste unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-10721-ENV, p.13; LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				0.00	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-26

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed tc Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope <3%; Terrain average slope >8%. (ENG-R 5277/14)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/14)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Piles partially covered, stability of waste unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	0	1	0	18		
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	0	1	0	8		
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				0	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine Falcon habitat within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				4	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 31

SITE NAME: TA-31

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-31, East Receiving Yard, was removed in 1954.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	5.43	0.00	5.43
Sgw =	8.84	0.00	8.84
Ssw =	3.15	0.00	3.15
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-31

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1350 ft. (LA-9957-MS, fig. 4; ENG-R 92)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Sludge.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	2	1	2	3	3.3	Spills-no containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Oil, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				5070	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				8.84	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				8.84	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-31

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 92)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, figs. 4,5)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 92)
D. Physical State	0 1 2 3	3	1	3	3		Sludge.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Spils-no containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Oil, chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	2	2	4	6		Peregrine Falcon with 1/2 mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				4	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2028			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				3.15	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				3.15	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 32

SITE NAME: TA-32

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-32 was a medical research laboratory near the Main Technical Area. TA-32 was removed in 1954.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	5.19	0.00	5.19
Sgw =	8.84	0.00	8.84
Ssw =	1.54	0.00	1.54
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-32

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 ... 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1365 ft. (LA-9957-MS, fig. 4; ENG-R 92)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.2')
D. Physical State	0 1 2 3	3	1	3	3		Sludge.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	2	1	2	3	3.3	Piping-limited containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	12	1	12	18		Some chemical contamination possible.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				13	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	30	1	30	40		Distance to nearest supply well one to two miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				39	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				5070	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				8.84	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				8.84	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-32

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 92)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 92)
D. Physical State	0 1 2 3	3	1	3	3		Sludge.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	2	1	2	3	4.3	Piping-limited containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Some chemical contamination possible.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	1	2	2	6		Peregrine falcon habitat within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				2	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				988			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				1.54	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				1.54	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 33

SITE NAME: TA-33

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Initial use of this technical area involved classified weapons development. TA-33 is now utilized as as a support installation for Fenton Hill (TA-57) activities. Material Disposal Areas D, E, and K are located at TA-33. Scoring for air route, and fire and explosion are not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	15.65	0.00	15.65
Sgw =	4.71	0.00	4.71
Ssw =	26.67	0.00	26.67
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	12.50	0.00	12.50

GROUND WATER ROUTE WORKSHEET Site: TA-33

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aqifer approx. 860 ft. (LA-9957-MS, fig. 4; ENG-R 5277/18,25)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, lead, mercury, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		Distance to nearest supply well greater than three miles. (LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				9	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				2700	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				4.71	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				4.71	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-33

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Terrain average slope >8%. (ENG-R 5277/18,25)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/18,25)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, mercury, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				20	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational and irrigational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	16	1	16	40		Irrigation from Cochiti Reservoir serves 6000 acres being equivalent to 9000 people served. (USGS Report NM-85-1, p.151)
TOTAL TARGETS SCORE				22	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				17160			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				26.67	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				26.67	100.00		

DIRECT CONTACT WORKSHEET Site: TA-33

RATING FACTOR	VALUE RANGE		SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0	45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4								
If Observed Incident is Given a Score of 0, Proceed to Line 2								
2. ACCESSIBILITY	0 1 2 3		3	1	3	3	8.2	Facility not completely fenced, not guarded. Site easily accessible.
3. CONTAINMENT	0	15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS								
Chemical Toxicity	0 1 2 3		3	5	15	15	8.4	Beryllium, trichloroethane.
Radioactive	0 1 2 4 6 9 12 15		0	1	0	15		Uranium, tritium possible contaminants.
5. TARGETS								
A. Population Within a 1-Mile Radius	0 1 2 3 4 5		1	4	4	20	8.5	Population less than 100.
B. Distance to a Critical Habitat	0 1 2 3		0	4	0	12		No sensitive environments within one mile.
TOTAL TARGETS SCORE					4	32		
6. CALCULATION								
If Line 1 is 45, Multiply 1 x 4 x 5								
If Line 1 is 0, Multiply 2 x 3 x 4 x 5								
CHEMICAL					2700	21600		
RADIOACTIVE					0	21600		
7. NORMALIZATION								
Divide Line 6 by 21600 and Multiply by 100								
CHEMICAL Sdc =					12.50	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =					0.00	100.00		
MAXIMUM Sdc =					12.50	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 35, 42, 48, 50, AND 55

SITE NAME: TA-35,42,48,50,55

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 6, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

These five Technical Areas were consolidated for scoring because of their close proximity to one another as well as the fact that they share common drainage areas. Work performed at these areas is diverse. TA-42 was an incinerator site that was decommissioned in 1978. Material Disposal Areas C, W, and X are located in these areas. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	16.75	0.00	16.75
Sgw =	27.63	0.00	27.63
Ssw =	8.73	0.00	8.73
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	62.50	0.00	62.50

GROUND WATER ROUTE WORKSHEET Site: TA-35,42,48,50,55

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1280 ft (LA-9957-MS, fig. 4; ENG-R 5277/4,8)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Organics, metals, PCB contaminated oil.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	6	1	6	8		Quantity assumed to be less than 5000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, cesium, strontium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				24	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				15840	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				27.63	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				27.63	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-35,42,48,50,55

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Average terrain slope >8%. (ENG-R 5277/4,8)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/4,8)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Organics, metals, PCB contaminated oil.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	6	1	6	8		Quantity assumed to be less than 5000 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, cesium, strontium, tritium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				24	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	3	2	6	6		Wetlands within 100 ft.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				6	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				5616			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				8.73	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				8.73	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 36

SITE NAME: TA-36

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Kappa Site has been a firing site since its beginning in 1950. Material Disposal Area AA is located at this technical area.

Scoring for air route, and fire and explosion was not applicable; therefore,

score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	10.11	0.00	10.11
Sgw =	17.50	0.00	17.50
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	4.17	0.00	4.17

GROUND WATER ROUTE WORKSHEET Site: TA-36

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 970 ft. (LA-9957-MS, fig. 4; ENG-R 5277/9,10,16)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Powder or fine material assumed.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment assumed.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, metals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				10032	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				17.50	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				17.50	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-36

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope >8%; Terrain average slope >8%. (ENG-R 5277/9,10,16)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/9,10,16)
D. Physical State	0 1 2 3	2	1	2	3		Powder or fine material form.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment assumed.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, metals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: TA-36

RATING FACTOR	VALUE RANGE		SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0	45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4								
If Observed Incident is Given a Score of 0, Proceed to Line 2								
2. ACCESSIBILITY	0 1 2 3		1	1	1	3	8.2	Facility boundary fenced only. Access is controlled.
3. CONTAINMENT	0	15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS								
Chemical Toxicity	0 1 2 3		3	5	15	15	8.4	Beryllium, lead, high explosives.
Radioactive	0 1 2 4 6 9 12 15		0	1	0	15		Uranium possible contaminant. Insufficient data for analysis.
5. TARGETS								
A. Population Within a 1-Mile Radius	0 1 2 3 4 5		1	4	4	20	8.5	Population less than 100.
B. Distance to a Critical Habitat	0 1 2 3		0	4	0	12		No sensitive environments within one mile.
TOTAL TARGETS SCORE					4	32		
6. CALCULATION								
If Line 1 is 45, Multiply 1 x 4 x 5								
If Line 1 is 0, Multiply 2 x 3 x 4 x 5								
CHEMICAL					900	21600		
RADIOACTIVE					0	21600		
7. NORMALIZATION								
Divide Line 6 by 21600 and Multiply by 100								
CHEMICAL Sdc =					4.17	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =					0.00	100.00		
MAXIMUM Sdc =					4.17	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 39

