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Preliminary Problem Definition Decommissioning the Hanford Site

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April 1972

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Prepared by the Staffs of:

Atlantic Richfield Hanford Company

Battelle-Northwest

Douglas United Nuclear, Inc.

Westinghouse Hanford Company

Compiled by:

M. J. Szulinski

JUN 1990
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Atlantic Richfield Hanford Company
Richland, Washington 99352

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ARH-2164

PRELIMINARY PROBLEM DEFINITION
DECOMMISSIONING THE HANFORD SITE

April 1972

Prepared by the Staffs of:

Atlantic Richfield Hanford Company

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Westinghouse Hanford Company

Compiled by:

M. J. SZULINSKI

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PRELIMINARY PROBLEM DEFINITION
DECOMMISSIONING THE HANFORD SITE

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The compilation of this study would not have been possible without the available background information in the fields of radiochemical waste management, ecology, and environmental safety that have been accumulated over the years under the sponsorship of many Atomic Energy Commission (AEC) Divisions. This study was originally compiled and coordinated by Mr. R. E. Tomlinson and completed by Mr. M. J. Szulinski, Atlantic Richfield Hanford Company (ARHCO) under the guidance of Mr. O. J. Elgert (AEC-RL) and Mr. J. H. Warren (ARHCO). Contractor representatives included Mr. R. W. Harvey, Mr. M. J. Szulinski (ARHCO), Mr. E. E. Voiland, Mr. A. M. Platt, Battelle Northwest Laboratory (BNWL), Mr. R. T. Jessen and Mr. J. T. Stringer, Douglas United Nuclear (DUN), and Mr. W. R. Felts, Westinghouse Hanford Company. Supporting these representatives were numerous engineers, estimators, and secretaries who made this report possible.

SECTION I

INTRODUCTION

Hanford was commissioned as a plutonium production site in 1942 by the Manhattan District of the United States Army Corps of Engineers. In 1946 responsibility for the operation of the Hanford site was transferred to the newly created Atomic Energy Commission (AEC). Plutonium production was started in 1944 and has continued at varying rates. By January 1971 all operating reactors had been shut down with the exception of N Reactor. This reactor continues to be operated for two purposes: primarily, production of plutonium for AEC programs and, secondarily, generation of steam from which the Washington Public Power Supply System (WPPSS) produces electricity. It is presently planned to operate N Reactor under this mode until FY 1974.

At the termination of Hanford Production Operations the site will consist of approximately 800 buildings ranging from small, uncontaminated shelters to massive, highly-contaminated concrete processing facilities. These are located on a land area of 560 square miles. Of this area approximately 90 square miles are influenced by nuclear operations or by contamination to the extent that public access would have to be controlled.

The purpose of this document is to determine preliminary cost and time requirements for alternative actions that would be required to decommission the Hanford site. Alternatives include preparation for safe shut down status with either unrestricted or limited release of some or all of the land area.

Decommissioning Hanford requires that the production facilities and areas be placed in a stable condition such that possibility of either polluting the environment with radioactive materials or of affecting the local ecology by exposure to radiation is minimized. The degree of stabilization can vary over a wide range. For example, a minimum decontamination effort would require that an operating status be maintained. Ventilation equipment would need to remain in operation, surveillance crews would be needed to monitor radioactively contaminated areas, and operating crews would be needed to correct deficiencies as they develop. This alternative would probably

not be satisfactory for periods exceeding a few decades. At the other extreme, the site could be reverted to an uncontaminated state such that the total area could be released for unrestricted use by the public. This would require that all production produced radionuclides be removed from the site (within an acceptable definition of the uncontaminated state) and transported for storage at some other approved site. This is not considered an acceptable alternative since extremely large volumes of contaminated materials would need to be packaged according to DOT regulations for transport to a waste repository. This material would consist of high level waste, razed process buildings and equipment, disinterred materials and equipment from burial grounds, and contaminated soil excavated in some cases down to ground water (200 to 300 feet below the surface). The cost of such an operation would be many tens of billions of dollars and depending upon the rate of effort might require hundreds of years to complete. The cost would be out of proportion to the benefit, that is, very expensive real estate would result while significant exposure to personnel and possibility of accidental release of contamination would occur during the operation. Further, this alternative discounts the fact that the Hanford site is likely to be one of the more acceptable sites for storage of radioactive materials. The wisdom of selecting Hanford as a nuclear processing site is probably more apparent now than when it was originally selected. The site provides the following considerations:

- Isolation from the public,
- The 200 Area plateau consists of 200 to 300 feet of sediments above the water table,
- There is an extended travel time for water to reach the boundary of the site from the 200 Area plateau,
- The climate is arid with a minimum possibility of driving surface contamination to the water table.

The optimum treatment of the Hanford site following cessation of production operations will lie between these extremes. Planning for the preparation of the Hanford site for maximum utility at minimum cost (consistent with safety) in consideration with the intended use of the site is a problem of several dimensions or variables. The surface of the site contains many contaminated areas and facilities; high level wastes are stored in tanks or buried near the surface; the composition and level of the contamination is variable; potential uses of the site could allow underground contamination or could require complete removal of radioactivity. A strong consideration in planning will be the disposition of plutonium since plutonium contaminated areas will require hundreds of thousands of years for decay (geologic times)

while decay of fission products will require hundreds of years (foreseeable future).

Since the Hanford site provides advantages for the location of reactors as well as those indicated for storage of radioactive wastes, it is likely that the area will be used for new nuclear activities. As such, buried contamination may be acceptable. It will likely be desirable to relocate some buried materials and to retain high level wastes at Hanford. This might be continued storage as solidified wastes in their current location or might be some new isolated or immobilized storage mode. Production facilities such as reactors and processing plants will likely be cleaned of loose radioactivity only which will subsequently require that they be entombed or sealed.

Due to the complexity of the decommissioning, this study is of a preliminary nature with the objective of establishing relative costs for alternative actions. Costs are based in some cases on assumed information. Support of a decommissioning plan will require much additional work in characterizing the site such as determining the nature, location and degree of contamination, and developing alternative storage modes for the high level wastes. An early requirement to support a basis for those studies will be formulation of limits of radionuclides in solid matricies that will be nationally recognized as uncontaminated.

The assumptions made in the conduct of this study are as follows:

N Reactor will be operated through FY 1974 and then will be retired. The reactor will be transferred to WPPSS jurisdiction if it is to be operated beyond FY 1974.

KE and KW Reactors will be held in standby through FY 1977 and then will be retired. All other reactors will be retired prior to FY 1974.

Fuel fabrication and reprocessing facilities will be held in standby as needed to support standby reactors and will be retired with KE and KW Reactors.

Z Plant facilities will continue to function as an AEC plutonium processing and warehousing center through at least FY 1980.

The facilities involved in the FFTF-LMFBR program will remain in active status for the foreseeable future. Similarly, 300 Area facilities now supported by the Divisions of Research and of Biology and Medicine will remain active indefinitely.

SECTION II

SUMMARY

Releasing the Hanford site for controlled or for unrestricted public use requires pioneering definition of policy. For this study the general criteria for release or public use of Hanford areas are:

- Public use or access to decommissioned sites shall not result in risk to human health and welfare from noxious chemicals or radioactive materials.
- Radiation exposure to humans at the decommissioned sites shall not exceed 10 percent of that listed in AEC Manual Chapter 0524, Appendix Part II.
- Attractive nuisances and physical hazards will be minimized.
- Harmful effects to naturally-occurring biota will be minimized and attention will be given to restoration of aesthetic values.