SITE NAME: TA-39

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-39 is a remote canyon firing site. This has been its function since its beginning. Material Disposal Area Y is located at this technical area. Scoring for air route, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	12.77	0.00	12.77
Sgw =	12.14	0.00	12.14
Ssw =	18.46	0.00	18.46
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-39

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 600 ft. (LA-9957-MS, fig. 4; ENG-R 5277/11,17,18)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment assumed.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, lead, mercury, high explosives, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				20	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest well two to three miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				6960	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				12.14	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				12.14	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-39

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	0	1	0	3		Facility slope <3%; Terrain average slope <3%. (ENG-R 5277/11,17,18)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water greater than 1000 ft. (ENG-R 5277/11,17,18)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				9	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment assumed.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, mercury, lead, high explosives, barium.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	2	1	2	8		Quantity assumed to be less than 250 drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				20	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environment within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	16	1	16	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				22	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11880			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				18.46	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				18.46	100.00		

DIRECT CONTACT WORKSHEET Site: TA-39

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	0	1	0	3	8.2	Facility boundary fenced only. Access is controlled.
3. CONTAINMENT	0 15	15	1	15	15	8.3	No containment.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	3	5	15	15	8.4	Beryllium, lead, mercury, high explosives, barium.
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Uranium.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	1	4	4	20	8.5	Population less than 100.
B. Distance to a Critical Habitat	0 1 2 3	0	4	0	12		No sensitive environments within one mile.
TOTAL TARGETS SCORE				4	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 43

SITE NAME: TA-43

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Work at this Technical Area mainly consists of medical research projects.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	8.33	0.00	8.33
Sgw =	14.42	0.00	14.42
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-43

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1320 ft. (LA-9957-MS, fig. 4; ENG-R 5277/4)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than 10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid assumed.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Containment unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, strontium, thorium, radium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well two to three miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				8265	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				14.42	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				14.42	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-43

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 — 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3-5%; Terrain average slope 5-8%. (ENG-R 5277/4)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/4)
D. Physical State	0 1 2 3	3	1	3	3		Liquid assumed.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Containment unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Beryllium, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, strontium, thorium, radium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 45

SITE NAME: TA-45

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-45 was the industrial waste treatment plant for TA-1, the CMR building at TA-3, the HRL building at TA-43, and TA-48. This area was decontaminated and decommissioned for radioactive constituents in 1976. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	4.44	0.00	4.44
Sgw =	7.69	0.00	7.69
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-45

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1190 ft. (LA-9957-MS, fig.4; ENG-R 92)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	2	1	2	3	3.3	Limited containment.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed since clean up project. Some material may still be present. Plutonium, uranium, strontium, tritium, other possible contaminants in small, insignificant quantities. Insufficient data for analysis.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	20	1	20	40		Distance to nearest supply well two to three miles. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				29	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				4408	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				7.69	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				7.69	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-45

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	45	1	45	45	4.1	Observed release. (LA-10721-ENV, pp.40, 152)
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	NE	1	NE	3		
B. 1-yr. 24-hr. Rainfall	0 1 2 3	NE	1	NE	3		
C. Distance to Nearest Surface Water	0 1 2 3	NE	2	ERR	6		
D. Physical State	0 1 2 3	NE	1	NE	3		
TOTAL ROUTE CHARACTERISTICS SCORE				ERR	15		
3. CONTAINMENT	0 1 2 3	NE	1	NE	3	4.3	
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Metals, organics.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		Slight cesium, uranium, plutonium, uranium, tritium contamination in surface water.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water intake within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 46

SITE NAME: TA-46

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

This site was originally used for Rover Program work. It is now a laser research facility.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	12.64	0.00	12.64
Sgw =	21.87	0.00	21.87
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-46

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1160 ft. (LA-9957-MS, fig. 4; ENG-R 5277/9)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	Containment unknown.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Lithium hydride, organics, metals, oil.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, cesium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well 2000 ft to one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				12540	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				21.87	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				21.87	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-46

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope 3-5%; Terrain average slope >8%. (ENG-R 5277/9)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/9)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	Containment unknown.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Lithium hydride, organcs, metals, oil.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Plutonium, uranium, cesium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environment within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 51

SITE NAME: TA-51

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

This facility was originally used for animal irradiation experiments. It is now an engineering test facility. Demolished magazines from original TA-18 activities are present here. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	14.08	0.00	14.08
Sgw =	24.36	0.00	24.36
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-51

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 / 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1075 ft. (LA-9957-MS, fig. 4; ENG-R 5277/9)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Cobalt possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well approximately 2000 ft. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				13965	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				24.36	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				24.36	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-51

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	3	1	3	3		Facility slope 5-8%; Terrain average slope >8%. (ENG-R 5277/9)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/9)
D. Physical State	0 1 2 3	3	1	3	3		Liquid.
TOTAL ROUTE CHARACTERISTICS SCORE				13	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Cobalt possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 52, 4, AND 5

SITE NAME: TA-52, 4, 5

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 6, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

TA-52 consists of the UHTREX (Ultra High Temperature Reactor Experiment) Reactor which was used on an experimental basis for one year in 1968. Decontamination and decommissioning of the reactor and its support facilities is schedules for FY89. TA-4 and TA-5 are abandoned firing sites used for implosion studies during the war. Some clean up work was performed at these two sites in FY85. TA-52 sits on part of TA-4. Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	11.26	0.00	11.26
Sgw =	19.49	0.00	19.49
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-52,4,5

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 1320 ft. (LA-9975-MS, fig. 4; ENG-R 5277/9)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than -10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS p.21)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				4	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, photoprocessing chemicals, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-10721-ENV, p.13; LA-9957-MS, figs. 5, 10; ENG-R 92)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				11172	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				19.49	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				19.49	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-52,4,5

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <35; Terrain average slope >8%. (ENG-R 5277/9)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (ENG-R 5277/9)
D. Physical State	0 1 2 3	2	1	2	3		Fine material.
TOTAL ROUTE CHARACTERISTICS SCORE				11	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, photoprocessing chemicals, lead.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium possible contaminant.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was enetered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREAS 53 AND 20

SITE NAME: TA-53, 20

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 9, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Work at TA-53, Los Alamos Meson Physics Facility (LAMPF), revolves around the proton accelerator housed there.

TA-20, Sandia Canyon Site, is an abandoned implosion testing area used during the war years.

Scoring for air route, direct contact, and fire and explosion was not applicable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	12.64	0.00	12.64
Sgw =	21.87	0.00	21.87
Ssw =	0.00	0.00	0.00
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-53, 20

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 820 ft. (LA-9957-MS, fig. 4; ENG-R 5277/8,14)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No containment or liners-worst case.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cesium, tritium, sodium, beryllium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE CHEMICAL				19	26		
TOTAL WASTE CHARACTERISTICS SCORE RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	35	1	35	40		Distance to nearest supply well less than one mile. Population served greater than 10000. (LA-9957-MS, figs. 5, 10; LA-10721-ENV, p.13; ENG-R 92)
TOTAL TARGETS SCORE				44	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				12540	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				21.87	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				21.87	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-53, 20

RATING FACTOR	-----VALUE----- -----RANGE-----	SEL VAL	MULTI-PLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%; Average terrain slope >8%. (ENG-R 5277/8,14)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 feet. (ENG-R 5277/8,14)
D. Physical State	0 1 2 3	3	1	3	3		Liquid-worst case.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No containment or liners-worst case.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		High explosives, beryllium, various chemicals.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		None observed. Uranium, cesium, tritium, sodium, beryllium possible contaminants.
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		Insufficient data for analysis. Score of 0 was entered to prevent error code in computer program.
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	0	3	0	9		No surface water use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environments within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				0	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				0.00	100.00		

DIRECT CONTACT WORKSHEET Site: TA-53, 20

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED INCIDENT	0 45	0	1	0	45	8.1	No confirmed incident.
If Observed Incident is Given a Score of 45, Proceed to Line 4							
If Observed Incident is Given a Score of 0, Proceed to Line 2							
2. ACCESSIBILITY	0 1 2 3	3	1	3	3	8.2	No fence around LAMPF lagoons. Access not controlled by guards. Incomplete fencing around facility.
3. CONTAINMENT	0 15	15	1	15	15	8.3	Very accessible to direct contact.
4. WASTE CHARACTERISTICS							
Chemical Toxicity	0 1 2 3	0	5	0	15	8.4	
Radioactive	0 1 2 4 6 9 12 15	0	1	0	15		Insufficient data for analysis.
5. TARGETS							
A. Population Within a 1-Mile Radius	0 1 2 3 4 5	2	4	8	20	8.5	Population estimate of less than 1000.
B. Distance to a Critical Habitat	0 1 2 3	3	4	12	12		No sensitive environment within one mile.
TOTAL TARGETS SCORE				20	32		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				0	21600		
RADIOACTIVE				0	21600		
7. NORMALIZATION							
Divide Line 6 by 21600 and Multiply by 100							
CHEMICAL Sdc =				0.00	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sdc =				0.00	100.00		
MAXIMUM Sdc =				0.00	100.00		

HAZARD RANKING SYSTEM/MODIFIED HAZARD RANKING SYSTEM (HRS/mHRS)

TECHNICAL AREA 57

SITE NAME: TA-57

FIELD OFFICE: Los Alamos Area Office

EPA REGION: Region VI-Dallas

PERSON(S) IN CHARGE OF SITE: Harold Valencia, Area Manager
U.S. Department of Energy

NAME OF REVIEWER: J. Lynn Scholl DATE: March 16, 1987

GENERAL DESCRIPTION OF THE FACILITY:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Fenton Hill Site (TA-57) is a remote experimental geothermal facility.

Scoring for air route, direct contact, and fire and explosion was not appliable; therefore, score sheets are not included.

SCORES:	CHEMICAL	RADIOACTIVE	MAXIMUM
Sm =	14.55	0.00	14.55
Sgw =	24.36	0.00	24.36
Ssw =	6.38	0.00	6.38
Sa =	0.00	0.00	0.00
Sfe =	0.00	0.00	0.00
Sdc =	0.00	0.00	0.00

GROUND WATER ROUTE WORKSHEET Site: TA-57

RATING FACTOR	VALUE / RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	3.1	No observed release.
If Observed Release is Given a Score of 45, Proceed to Line 4							
If Observed Release is Given a Score of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						3.2	
A. Depth to Aquifer of Concern	0 1 2 3	0	2	0	6		Depth to top of aquifer approx. 816 ft. (LA-5780-MS, fig. 2; USGS 15 minute Jemez Springs topo map, 1952)
B. Net Precipitation	0 1 2 3	0	1	0	3		Less than .10 in. (40 CFR 300, App.A, figs. 4,5)
C. Permeability of the Unsaturated Zone	0 1 2 3	2	1	2	3		Measurements range from 2E-5 to 5E-4 (LA-8962-MS, p.21)
D. Physical State	0 1 2 3	3	1	3	3		Liquid/slurry form.
TOTAL ROUTE CHARACTERISTICS SCORE				5	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	3.3	No liner.
4. WASTE CHARACTERISTICS						3.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Arsenic, cadmium, lithium, fluorine.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						3.5	
A. Ground Water Use	0 1 2 3	3	3	9	9		
B. Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	40	1	40	40		Distance to nearest supply well less than 2000 ft. Population served greater than 10000. (LA-10892-PR, fig. 1; LA-10721-ENV, p.13)
TOTAL TARGETS SCORE				49	49		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5							
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				13965	57330		
RADIOACTIVE				0	57330		
7. NORMALIZATION							
Divide Line 6 by 57330 and Multiply by 100							
CHEMICAL Sgw =				24.36	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Sgw =				0.00	100.00		
MAXIMUM Sgw =				24.36	100.00		

SURFACE WATER ROUTE WORKSHEET Site: TA-57

RATING FACTOR	VALUE RANGE	SEL VAL	MULTIPLIER	SCORE	MAX. SCORE	REF. SEC.	REFERENCES FOR EACH ASSIGNED SCORE
1. OBSERVED RELEASE	0 45	0	1	0	45	4.1	No observed release.
If Observed Release is Given a Value of 45, Proceed to Line 4							
If Observed Release is Given a Value of 0, Proceed to Line 2							
2. ROUTE CHARACTERISTICS						4.2	
A. Facility Slope and Intervening Terrain	0 1 2 3	2	1	2	3		Facility slope <3%; Terrain average slope >8%. (USGS Jemez Springs 15 minute quadrangle topo, 1952)
B. 1-yr. 24-hr. Rainfall	0 1 2 3	1	1	1	3		1.0 to 2.0 in. (40 CFR 300, App.A, fig. 8)
C. Distance to Nearest Surface Water	0 1 2 3	3	2	6	6		Distance to nearest surface water less than 1000 ft. (USGS Jemez Springs 15 minute quadrangle topo, 1952)
D. Physical State	0 1 2 3	3	1	3	3		Liquid/slurry form.
TOTAL ROUTE CHARACTERISTICS SCORE				12	15		
3. CONTAINMENT	0 1 2 3	3	1	3	3	4.3	No liners.
4. WASTE CHARACTERISTICS						4.4	
Chemical							
A. Toxicity/Persistence	0 3 6 9 12 15 18	18	1	18	18		Arsenic, cadmium, lithium, fluorine.
B. Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	1	1	8		Quantity assumed to be less than forty drums.
Radioactive							
A. Maximum Observed	0 1 3 7 11 15 21 26	0	1	0	26		
B. Maximum Potential	0 1 3 7 11 15 21 26	0	1	0	26		
TOTAL WASTE CHARACTERISTICS SCORE							
CHEMICAL				19	26		
RADIOACTIVE				0	26		
5. TARGETS						4.5	
A. Surface Water Use	0 1 2 3	2	3	6	9		Recreational use within three miles.
B. Distance to Sensitive Environment	0 1 2 3	0	2	0	6		No sensitive environment within one mile.
C. Population Served/ Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	0	1	0	40		No surface water intake within three miles.
TOTAL TARGETS SCORE				6	55		
6. CALCULATION							
If Line 1 is 45, Multiply 1 x 4 x 5					64350		
If Line 1 is 0, Multiply 2 x 3 x 4 x 5							
CHEMICAL				4104			
RADIOACTIVE				0			
7. NORMALIZATION							
Divide Line 6 by 64350 and Multiply by 100							
CHEMICAL Ssw =				6.38	100.00		NOTE: NE means Not Evaluated.
RADIOACTIVE Ssw =				0.00	100.00		
MAXIMUM Ssw =				6.38	100.00		

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Appendix C

APPENDIX C

SUMMARY OF ENVIRONMENTAL MONITORING DATA 1980-1984

LOS ALAMOS NATIONAL LABORATORY

LOS ALAMOS, NEW MEXICO

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U.S. General Accounting Office
Albuquerque, New Mexico

December 1985

INTRODUCTION

Los Alamos National Laboratory is a government-owned and contractor-operated research facility. The Laboratory is operated by the University of California under a contract administered by the Albuquerque Operations Office of the U.S. Department of Energy (DOE). Since its inception, the Laboratory's prime mission has been research and development of nuclear weapons. Programs at the Laboratory include weapons development, magnetic and inertial fusion, nuclear fission, nuclear safeguards and security, and laser isotope separation. There is also basic research into areas of physics, chemistry, and engineering that support these programs. Research on peaceful applications of nuclear energy has included space applications, power reactor programs, radiobiology, and medicine. Other programs include applied photochemistry, astrophysics, earth sciences, energy resources, nuclear fuel safeguards, lasers, computer sciences, solar energy, geothermal energy, biomedical and environmental sciences, and nuclear waste management.

The Laboratory site encompasses about 43 mi^2 on the Pajarito Plateau of Northcentral New Mexico. The site is located about 25 mi northwest of Santa Fe and about 60 mi north-by-northeast of Albuquerque. The communities of Los Alamos and White Rock are situated adjacent to Laboratory boundaries. Approximately 168,000 people reside within a radius of 50 mi of the Laboratory.