For the purposes of this document the various elements of the Hanford site are classified in one of three categories as defined below. Costs are estimated, when appropriate, for the actions required to change an element to a less restrictive category.

Category A would include those facilities and land areas which may be released to the public without restriction.

Category B would include those facilities and land areas to which the public may have conditional access. For example, the purposeful use of heavy equipment (e.g., jackhammer, backhoe, etc.) would be required to reach contaminated materials. All points accessible without such an overt act would be made to meet the criteria of Category A. The use of groundwater, or large additions to the groundwater, might be prohibited in some Category B Areas. Similarly, public activities might be restricted within five miles of a production reactor, three miles of a radiochemical processing facility, or one mile of the FFTF, when these areas are in an active or standby status.

Category C would include those facilities and associated land areas for which there is a projected AEC programmatic need.

In the absence of nationally acceptable limits for the concentration of radionuclides in solid matrices, it was assumed for the purposes of this study that solids containing less than 100 picocuries/gram plutonium, 100 nanocuries/gram ^{14}carbon, or 2 nanocuries/gram fission products can be treated as uncontaminated. In an alternative case 2 nanocuries/gram plutonium was considered uncontaminated.

The task of decommissioning all or part of the Hanford site will require integration of developmental and operational projects. First, the individual site components need to be characterized and the feasibility and economics of alternative actions need to be determined. Technological development programs will be required to provide the know-how to achieve decommissioning objectives. Selection of alternatives will require engineering studies with Process Development support. A definitive plan will need to be formulated and, finally, the operating work and demonstration of contamination removal or stabilization must be accomplished.

Two basic alternatives were studied. These were:

- Contaminated areas stabilized with concrete pads or moved to the 200 Area plateau; facilities sealed or entombed. Buried uranium and thorium would remain in the 300 Area.

- Plutonium and ^{14}C removed; remaining radionuclides stabilized with concrete pads or entombed. Buried uranium and thorium would remain in the 300 Area.

These alternatives are consolidated into three potential plans. In Plan I all contaminated materials not required in active AEC programs would be consolidated on the 200 Areas plateau to the extent practical. The production reactors would be entombed and residual activity would be sealed or isolated so that public access to the reservation, aside from the 200 Areas plateau, would be permitted with little or no restriction. In Plan II the 200 Areas are decommissioned and areas with buried radioactivity are fixed or stabilized by covering with concrete pads to achieve a Category B status. In Plan III all plutonium-contaminated materials would be removed and fission products would be stabilized for Category B except for those involved in ongoing programs. Two alternatives were considered under Plan III; the first considers less than 100 picocuries/gram, and the second, less than 2 nanocuries/gram, as uncontaminated.

During Plans I and II facilities and land areas would be

cleaned, surveyed, and excessed or released in a stepwise fashion as rapidly as programmatic needs and funding permit. Some contaminated materials from the 100 and 300 Areas would be packaged and accumulated on the 200 Areas plateau for storage. Processing facilities, reactors, and storage basins would be entombed in concrete and contaminated soil would be isolated with concrete pads. A Category B status would be achieved.

Costs and schedules are summarized in Table I. Under Plan I the decommissioning of the 100 Areas could start as early as FY 1974. Except for the 200 Areas plateau and isolated areas housing AEC-sponsored activities, the Hanford site could probably be released for non-AEC use by about 1985.

Many of the 200 Areas facilities will be operating until the late 1970's and Plan II activities will necessitate its continuing classification as Category C. There seems to be little incentive to proceed with the stabilization of the 200 Areas particularly if the mechanics of stabilization would complicate subsequent Plan III actions. It may be prudent either to defer most of the 200 Areas Plan II activities until a decision is made to proceed with Plan III or to defer it indefinitely. Deferral of major actions or expenditures for Plan II will allow the technology required for decommissioning and for long-term storage of high level wastes to mature, which, in turn, would result in more realistic waste management objectives and programs.

During Plan III the site would be prepared to achieve a condition whereby the radionuclides would decay to innocuous levels in the foreseeable future. All plutonium-contaminated materials would be placed in an approved repository located either at Hanford or at another location. Fission products which contain no alpha contamination would be left in place and protected as in Category B for eventual decay to innocuous levels. While Plan III could probably be activated as early as 1980, studies in progress are likely to show that the start of Plan III could be safely deferred for decades or centuries. Costs for Plan III are sensitive to the plutonium concentration which can be considered as uncontaminated, upon site measurements to locate and quantify plutonium contamination, and upon the success of technology programs to decontaminate plutonium to acceptable levels. It is estimated that Plan III-A, plutonium reduced to 100 picocuries/gram, would cost in the order of 1500 to 4000 million dollars, while Plan III-B, plutonium reduced to 2 nanocuries/gram, might cost in the order of 500 to 1500 million dollars. Each would require decades to complete.

TABLE I

SUMMARY - HANFORD DECOMMISSIONING

TECHNOLOGY	TIMING	SUBTOTALS DOLLARS - MILLIONS PLAN I AND II	PLAN III	TOTALS
Characterization and Preliminary Engineering	1972 to 1980	3.8		
Biological Interactions	1972 to 1977	0.46		
Surficial Hydrology	1972 to 1975	1.30		
Water in Vadose Zone	1972 to 1974	0.50		
Site Seismicity and Engineering	1972 to 1976	2.84		
Solid Waste Handling				
Technology	1972 to 1974	3.0		
Demonstration	1973 to 1980	6.6	29.7	
Waste Processes	1972 to 1977		2.5	
Deep Storage Investigations				
Technology	1972 to 1976		9.1	
Demonstration	1977 to 1980		11.1	
TECHNOLOGY TOTAL		19.0	72.0 (2)	
OPERATIONAL				
Plan I	10 to 15 years	84		103 (1)
Plan II	10 to 15 years	370		390 (1)
Plan I and II	12 to 25 years	450		470 (1)
Plan III-A	-	-	1500 to 5000 (3)	1500 to 4000 (3)
Plan III-B			500 to 1500 (3)	500 to 1500 (3)

(1) Includes Technology Development.
(2) Includes $19 million required for Plans I and II.
(3) Includes only removal and packaging costs. Processing, transportation, and storage costs, if any, would be additive.

SECTION III

CURRENT STATUS OF SITE

The 27 years of nuclear operations at Hanford have resulted in a large number of buildings, both contaminated and uncontaminated; contaminated equipment; waste storage sites; and some groundwater contaminated with both nitrate and radionuclides. Although the total volume of fission products produced at Hanford, particularly those with half-lives of significance to the Waste Management Program, is relatively small, the volume of contaminated materials is large and composition varies over a very wide range. For example, it is estimated that about 10^7 cubic feet of salt cake will be in storage with fission product concentrations of about 1 to 100 curies per cubic foot. Most of the fission products, other than the encapsulated cesium and strontium, are contained in the salt cake. Buried solids consisting of cellulosic materials, rubber, glass, plastics, and discarded metal equipment are also estimated at about 10^7 cubic feet with contamination levels ranging from essentially uncontaminated to about 100 curies per cubic foot. Contaminated soils in crib disposal areas and ponds are estimated roughly at 10^8 to 10^{10} cubic feet with contamination levels of essentially uncontaminated to about one curie per cubic foot. Plutonium in these materials varies from uncontaminated to about 25 grams per cubic foot.

The facilities are grouped into operating areas as indicated on the project map, Figure 1. The surface and near-surface contaminated areas outside the limited areas are also indicated on this map. The groundwater contamination, total beta (expressed as ^{106}Ru), tritium and nitrate ion, are indicated on the project maps in Figures 2 to 4, respectively. These chemical and radionuclide concentrations with the exception of small areas are at or near acceptable limits (within the criteria for this study), and should not seriously affect use of the groundwater for most industrial applications. These factors are under current study for groundwater management. A summary of current building use is presented in Table II.