ENVIRONMENTAL MONITORING

The Laboratory carries out routine monitoring for radiation, radioactive materials, and chemical substances on the Laboratory site as well as in adjacent and regional environments. The monitoring program aids in fulfilling the Laboratory's policy of protection of the public, employees, and environment from impact caused by Laboratory operations. The monitoring program has been established to document compliance with applicable standards and permit requirements, identify undesirable trends, provide information to the public, and contribute to general environmental knowledge. The results of monitoring are used to determine the need for and the nature of remedial actions necessary to ensure continued protection. The results are reported annually in publicly available reports (Refs. 1-5).

ENVIRONMENTAL REGULATIONS

In 1985, DOE developed new Radiation Protection Standards, and the agency is revising its Concentration Guidelines in accordance with the new standards. Herein, the monitoring results for the five-year period of review (1980-1984) are compared to the the Standards and Guide in effect during that period. These Standards and Guide are discussed below.

Radiation Protection Standard. The DOE regulates radiation exposure to the public from its operations by limiting the radiation dose that a member of the public can receive (Ref. 6). For 1980-1984, the DOE's Radiation Protection Standard limited the annual dose to any member of the public to 500 mrem to whole body, bone marrow, and gonads, and 1500 mrem to any other organ. These doses are in addition to what the individual would normally receive from background radiation and from medical exposures. The average dose to a suitable sample of the exposed population is limited to one third of the dose standard for the maximum exposed individual.

These Standards are based on the recommendations of the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements.

Concentration Guide. The DOE also has secondary guidelines for radionuclide concentrations in air and water (Ref. 6). These guidelines are the concentrations that would result in a person receiving a dose equal to the Radiation Protection Standard if he were to breath air or drink water having that radionuclide concentration for an entire year. The Concentration Guide is very conservative because it assumes 100% intake of contaminated air or water during the year. This almost never occurs, since most individuals would spend some time at other locations with different air concentrations and mix their water intake with other liquids. The Concentration Guide is secondary to the Radiation Protection Standard, which refers to the actual dose that an individual receives, taking into account not only the concentration in the air or water but how much is actually consumed by the public. The Concentration Guide is compared with radionuclide concentrations in air and water at the site boundary.

In this report, air and water concentrations are compared with the DOE Concentration Guides to provide a perspective on the potential hazards involved. The concentrations for all radionuclides in both air and water in offsite areas are less than 1% of the Concentration

Guide. Actual radiation doses -- which are more basic than the air and water concentrations because they are compared with the Radiation Protection Standard -- are much lower than even these concentrations would imply, because of the limited exposure of the public to air or water with these concentrations.

Maximum Concentration Limits. Under the Safe Drinking Water Act, the Environmental Protection Agency (EPA) has promulgated Maximum Concentration Limits for a large number of parameters in drinking water. Six of the parameters are radioactive -- gross alpha, gross beta, radium-226, radium-228, tritium, and strontium-90. The EPA Maximum Concentration Limits are not effluent limits used to regulate discharges, but are applied at the point of consumption to community drinking water supplies used by a large number of individuals. In contrast to other limits and guides discussed here, the Maximum Concentration Limits do include background concentrations of naturally occurring parameters.

In this report, radionuclide levels measured in the water supply of communities near the Laboratory are compared to the Maximum Concentration Limits. The levels measured in these water supplies were found to be typical of those for most communities in New Mexico, and do not show any effect from Laboratory operations.

Soil Guidelines. There are no concentration guides for radionuclides in soil in the DOE Orders. Several programs have developed guidelines that relate a soil concentration of a particular radionuclide to the DOE Radiation Protection Standard. These analyses are unofficial and carry no regulatory weight, but they do provide useful points of comparison to assess the potential impact of measured radionuclide concentrations in soil.

Herein, soil concentrations are compared to limits recommended for DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) (Ref. 8). These limits define levels below which the land would be suitable for unrestricted release. The comparison with the soil guidelines must be qualified by remembering the very conservative assumptions that underlie their derivation. These assumptions include a person living on the soil for 70 years, and growing a significant amount of his food in the soil.

Comparing measured soil concentrations with the soil guidelines is conservative and tends to overestimate any potential risk. The basic regulation is comparison of the actual doses with the Radiation Protection Standard, and the

actual doses would probably be much smaller since the maximum exposure conditions are seldom realized in practice.

ENVIRONMENTAL DATA SUMMARY

This report has been compiled to summarize the environmental monitoring data collected over the last 5 years at the Laboratory. The data summarized herein are derived from over 84,000 analyses carried out from 1980 to 1984.

Data are presented here as the averages of a number of samples. These estimates have an associated variability or uncertainty which is not presented here for the purpose of clarity. More details on the variability of the data may be found in the Environmental Surveillance Reports (Refs. 1 to 5). Where estimated means fall below zero, the estimates have been assigned a value of zero in the tables that follow. The tables are also annotated to indicate the appropriate standards or guidelines for comparison as well as to identify minimum limits of detection for the analyses.

DOSE ASSESSMENTS

Some incremental radiation doses are received by local residents as a result of Laboratory operations. The maximum annual dose received by a resident during 1980-1984 has been estimated to be about 34 mrem above doses received from natural background, worldwide fallout, and medical procedures. This estimated dose is less than 7% of DOE's Radiation Protection Standard (RPS). The primary source of this dose is airborne and scattered radiation from the linear particle accelerator at the Los Alamos Meson Physics Facility (LAMPF). Estimated doses to the maximally exposed individual are based upon measurements of external penetrating radiation. These measurements have been routinely carried out with a network of 32 to 40 dosimetry stations located principally in Los Alamos County. Other minor exposure pathways exist but contribute only a few millirem per year to doses received by the public.

Total cumulative whole-body dose received by the population within 50 miles of the Laboratory did not exceed 10 person-rem during the five year period. This represents about 0.1% of the doses received annually by the same population from natural and medical diagnostic sources. The average added annual risk of cancer mortality for a resident in Los Alamos County is less than 1 chance in 7,000,000 as a result of Laboratory operations. This compares to a risk of about 1 in 26,000 as a result of exposure to natural background radiation.

SUMMARY OF ESTIMATED ANNUAL DOSES DUE TO LABORATORY OPERATIONS

YEAR	MAXIMUM INDIVIDUAL DOSE (mrem)	%RPS	AVERAGE DOSE NEARBY RESIDENTS (mrem)	%RPS
1980	3	0.6%	1.4	0.28%
1981	5	1.0%	0.7	0.14%
1982	8	1.6%	0.2	0.04%
1983	34	6.8%	0.4	0.08%
1984	31	6.2%	0.5	0.10%

Radiation Protection Standard (RPS)= 500 mrem/year

NOTES:

- Maximum individual dose is calculated as the 50-year commitment due to Laboratory operations to an individual resident nearest the site of maximum exposure potential.
- Estimated cumulative population doses within 50 mi of the Laboratory have ranged from 3 to 10 person-rem from 1980-1984.

EFFLUENT MONITORING DATA

Airborne radioactive emissions were monitored as released from 86 points at the Laboratory. The major source of emissions was the Los Alamos Meson Physics Facility (LAMPF). Increasing operations at LAMPF have resulted in an increasing amount of release of mixed activation products. These products are mostly short-lived (half-lives of 2 to 20 minutes). DOE does not directly regulate the amount of each radionuclide released, but it does regulate the offsite and onsite concentrations through the Concentration Guides. The appropriate Guides are based upon resultant concentrations of radionuclides in the air. The Laboratory's air monitoring program has revealed no concentrations of longer-lived radionuclides exceeding 1% of the Concentration Guides; concentrations of short-lived radionuclides have not exceeded 7% of the Guides. Non-radioactive emissions at the Laboratory have complied with all relevant federal and state air quality regulations.