Reactor Areas

The storage locations of all radioactive wastes are shown in Figures 5 through 10 and the inventories of solid wastes are

tabulated in Table III. In the effluent water systems of the reactors, ^{152}Eu is the dominant remaining contaminant, and it will require about 150 years to decay to 2 nanocuries/gram. Plutonium is present at a concentration of 0.5 nanocuries/gram. In the sediment of the reactor metal storage basins, ^{90}Sr and ^{137}Cs are the dominant contaminants and will require up to 200 years to decay to less than 2 nanocuries/gram. Plutonium is also present in levels of 0.6 to 2 nanocuries/gram. In the solid waste burial grounds and the reactor shields, ^{60}Co is the dominant radionuclide.

Nearly all of these isotopes will be decayed to less than 2 nanocuries/gram within 100 years. However, ^{14}C is present in the graphite core and may be present in the silica gel in the 115 Buildings and in the burial grounds where spent silica gel has been buried. Concentrations greater than 3 microcuries/gram can be expected. Innocuous levels for this radionuclide have not been defined.

Separations Areas

The storage locations of radioactive wastes in the 200 Areas are shown in Figures 11 and 12. A summary of 200 Areas stored wastes, other than process waste, is tabulated in Table IV. Details on 200 Areas buried wastes and on contaminated areas are summarized in the Appendix. Process wastes are stored in underground tanks and will be essentially converted to moist nitrate and nitrite salt cakes by 1976 by the In-Tank Solidification (ITS) process. The tank locations are indicated on the area maps. The inventories are given in the classified addendum of CPD-220, Revision 1, "Hanford Radioactive Waste Management Plans," O. J. Elgert, et al. Sites outside the limited areas, but under 200 Areas operational control, contain the inventory presented in Table V.

300 Area

The storage locations of radioactive wastes in the 300 Area are shown in Figure 13. The stored inventory of uranium in the 300 Area solid waste burial sites is less than 500 pounds. In addition to uranium the process pond areas contain substantial amounts of copper, fluoride, sulfate, and nitrate compounds.

Burial Ground Number 1 (located east of the 333 Building) also contains some plutonium and fission products. The locations of radionuclides stored outside the 300 Area, but under 300 Area control, are indicated on Figure 1 and tabulated in Table VI.

Washington State Lease Land

Land on the 200 Areas plateau between 200 East and 200 West Areas has been leased to Washington State. A portion of

this land has been subleased for a radioactive materials burial operation. Management of this area is not included in this study; however, it is located within the proposed three-mile controlled zone and should not cause significant changes in conclusions.

TABLE II

SUMMARY - BUILDING USE

Areas	Total Number of Buildings	Present Status			Proposed Status (6-30-71)			
		In Service	Standby	Retired	In Service	Standby	Retired in Place	
							Noncontaminated	Contaminated
100 AREAS	255	104	83	68	83	41	86	45
100-B-C	50	5	42	3	4	0	34	12
100-D-DR	51	29	0	22	9	0	28	14
100-F	47	30	0	17	30	0	7	10
100-H	29	3	0	26	3	0	17	9
100-KE-KW	51	10	41	0	10	41	0	0
100-N	27	27	0	0	27	0	0	0
200 AREAS	288	215	0	73	215	0	21	52
200-E	136	120	0	16	120	0	2	14
200-W	140	95	0	45	95	0	9	36
Other	12	0	0	12	0	0	10	2
300 AREA	148	135	4	9	135	4	7	2
600 AREA	55	49	0	6	49	—	0	6
700 AREA	10	10	0	0	10	0	0	0
1100 AREA	19	19	0	0	19	0	0	0
1400 AREA	17	17	0	0	17	0	0	0
3000 AREA	24	21	3	0	21	3	0	0
TOTAL ALL AREAS	816	570	90	156	549	48	114	105

TABLE III

100 AREAS APPROXIMATE INVENTORIES OF STORED WASTE

Location	Radioactive Inventory Half-Life <1 Year (Ci)	Radioactive Inventory Half-Life >1 Year (Ci)
100-B		
2 B-C Reactors		30,000 (^{60}Co)
2 Metal Storage Basins		20 (^{90}Sr, ^{137}Cs, ^{239}Pu)
3 107 Basins and Soil		150 (^{152}Eu, ^{239}Pu)
Solid Wastes	10,000	4,000 (^{60}Co)
100-D		
2 D-DR Reactors		25,000 (^{60}Co)
2 Metal Storage Basins		20 (^{90}Sr, ^{137}Cs, ^{239}Pu)
2 107 Basins and Soil		100 (^{152}Eu, ^{239}Pu)
Solid Wastes		4,500 (^{60}Co)
100-F		
1 F Reactor		10,000 (^{60}Co)
1 Metal Storage Basin		10 (^{90}Sr, ^{137}Cs, ^{239}Pu)
1 107 Basin and Soil		50 (^{152}Eu, ^{239}Pu)
Solid Wastes		2,200 (^{60}Co)
100-H		
1 H Reactor		10,000 (^{60}Co)
1 Metal Storage Basin		10 (^{90}Sr, ^{137}Cs, ^{239}Pu)
1 107 Basin and Soil		50 (^{152}Eu, ^{239}Pu)
Solid Wastes		4,000 (^{60}Co)
100-K		
2 KE-KW Reactors		20,000 (^{60}Co)
2 Metal Storage Basins		100 (^{90}Sr, ^{137}Cs, ^{239}Pu)
6 107 Basins and Soil		300 (^{152}Eu, ^{239}Pu)
Solid Wastes	60,000	15,000 (^{60}Co)
100-N		
1 N Reactor		10,000 (^{60}Co)
Crib	6,500	500 (^{60}Co)
Spacer Storage	150,000	2,000 (^{60}Co)

NOTE: ^{14}C data in the reactors and reactor systems are insufficient to quantify at this time.

TABLE IV

STORED RADIOACTIVE WASTES - 200 AREAS[1]

Waste Type		Type of Storage	Where Stored	Volume	Pu (kg)	Decayed[2] Ci
Solid:	Dry Waste	Long	Ground	$2.6 \times 10^6 ft^3$	344	(3)
Solid:	Industrial Waste	Long	Ground	$2.4 \times 10^6 ft^3$	15.8	(3)
Solid:	Industrial Waste	Int.	Tunnel	$30,500\ ft^3$	(3)	(3)
Liquid:	Intermediate Level	Long	Ground (cribs)	7.0×10^9	194	35,500
Liquid:	Intermediate Level	Long	Ground (spec. ret. cribs)	37×10^6 (gal)	76	29,900
Liquid:	Low Level	Long	Ground (pond)	119×10^9 (gal)	9.1	2,000

(1) Stored high level liquid waste is shown in Table 3 of the Classified Addendum to CPD 220.

(2) Cesium and strontium decayed through CY 1970.

(3) Not estimated.

TABLE V

RADIONUCLIDE INVENTORY - 600 AREA UNDER 200 AREA CONTROL

	U, lb[1]	Pu, g[1]	Beta Curies[1] Current[2]
Gable Mountain Pond	< 940	<380	
Redox Pond	<6 960	<370	
B Plant Pond	< 600	<230	
			2000 Total

(1) Estimated quantities based on known releases and on analytical detection limits of small releases in large quantities of water.