Liquid effluents containing low levels of radioactivity are routinely released from two waste treatment plants and one sanitary sewage lagoon system. Effluent quality of all discharges has been less than 5% of DOE's Concentration Guide for controlled areas. A single National Pollutant Discharge Elimination System (NPDES) Permit authorizes discharge of non-radioactive effluent from 99 industrial outfalls and 11 sanitary sewage treatment plants. The Laboratory has been in compliance with the requirements of this permit for over 90% of the analyses done on samples collected for compliance monitoring.

ANNUAL RADIOACTIVE AIR EMISSIONS

YEAR	PLUTONIUM (uCi)	URANIUM (uCi)	FISSION PRODUCTS (uCi)	ARGON (Ci)	TRITIUM (Ci)	GASEOUS MIXED ACTIVATION PRODUCTS (Ci)	PARTICLE/VAPOR ACTIVATION PRODUCTS (Ci)
1980	746	790	2191	951	7521	145600	--
1981	57	1273	1544	1360	7225	352340	--
1982	112	1373	1184	342	15856	251000	182
1983	113	888	843	418	7891	461111	2640
1984	140	1205	1617	335	14869	734118	2500

AIR MONITORING DATA

Worldwide background atmospheric radioactivity is composed of fallout from atmospheric nuclear weapons tests, natural radioactive constituents in dust, and radioactive materials resulting from interactions with cosmic radiation. Air is routinely sampled at 26 locations on the Laboratory site, along the Laboratory perimeter, and in distant areas. These samples are used to determine the existence and composition of any contributions to airborne radionuclide levels due to Laboratory operations. Atmospheric concentrations of americium, tritium, plutonium and uranium are routinely measured. Levels of americium and plutonium-238 have regularly been below minimum limits of detection. The highest measured and average concentrations of radionuclides have been much less than 1% of DOE's concentration guides for uncontrolled, offsite areas.

ATMOSPHERIC CONCENTRATIONS OF TRITIATED WATER VAPOR (pCi/m^3)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	17	10	8
1981	9	8	18
1982	34	21	11
1983	17	13	11
1984	19	9	10

Minimum Limit of Detection= 1 pCi/m^3

Concentration Guide= 200,000 pCi/m^3

During the past 5 years, average percentages of the Guide have been less than:

Onsite--0.017% Perimeter--0.011%
Regional--0.009%

NOTES:

- Air sampling networks consist of the following stations sampled quarterly: onsite,11; perimeter, 11; and regional, 3. In 1983, a twelfth station was added to the onsite network.

ATMOSPHERIC CONCENTRATIONS OF PLUTONIUM-239,240 (aCi/m^3)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	7	8	1
1981	8	13	8
1982	3	2	2
1983	2	1	1
1984	3	1	0

Minimum Limit of Detection= 3 aCi/m^3

Concentration Guide= 60,000 aCi/m^3 .

During the past 5 years average percentages of the Guide measured have been less than:

Onsite--0.014% Perimeter--0.022%
Regional--0.014%.

NOTES:

- Air sampling networks consist of the following stations sampled quarterly: onsite, 11; perimeter, 11; and regional, 3. In 1983, a twelfth station was added to the onsite network.

ATMOSPHERIC CONCENTRATIONS OF URANIUM (aCi/m^3)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	16	16	20
1981	12	16	9
1982	17	15	20
1983	9	12	13
1984	10	9	13

Minimum Level of Detection= 0.3 aCi/m^3

Concentration Guide= 2,000,000 aCi/m^3

During the past 5 years, average percentages of the Guide measured have been less than 0.001%.

NOTES:

- Air sampling networks consist of the following stations sampled quarterly: onsite,11; perimeter 11; and regional, 3. In 1983, a twelfth station was added to the onsite network.

WATER MONITORING DATA

Surface and ground waters are sampled to monitor dispersion of radionuclides and chemicals from Laboratory operations. The data over the five year period indicate no observable effects of discharge of treated effluent. Water in onsite effluent release areas contains trace amounts of radionuclides in concentrations below DOE's concentration guides for controlled areas. Radiochemical and chemical concentrations vary from year to year but exhibit no trends attributable to Laboratory operations. Although the radiochemical and chemical quality of surface and shallow ground waters in effluent release areas reflects some impact form Laboratory operations, these waters are confined to the Laboratory site and are not a source of municipal, industrial, or agricultural supply. Radionuclide concentrations in the Rio Grande have averaged less than 0.2% of the DOE Concentration Guides.

Municipal and industrial supply for the Laboratory and surrounding communities is drawn from 16 wells and 1 gallery. The radiochemical and chemical quality of these waters are well below the Environmental Protection Agency's National Interim Primary Drinking Water Standards (Ref. 7). The radionuclide concentrations in the local area exhibit ranges similar to other waters of New Mexico. There has been no evidence that Laboratory operations have affected the local municipal water supply.

SURFACE WATER SAMPLING FOR THE RIO GRANDE UPSTREAM AND DOWNSTREAM OF LABORATORY OPERATIONS (pCi/l)

YEAR	PU-239,240	PU-238	URANIUM	TRITIUM	CS-137
1980					
UPSTREAM (6)	0.01	0.000	0.7	300	32
DOWNSTREAM (4)	0.00	0.000	0.9	800	23
1981					
UPSTREAM (6)	0.01	0.007	1.1 (3)	900	20
DOWNSTREAM (4)	0.00	0.002	1.3 (2)	500	17
1982					
UPSTREAM (5)	0.00	0.004	0.9	320	0
DOWNSTREAM (4)	0.00	0.004	1.0	350	10
1983					
UPSTREAM (6)	0.01 (5)	0.000 (5)	1.0	2770	24
DOWNSTREAM (4)	0.01	0.004	1.0	3380	12
1984					
UPSTREAM (6)	0.05	0.023	0.9	700	8
DOWNSTREAM (4)	0.02	0.021	1.3	1700	19
Minimum Limit of Detection	0.03	0.009	0.3	700	4
Concentration Guide	5000	5000	600	3,000,000	20,000

From 1980-1984 concentrations in Rio Grande were less than 0.2% of the Concentration Guides.

NOTES:

- Numbers in parentheses denote the number of samples used to estimate means.
- Sampling arrays consisted of three stations upstream and two stations downstream each sampled semi-annually.

RADIONUCLIDE CONCENTRATIONS IN THE LOS ALAMOS MUNICIPAL WATER SUPPLY SYSTEM (pCi/l)

YEAR	PU-239,240	PU-238	URANIUM	TRITIUM	CESIUM-137
1980 (16)	0.01	0.000	0.8	200	7
1981	0.00 (25)	0.003 (25)	0.7 (14)	1100 (27)	25 (27)
1982 (16)	0.00	0.003	0.7	1300 (15)	0
1983 (16)	0.00	0.000	0.4	400	0
1984 (31)	0.03	0.006	0.9	400	20

NOTES:

- Numbers in parentheses denote number of samples used to estimate means.
- Sampling array consists of 16 stations sampled once in 1980, 1982, and 1983 and once or twice in 1981 and 1984.
- EPA's Maximum Concentration Limits explicitly address only tritium and is set at 20,000 pCi/l. Tritium has reached a maximum of 6.5% of this limit. The other radionuclides are not explicitly covered and uranium is explicitly exempted from the EPA limits for safe drinking water.

SOILS MONITORING DATA

Soil and sediment samples were collected and analyzed for radioactivity to evaluate the effect of Laboratory operations on the local environment. Concentrations of cesium and plutonium have been generally below or near background levels. Concentrations of uranium found at some stations have been attributable to natural occurrence of uranium in the parent-rock from which the soil derived. Concentrations of tritium in offsite soils results from atmospheric washout of worldwide fallout, while higher concentrations of tritium in onsite soils are the result of the Laboratory's airborne emissions. Sediment stations in onsite effluent areas contain radioactivity levels above background. The concentrations are highest near the discharge points and decrease with distance downstream.