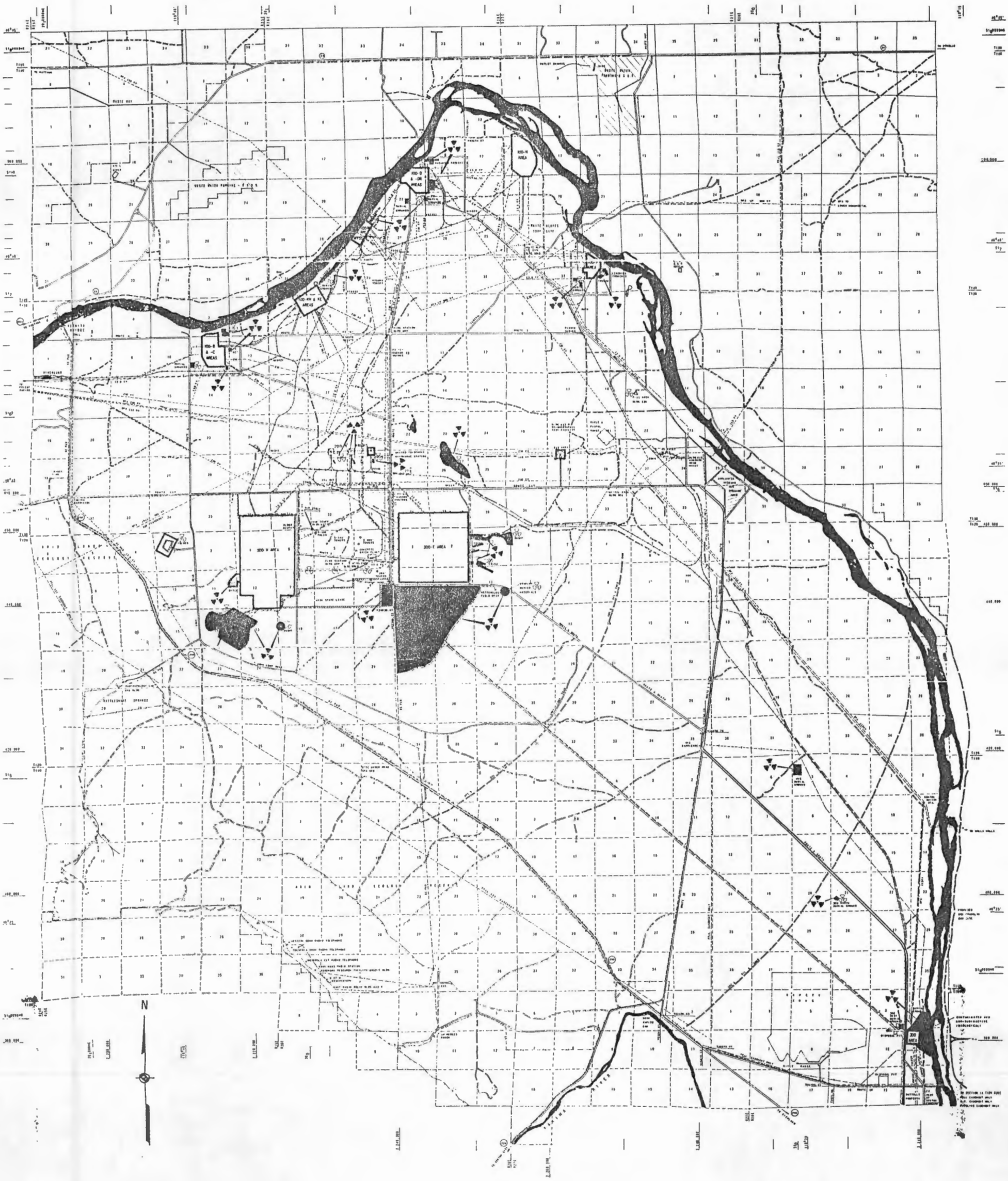
(2) Estimated cesium and strontium decayed through 1970.

TABLE VI

600 AREA WASTES BURIAL AND STORAGE SITES
UNDER 300 AREA CONTROL

Site Description	Status	Size Acres	Site Contents B-γ (Ci)	Site Contents Pu (kg)
300 North Burial	Retired - filled and marked. Broad spectrum of low to high level solid radioactive wastes, primarily fission products and plutonium. Cartoned low level wastes were buried in trenches; medium to high level wastes in caissons or buried pipe facilities.	6.1	<2,000	0.1 to 1
300 North Crib	Retired - bottomless tank located about 150 feet southeast of 300-N Burial Ground. Contains uranium contaminated liquid wash from 321 Building.	<1		
213-J and K Vaults	Retired - located at southeast end of Gable Mountain. Decontamination solution and probably rags and buckets used to clean the vaults between 1944 and 1950 were discarded into two small pits about four feet deep. The carriers used to ship plutonium nitrate solutions were occasionally returned in a contaminated condition. The carriers were probably not decontaminated at this site, but some contamination was transferred from the carriers to the vaults. Each site is covered with a concrete slab and "Contaminated Waste" is lettered into the concrete.			
300 Wye Burial	Retired - filled and marked. Broad spectrum of low to high level solid radioactive wastes, primarily fission products and plutonium. Cartoned low level wastes were buried in trenches; medium to high level wastes in caissons or buried pipe facilities.	8.6	<2,000	1 to 5
100-F Burial Ground	Active. Scheduled for retirement in 1973 or 1974. Very low level beta-gamma wastes from Biology Laboratory operations. Waste cartons contain micro- or millicurie quantities. No plutonium has been discharged to this site.	<5 (est.)	<10	None
100-F Leaching Trench	Active. Scheduled for retirement in 1973 or 1974. Very slightly contaminated liquid wastes primarily ^{90}Sr, from animal feeding studies.		1-10	None
P-11 Building	Retired.			<0.015

[redacted]



RADIOACTIVE WASTE STORAGE SITES OUTSIDE LIMITED AREAS

FIGURE 1

[redacted]

[redacted]

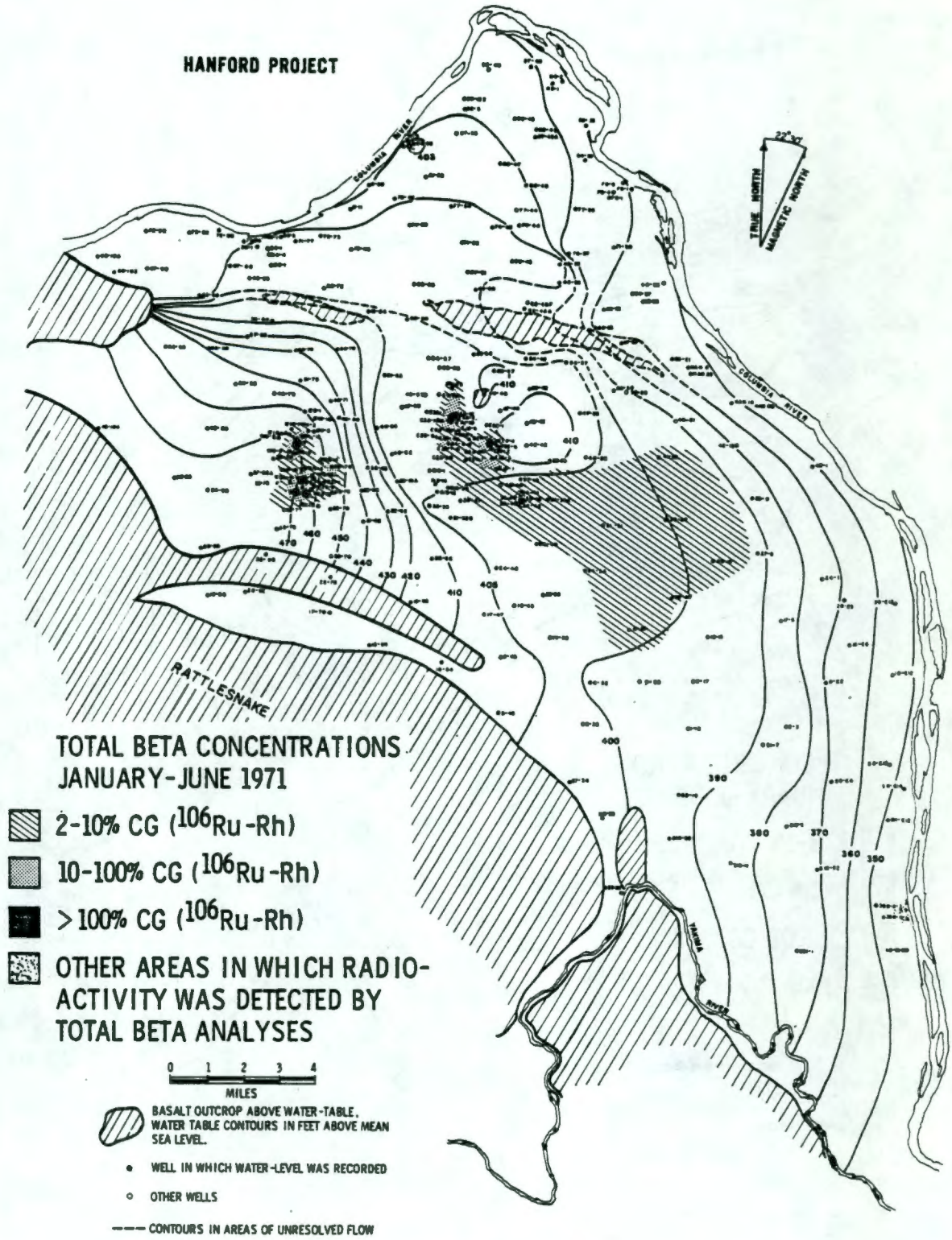


FIGURE 2

TOTAL BETA CONCENTRATIONS BENEATH THE HANFORD PROJECT EXPRESSED AS PERCENT OF ^{106}Ru CONCENTRATION GUIDE (10 pCi/ml)

[redacted]

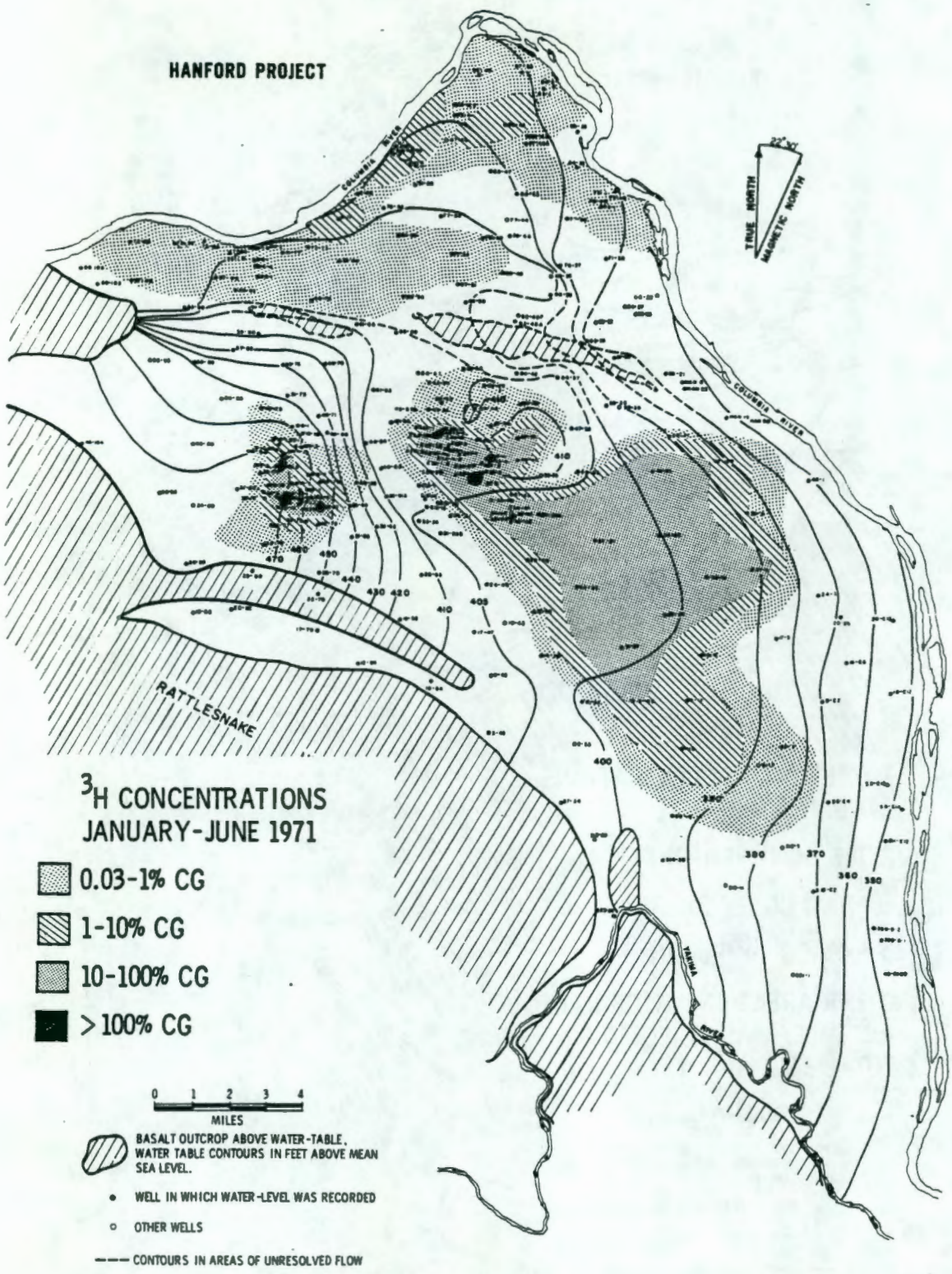


FIGURE 3

TRITIUM CONCENTRATIONS BENEATH THE HANFORD PRODUCT EXPRESSED AS PERCENT OF ^{3}H CONCENTRATION GUIDE (3000 pCi/ml)