CONCENTRATIONS OF TRITIUM IN SOIL WATER (pCi/ml)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	22 (19)	3.4 (8)	1.6 (6)
1981	5.6 (13)	2.1 (6)	2.5 (6)
1982	16 (10)	7.9 (6)	3.3 (7)
1983	4.9 (10)	1.7 (6)	1.9 (6)
1984	11 (10)	3.5 (6)	4.8 (7)

Minimum Limit of Detection= 0.7 pCi/ml

Concentration Guide= 3,000 pCi/ml

During the 5 year period, average percentages of the Guide measured have been less than:

Onsite--0.75% Perimeter--0.26%
Regional--0.16%

NOTES:

- Numbers in parentheses represent the number of stations sampled annually to estimate mean concentrations.

CONCENTRATIONS OF CESIUM-137 IN SOILS (pCi/g)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	1.00 (19)	0.98 (8)	0.60 (6)
1981	1.00 (13)	0.95 (6)	0.44 (6)
1982	0.66 (10)	1.25 (6)	0.75 (7)
1983	0.50 (10)	0.62 (6)	0.27 (6)
1984	0.75 (10)	0.80 (6)	0.30 (7)

Minimum Limit of Detection= 0.1 pCi/g

Recommended Soil Guide for Unrestricted Use= 80 pCi/g

During the 5 year period average percentages of the limit have been less than:

Onsite--1.25% Perimeter--1.56%

Regional--0.75%

NOTES:

- Numbers in parentheses represent the number of stations sampled annually to estimate mean concentrations.

CONCENTRATION OF URANIUM IN SOILS (pCi/g)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	1.480 (19)	1.320 (8)	0.790 (6)
1981	--	--	--
1982	1.390 (9)	1.520 (6)	0.924 (7)
1983	1.420 (10)	1.290 (6)	0.891 (6)
1984	1.320 (10)	1.320 (6)	0.858 (7)

Minimum Limit of Detection= 0.009 pCi/g

Recommended Soil Guide for Unrestricted Use= 75 pCi/g

During the 5 year period, average percentages of the limit were less than:

Onsite--2% Perimeter--2%

Regional--1.2%

NOTES:

- Numbers in parentheses represent the number of stations sampled annually to estimate mean concentrations.

CONCENTRATIONS OF PLUTONIUM-238 IN SOILS (pCi/g)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	0.120 (22)	0.000 (10)	0.000 (6)
1981	0.003 (13)	0.002 (6)	0.003 (6)
1982	0.001 (10)	0.002 (6)	0.002 (6)
1983	0.002 (10)	0.001 (6)	0.002 (6)
1984	0.001 (10)	0.001 (6)	0.000 (7)

Minimum Limit of Detection= 0.003 pCi/g

Recommended Soil Guide for Unrestricted Use= 100 pCi/g

During the 5 year period, average percentages of this limit were less than:

Onsite--0.12% Perimeter--0.002%

Regional--0.003%

NOTES:

- Numbers in parentheses represent the number of stations sampled annually to estimate mean concentrations.

CONCENTRATIONS OF PLUTONIUM-239,240 IN SOILS (pCi/g)

YEAR	ONSITE	PERIMETER	REGIONAL
1980	0.089 (22)	0.048 (10)	0.009 (6)
1981	0.030 (13)	0.054 (6)	0.028 (6)
1982	0.055 (10)	0.048 (6)	0.011 (6)
1983	0.018 (10)	0.011 (6)	0.003 (6)
1984	0.022 (10)	0.002 (6)	0.008 (7)

Minimum Limit of Detection= 0.002 pCi/g

Recommended Soil Guide for Unrestricted Use= 100 pCi/g

During the 5 year period, average percentages of the limit were less than:

Onsite--0.09% Perimeter--0.06%
Regional--0.03%

NOTES:

- Numbers in parentheses represent the number of stations sampled annually to estimate mean concentrations.

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Appendix D

APPENDIX D

DESCRIPTION OF HAZARDOUS WASTES

The table in this appendix is included in "RCRA Part B Permit Application," Vol. II, Los Alamos National Laboratory, Project No. 301017, January 1986 (Rev. November 1986).

EPA Hazardous Waste Number	Estimated Annual Quantity of Waste (lb)	Process/Disposal Codes (1)	Waste Type for Segregation (2)	Waste Materials (3)
P001	250(4)	S01	O	Warfarin (H)
P002	250(4)	S01	O	1-Acetyl-2-thiourea (H)
P003	250(4)	S01	O	Acrolein (H)
P004	250(4)	S01	O	Aldrin (H)
P005	250(4)	S01	O	Allyl alcohol (H)
P006	250(4)	S01, T04	R	Aluminum phosphide (H)
P007	250(4)	S01	O	Muscimol (H)
P008	250(4)	S01	O	4-Aminopyridine (H)
P009	250(4)	S01, T04	R	Ammonium picrate (R)
P010	250(4)	S01	M	Arsenic acid (H)
P011	250(4)	S01	M	Arsenic pentoxide (H)
P012	250(4)	S01	M	Arsenic trioxide (H)
P013	250(4)	S01, T01	M	Barium cyanide (H)
P014	250(4)	S01	O	Benzenethiol (H)
P015	6000	S01	M	Beryllium dust (H)
P016	250(4)	S01	O	Bis(chloromethyl) ether (H)
P017	250(4)	S01	O	Bromoacetone (H)
P018	250(4)	S01	O	Brucine (H)
P020	250(4)	S01	O	Dinoseb (H)
P021	250(4)	S01, T01	M	Calcium cyanide (H)
P022	250(4)	S01, T04	O	Carbon bisulfide (H)
P023	250(4)	S01	O	Chloroacetaldehyde (H)
P024	250(4)	S01	O	p-Chloroaniline (H)
P026	250(4)	S01	O	1-(o-Chlorophenyl) thiourea (H)
P027	250(4)	S01	O	3-Chloropropionitrile (H)
P028	250(4)	S01	O	Chloromethylbenzene (H)
P029	250(4)	S01, T01	M	Copper cyanide (H)
P030	250(4)	S01, T01	M	Cyanide salts (H)
P031	250(4)	S01, T04	M	Cyanogen (H)
P033	250(4)	S01, T04	M	Cyanogen chloride (H)
P034	250(4)	S01	O	2-Cyclohexyl-4,6-dinitrophenol (H)
P036	250(4)	S01	O	Dichlorophenylarsine (H)
P037	250(4)	S01	O	Dieldrin (H)
P038	250(4)	S01	O	Diethylarsine (H)
P039	250(4)	S01	O	Disulfoton (H)
P040	250(4)	S01	O	Thionazin (H)
P041	250(4)	S01	O	Paraoxon (H)
P042	250(4)	S01	O	Epinephrine (H)
P043	250(4)	S01	A	Isoflurophate (H)
P044	250(4)	S01	O	Dimethoate (H)
P045	250(4)	S01	O	Thiofanox (H)
P046	250(4)	S01	O	Phentermine (H)
P047	250(4)	S01	O	Dinitrocresol (H)
P048	250(4)	S01	O	2,4-Dinitrophenol (H)
P049	250(4)	S01	O	2,4-Dithiobiuret (H)
P050	250(4)	S01	O	Endosulfan (H)
P051	250(4)	S01	O	Endrin (H)
P054	250(4)	S01, T01, T04	O	Ethylenimine (H)
P056	250(4)	S01, T04	G	Fluorine (H)
P057	250(4)	S01	O	Fluoroacetamide (H)
P058	250(4)	S01	O	Fluoroacetic acid, sodium salt (H)
P059	250(4)	S01	O	Heptachlor (H)
P060	250(4)	S01	O	Hexachlorohexahydro-exo, (H) exo-dimethanonaphthalene

EPA Hazardous Waste Number	Estimated Annual Quantity of Waste (1b)	Process/Disposal Codes (1)	Waste Type for Segregation (2)	Waste Materials (3)
P062	250(4)	S01	A	Tetraphosphoric acid, hexaethyl ester (H)
P063	250(4)	S01, T04	CN	Hydrogen cyanide (H)
P064	250(4)	S01, T04	A	Isocyanic acid, methyl ester (H)
P065	250(4)	S01, T04	R	Mercury fulminate (R, T)
P066	250(4)	S01	O	Methomyl (H)
P067	250(4)	S01	O	1,2-Propylenimine (H)
P068	250(4)	S01	O	Methylhydrazine (H)
P069	250(4)	S01, T04	CN	2-Methyllactonitrile (H)
P070	250(4)	S01	O	Aldicarb (H)
P071	250(4)	S01, T04	O	Methyl parathion (H)
P072	250(4)	S01	O	2-Naphthylthiourea (H)
P073	250(4)	S01, T01, T04	M	Nickel tetracarbonyl (H)
P074	250(4)	S01, T01	CN	Nickel cyanide (H)
P075	250(4)	S01	O	Nicotine and salts (H)
P076	250(4)	S01, T01, T04	G	Nitric oxide (H)
P077	250(4)	S01, T04	O	p-Nitroaniline (H)
P078	250(4)	S01, T01	G	Nitrogen dioxide (H)
P081	250(4)	S01, T04	R	Nitroglycerine (R)
P082	250(4)	S01	O	Dimethylnitrosamine (H)
P084	250(4)	S01	O	N-Nitrosomethylvinylamine (H)
P085	250(4)	S01	O	Schradan (H)
P087	250(4)	S01	M	Osmium tetroxide (H)
P088	250(4)	S01	O	Endothall (H)
P089	250(4)	S01	O	Parathion (H)
P092	250(4)	S01	M	Phenylmecuric acetate (H)
P093	250(4)	S01, T03	O	N-Phenylthiourea (H)
P094	250(4)	S01, T03	O	Phorate (H)
P095	250(4)	S01, T03	O	Phosgene (H)
P096	250(4)	S01, T04	G	Phosphine (H)
P097	250(4)	S01, T03	O	Famphur (H)
P098	250(4)	S01, T01	CN	Potassium cyanide (H)
P099	250(4)	S01, T01	CN	Potassium silver cyanide (H)
P101	250(4)	S01, T03	CN	Acrylonitrile (H)
P102	250(4)	S01, T03	O	Propargyl alcohol (H)
P103	250(4)	S01, T03	M	Selenourea (H)
P104	250(4)	S01, T01	CN	Silver cyanide (H)
P105	250(4)	S01	O	Sodium azide (H)
P106	250(4)	S01, T01	CN	Sodium cyanide (H)
P107	250(4)	S01, T04	S	Strontium sulfide (H)
P108	250(4)	S01, T03	O	Strychnidin-10-one, and salts (H)
P109	250(4)	S01, T03	O	Sulfotepp (H)
P110	250(4)	S01, T03	O	Tetraethyl lead (H)
P111	250(4)	S01, T03	O	Tetraethyl pyrophosphate(H)
P112	250(4)	S01, T03, T04	R	Tetranitromethane (R)
P113	250(4)	S01	M	Thallic oxide (H)
P114	250(4)	S01	M	Thallium selenite (H)
P115	250(4)	S01	M	Thallium sulfate (H)
P116	250(4)	S01	O	Thiosemicarbazide (H)
P118	250(4)	S01, T03	O	Trichloromethanethiol (H)
P119	250(4)	S01	A	Vanadic acid, ammonium salt (H)
P120	250(4)	S01	M	Vanadium pentoxide (H)
P121	250(4)	S01, T01	CN	Zinc cyanide (H)
P122	250(4)	S01, T04	R	Zinc phosphide (R, T)
P123	250(4)	S01, T03	O	Toxaphene (H)

EPA Hazardous Waste Number	Estimated Annual Quantity of Waste (lb)	Process/Disposal Codes (1)	Waste Type for Segregation (2)	Waste Materials (3)
U001	250(4)	S01, T03	O	Acetaldehyde (I)
U002	1000	S01, T03	O	Acetone (I)
U003	250(4)	S01, T03	O	Acetonitrile (I, T)
U004	250(4)	S01, T03	O	Acetophenone (T)
U005	250(4)	S01	O	2-Acetylaminofluorene (T)
U006	250(4)	S01, T04	R	Acetyl chloride (C, R, T)
U007	250(4)	S01, T03	O	Acrylamide (T)
U008	250(4)	S01, T03, T04	A	Acrylic acid (I)
U009	250(4)	S01, T03	O	Acrylonitrile (T)
U010	250(4)	S01, T03	O	Mytomycin-C (T)
U011	250(4)	S01, T03	O	Amitrole (T)
U012	250(4)	S01, T03	O	Aniline (I, T)
U014	250(4)	S01, T03	O	Auramine (T)
U015	250(4)	S01, T03	O	Azaserine (T)
U016	250(4)	S01, T03	O	3,4-Benzacridine (T)
U017	250(4)	S01, T03	O	Benzal chloride (T)
U018	250(4)	S01, T03	O	1,2-Benzanthracene (T)
U019	250(4)	S01	O	Benzene (I, T)
U020	250(4)	S01, T03, T04	R	Benzenesulfonyl chloride (C, R)
U021	250(4)	S01, T03	O	Benzidine (T)
U022	250(4)	S01, T03	O	3,4-Benzopyrene (T)
U023	250(4)	S01, T03, T04	R	Benzotrichloride (C, R, T)
U024	250(4)	S01, T03	O	Bis(2-chloroethoxy) methane (T)
U025	250(4)	S01, T03	O	Dichloroethyl ether (T)
U026	250(4)	S01, T03	O	Chlornaphazine (T)
U027	250(4)	S01, T03	O	2,2 Oxybis-2-chloropropane (T)
U028	250(4)	S01, T03	O	Bis(2-ethylhexyl) phthalate (T)
U029	250(4)	S01, T03	G	Methyl bromide (T)
U030	250(4)	S01, T03	O	4-Bromophenyl phenyl ether (T)
U031	250(4)	S01, T03	O	n-Butyl alcohol (I)
U032	250(4)	S01, T01	M	Calcium chromate (T)
U033	250(4)	S01, T04	G	Carbon oxyfluoride (R, T)
U034	250(4)	S01, T03	O	Chloral (T)
U035	250(4)	S01, T03	O	Chlorambucil (T)
U036	250(4)	S01, T03	O	Chlordane (T)
U037	250(4)	S01, T03	O	Chlorobenzene (T)
U038	250(4)	S01, T03	O	Chlorobenzilate (T)
U039	250(4)	S01, T03	O	4-chloro-m-cresol (T)
U041	250(4)	S01, T03	O	Epichlorohydrin (T)
U042	250(4)	S01, T03, T04	O	Chloroethyl vinyl ether (T)
U043	250(4)	S01, T04	G	Chloroethene (T)
U044	1000	S01, T03	O	Chloroform (T)
U045	250(4)	S01, T04	G	Methyl chloride (I, T)
U046	250(4)	S01, T03	O	Chloromethoxymethane (T)
U047	250(4)	S01, T03	O	-Chloronaphthalene (T)
U048	250(4)	S01, T03	O	o-Chlorophenol (T)
U049	250(4)	S01, T03	O	4-Chloro-o-toluidine, hydrochloride (T)
U050	250(4)	S01, T03	O	Chrysene (T)
U051	250(4)	S01, T03	O	Creosote (T)
U052	250(4)	S01, T03	O	Cresols (T)
U053	250(4)	S01, T03	O	Crotonaldehyde (T)
U055	250(4)	S01, T03	O	Cumene (I)
U056	250(4)	S01, T03	O	Cyclohexane (I)