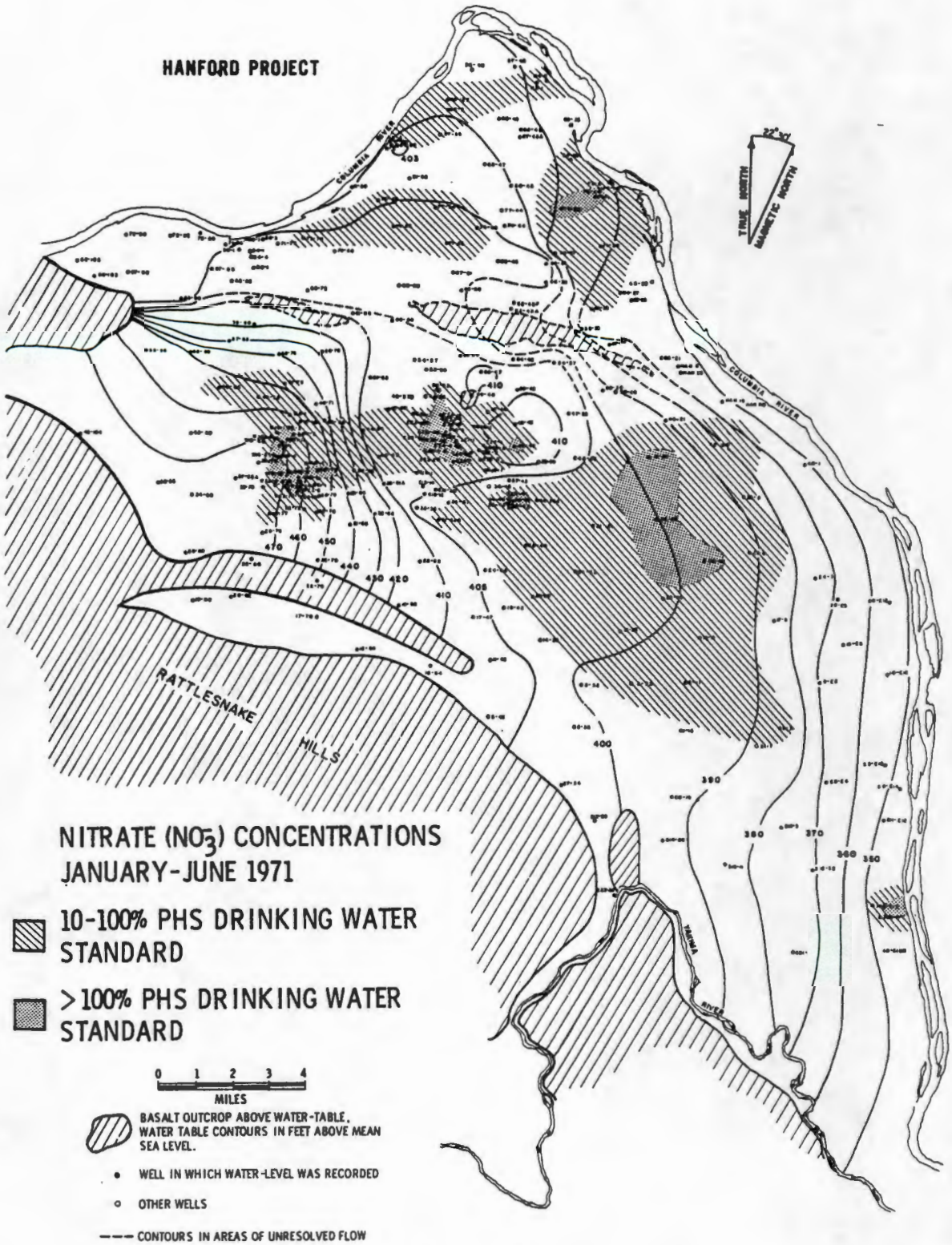
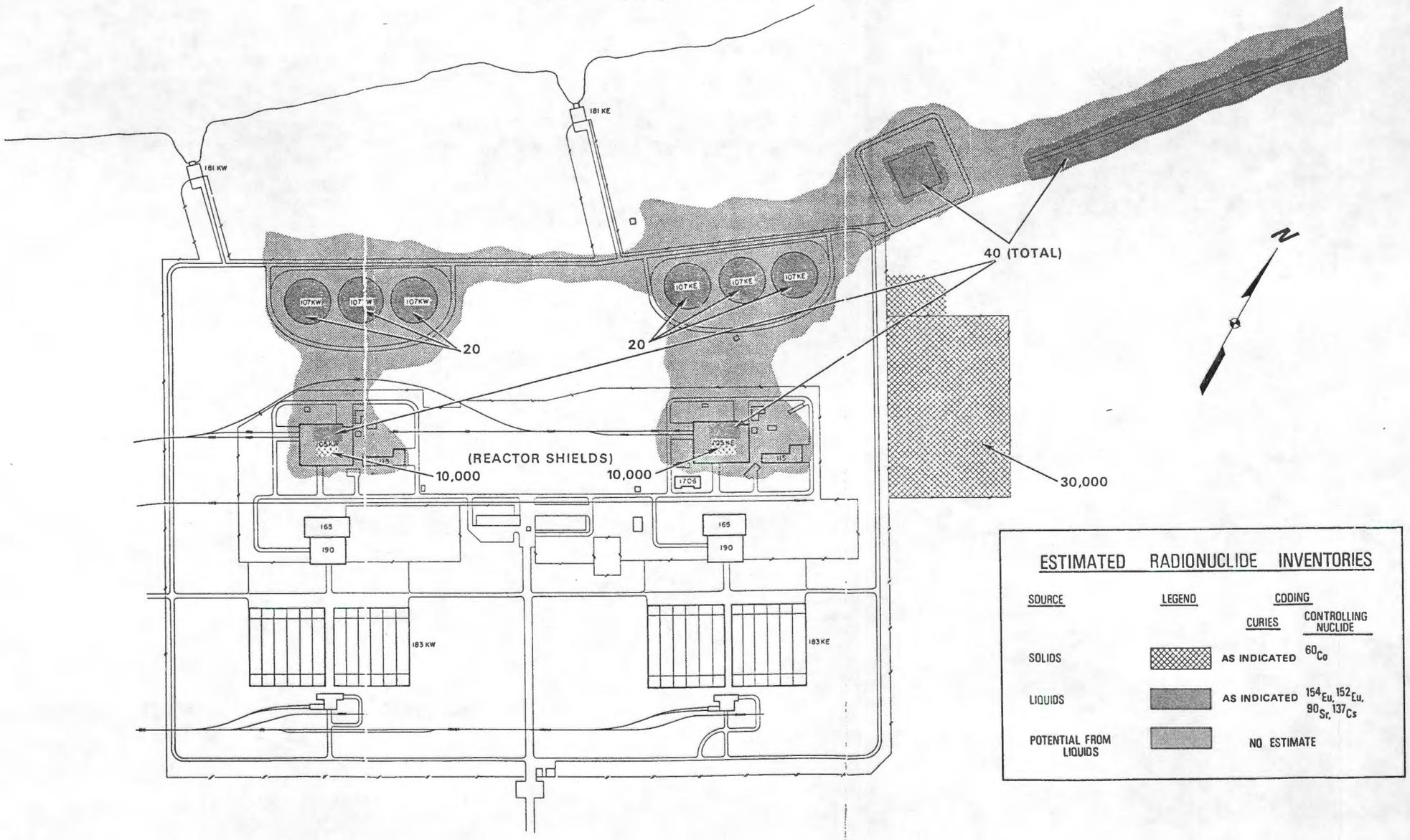


FIGURE 4

NITRATE ION CONCENTRATIONS BENEATH THE HANFORD PROJECT EXPRESSED AS PERCENT OF PUBLIC HEALTH SERVICE DRINKING WATER LIMIT (45 ppm)

100 KE - KW AREA



ESTIMATED RADIONUCLIDE INVENTORIES

SOURCE	LEGEND	CODING: CURIES	CODING: CONTROLLING NUCLIDE
SOLIDS		AS INDICATED	^{60}Co
LIQUIDS		AS INDICATED	^{154}Eu, ^{152}Eu, ^{90}Sr, ^{137}Cs
POTENTIAL FROM LIQUIDS		NO ESTIMATE	

FIGURE 5 100 KE-KW AREA

[redacted]

100 B - C AREA

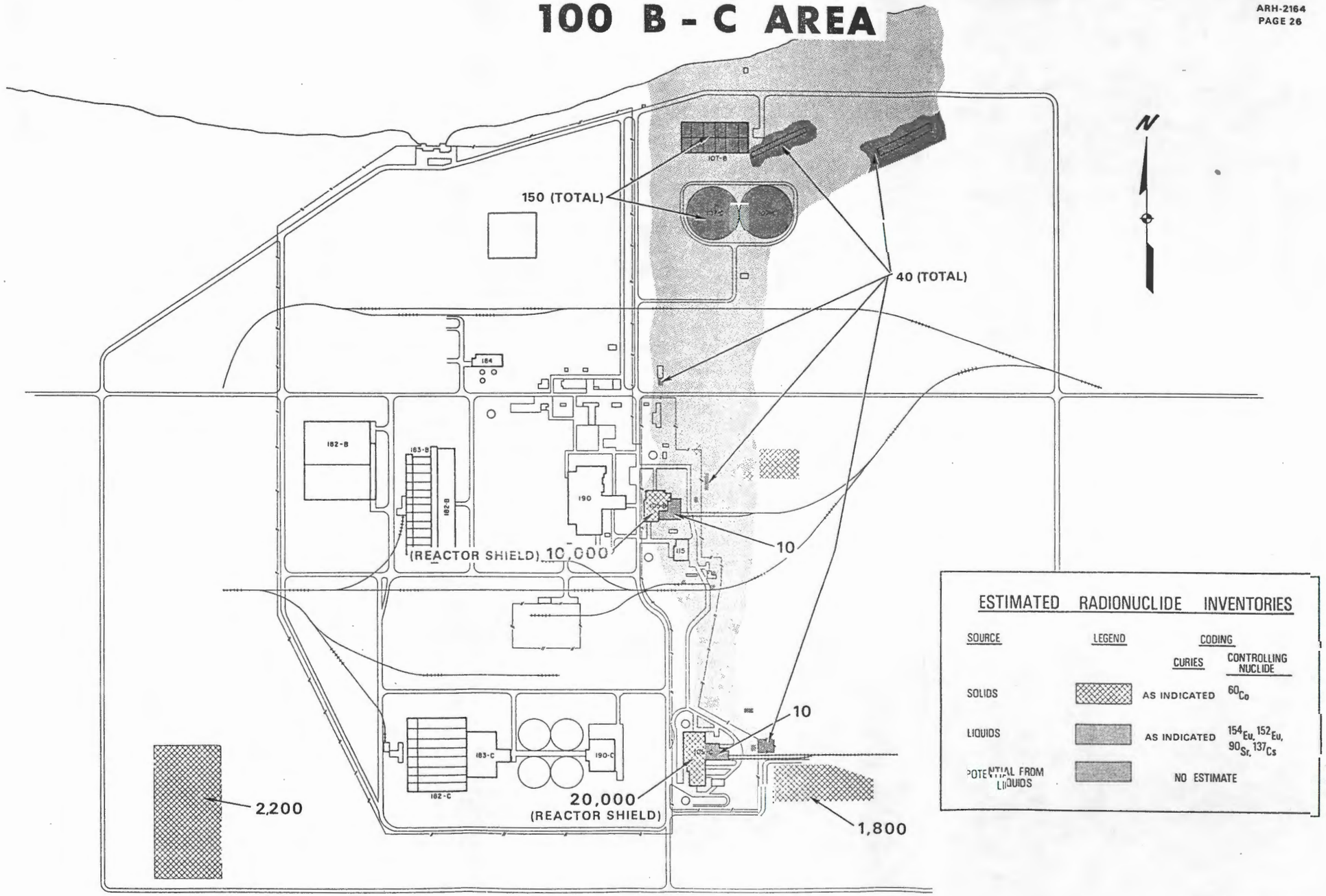


FIGURE 6 100 B-C AREA

[redacted]

[redacted]

100 N AREA

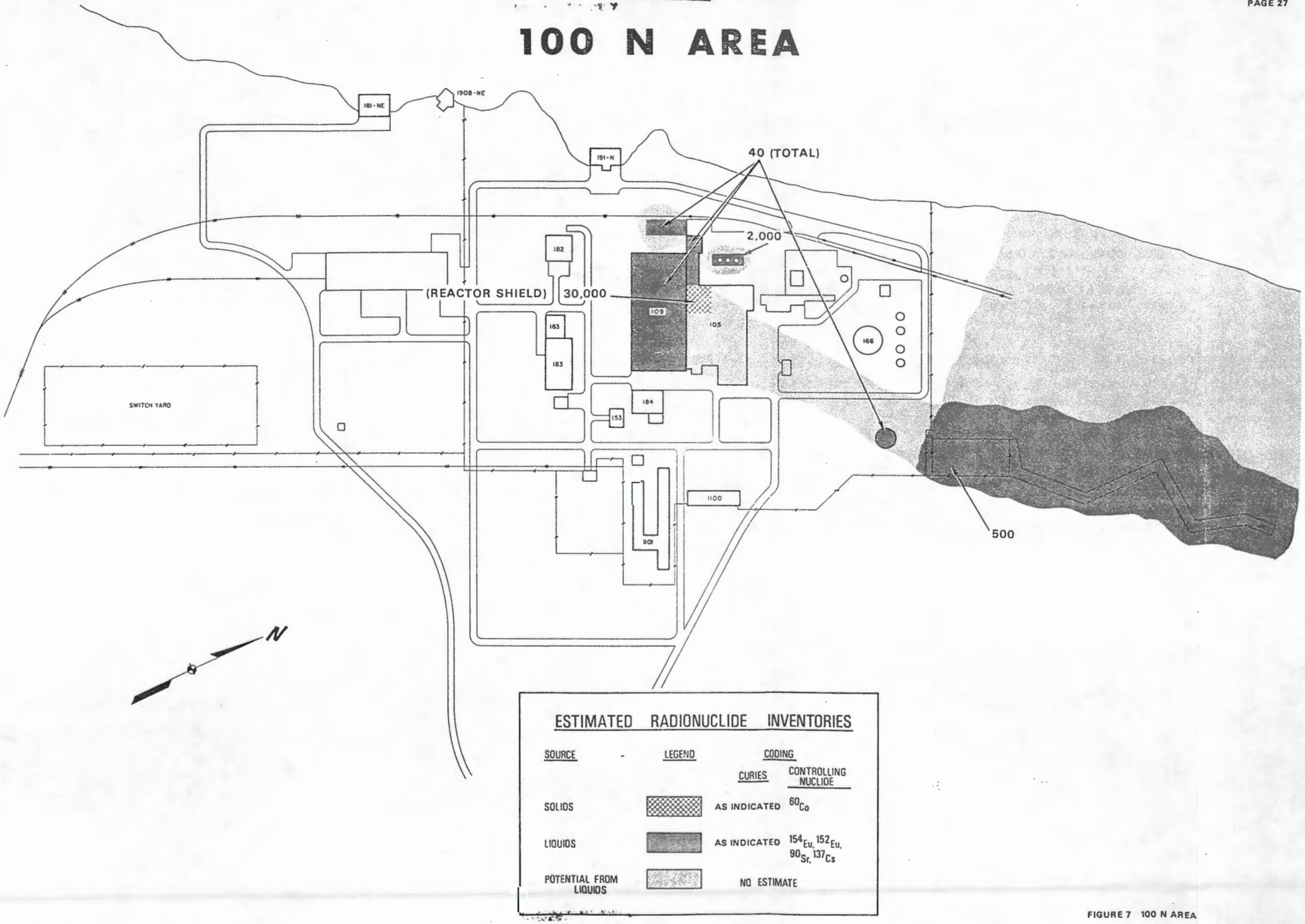


FIGURE 7 100 N AREA

[redacted]

[redacted]