EPA Hazardous Waste Number	Estimated Annual Quantity of Waste (lb)	Process/Disposal Codes (1)	Waste Type for Segregation (2)	Waste Materials (3)
U057	250(4)	S01, T03	O	Cyclohexanone (I)
U058	250(4)	S01, T03	O	Cyclophosphamide (T)
U059	250(4)	S01, T03	O	Daunomycin (T)
U060	250(4)	S01, T03	O	DDD (T)
U061	250(4)	S01, T03	O	DDT (T)
U062	250(4)	S01, T03	O	Diallate (T)
U063	250(4)	S01, T03	O	Dibenzanthracene (T)
U064	250(4)	S01, T03	O	Dibenzopyrene (T)
U066	250(4)	S01, T03	O	1,2-Dibromo-3-chloropropane (T)
U067	250(4)	S01, T03	O	Ethylene dibromide (T)
U068	250(4)	S01, T03	O	Methylene bromide (T)
U069	250(4)	S01, T03	O	Dibutyl phthalate (T)
U070	250(4)	S01, T03	O	o-Dichlorobenzene (T)
U071	250(4)	S01, T03	O	m-Dichlorobenzene (T)
U072	250(4)	S01, T03	O	p-Dichlorobenzene (T)
U073	250(4)	S01, T03	O	3,3-Dichlorobenzidine (T)
U074	250(4)	S01, T03	O	1,4-Dichloro-2-butene (T, I)
U075	250(4)	S01, T04	G	Dichlorodifluoromethane (T)
U076	250(4)	S01, T03	O	1,1-Dichloroethane (T)
U077	250(4)	S01, T03	O	Ethylene dichloride (T)
U078	250(4)	S01, T03	O	1,1-Dichloroethylene (T)
U079	250(4)	S01, T03	O	1,2-Dichloroethylene (T)
U080	3000	S01, T03	O	Dichloromethane (T)
U081	250(4)	S01, T03	O	2,4-Dichlorophenol (T)
U082	250(4)	S01, T03	O	2,6-Dichlorophenol (T)
U083	250(4)	S01, T03	O	1,2-Dichloropropane (T)
U084	250(4)	S01, T03	O	1,3-Dichloropropene (T)
U085	250(4)	S01, T03	O	1,2:3,4-Diepoxybutane (I, T)
U086	250(4)	S01, T03	O	N,N-Diethylhydrazine (T)
U087	250(4)	S01, T03	O	O,O-Diethyl-s-methyl-dithiophosphate (T)
U088	250(4)	S01, T03	O	Diethyl phthalate (T)
U089	250(4)	S01, T03	O	Diethylstilbestrol (T)
U090	250(4)	S01, T03	O	Dihydrosafrole (T)
U091	250(4)	S01, T03	O	3,3-Dimethoxybenzidine (T)
U092	250(4)	S01, T04	O	Dimethylamine (I)
U093	250(4)	S01, T03	O	Dimethylaminoazobenzene (T)
U094	250(4)	S01, T03	O	7,12-Dimethylbenzanthracene (T)
U095	250(4)	S01, T03	O	3,3-Dimethylbenzidine (T)
U096	250(4)	S01, T03	R	- -Dimethylbenzylhydroperoxide (R)
U097	250(4)	S01, T03	O	Dimethylcarbamoyl chloride (T)
U098	250(4)	S01, T03	O	1,1-Dimethylhydrazine (T)
U099	250(4)	S01, T03	O	1,2-Dimethylhydrazine (T)
U101	250(4)	S01, T03	O	2,4-Dimethylphenol (T)
U102	250(4)	S01, T03	O	Dimethyl phthalate (T)
U103	250(4)	S01, T03	O	Dimethyl sulfate (T)
U105	250(4)	S01, T03	O	2,4-Dinitrotoluene (T)
U106	250(4)	S01, T03	O	2,6-Dinitrotoluene (T)
U107	250(4)	S01, T03	O	Di-n-octyl phthalate (T)
U108	250(4)	S01, T03	O	1,4-Dioxane (T)
U109	250(4)	S01, T03	O	1,2-Diphenylhydrazine (T)
U110	250(4)	S01, T03	O	Dipropylamine (I)
U111	250(4)	S01, T03	O	Di-n-propylnitrosamine (T)
U112	250(4)	S01, T03, T04	O	Ethyl acetate (I)

EPA Hazardous Waste Number	Estimated Annual Quantity of Waste (lb)	Process/Disposal Codes (1)	Waste Type for Segregation (2)	Waste Materials (3)
U113	250(4)	S01, T03, T04	O	Ethyl acrylate (I)
U114	250(4)	S01, T03	O	1,2 Ethanediylbiscarbamodithioc acid (T)
U115	250(4)	S01, T03, T04	O	Ethylene oxide (I, T)
U116	250(4)	S01, T03	O	Ethylene thiourea (T)
U117	250(4)	S01, T03, T04	O	Ethyl ether (I)
U118	250(4)	S01, T03, T04	O	Ethyl methacrylate (T)
U119	250(4)	S01, T03	O	Ethyl methanesulfonate (T)
U120	250(4)	S01, T03	O	Benzo(j,k)fluorene (T)
U121	250(4)	S01	O	Trichlorofluoromethane (T)
U122	250(4)	S01, T03	G	Formaldehyde (T)
U123	250(4)	S01	A	Formic acid (C, T)
U124	250(4)	S01, T03	O	Furan (I)
U125	250(4)	S01, T03	O	Furfural (I)
U126	250(4)	S01, T03	O	Glycidylaldehyde (T)
U127	250(4)	S01, T03	O	Hexachlorobenzene (T)
U128	250(4)	S01, T03	O	Hexachlorobutadiene (T)
U129	250(4)	S01, T03	O	Hexachlorocyclohexane (T)
U130	250(4)	S01, T03	O	Hexachloropentadiene (T)
U131	250(4)	S01, T03	O	Hexachloroethane (T)
U132	250(4)	S01, T03	O	Hexachlorophene (T)
U133	250(4)	S01, T03, T04	R	Hydrazine (R, T)
U134	250(4)	S01, T01, T04,	G	Hydrogen fluoride (C, T)
U135	250(4)	S01, T04	G	Hydrogen sulfide (T)
U136	250(4)	S01	A	Cacodylic acid (T)
U137	250(4)	S01, T03	O	Indeno (1,2,3) pyrene (T)
U138	250(4)	S01, T03	O	Methyl iodide (T)
U139	250(4)	S01, T03	O	Iron dextran (T)
U140	250(4)	S01, T03	O	Isobutyl alcohol (I, T)
U141	250(4)	S01, T03	O	Isosafrole (T)
U142	250(4)	S01, T03	O	Kepone (T)
U143	250(4)	S01, T03	O	Lasiocarpine (T)
U144	250(4)	S01	M	Lead acetate (T)
U145	250(4)	S01	M	Lead phosphate (T)
U146	250(4)	S01	M	Lead subacetate (T)
U147	250(4)	S01, T03	O	Maleic anhydride (T)
U148	250(4)	S01, T03	O	Maleic hydrazide (T)
U149	250(4)	S01, T03	O	Malononitrile (T)
U150	250(4)	S01, T03	O	Melphalan (T)
U151	250(4)	S01, T03	M	Mercury (T)
U152	250(4)	S01	O	Methacrylonitrile (I, T)
U153	250(4)	S01, T03	G	Methanethiol (I, T)
U154	250(4)	S01, T03	O	Methanol (I)
U155	250(4)	S01, T03	O	Methapyrilene (T)
U156	250(4)	S01, T03	O	Methyl chlorocarbonate (I, T)
U157	1000	S01, T03	O	3-Methylcholanthrene (T)
U158	250(4)	S01, T03	O	4,4-Methylenebis[2-chloroaniline] (T)
U159	1000	S01, T03	O	Methyl ethyl ketone (I, T)
U160	250(4)	S01, T03, T04	R	Methyl ethyl ketone peroxide (R, T)
U161	250(4)	S01, T03	O	Methyl isobutyl ketone (I)
U162	250(4)	S01, T03	O	Methyl methacrylate (I, T)
U163	250(4)	S01, T03	O	N-Methyl-N-nitro-nitrosoguanidine (T)
U164	250(4)	S01, T03	O	Methylthiouracil (T)