100 D - DR AREA

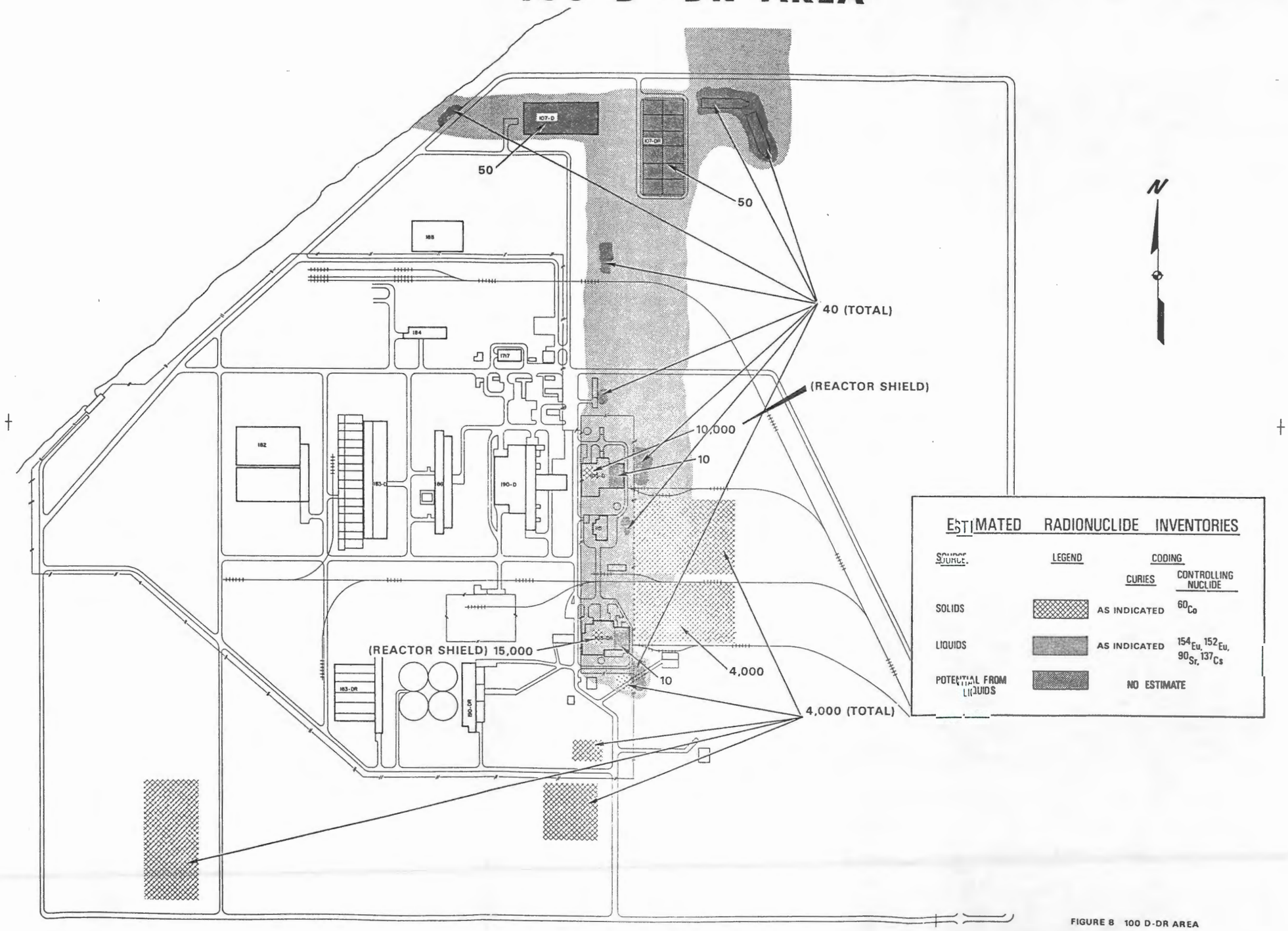


FIGURE 8 100 D-DR AREA

[redacted]

100 H AREA

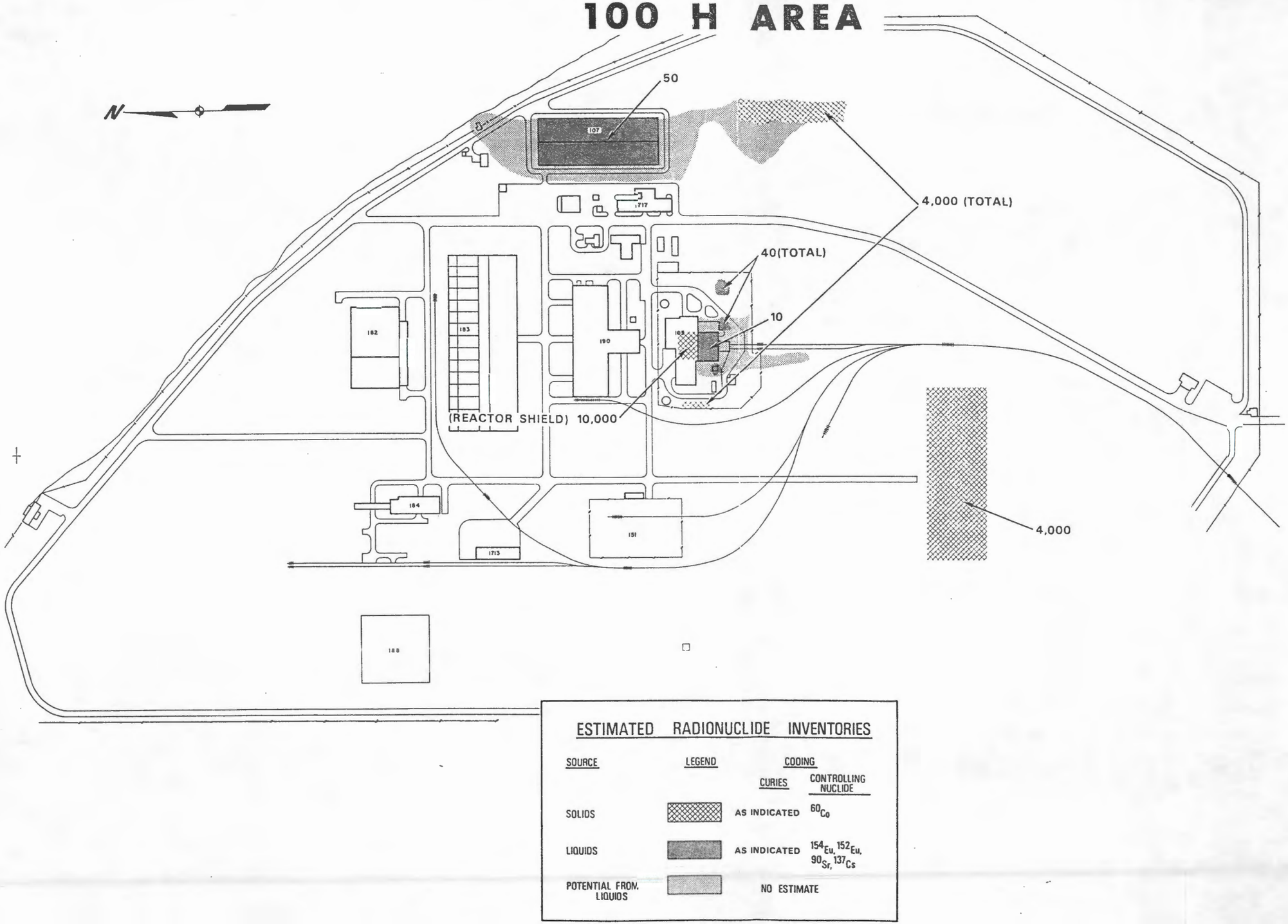
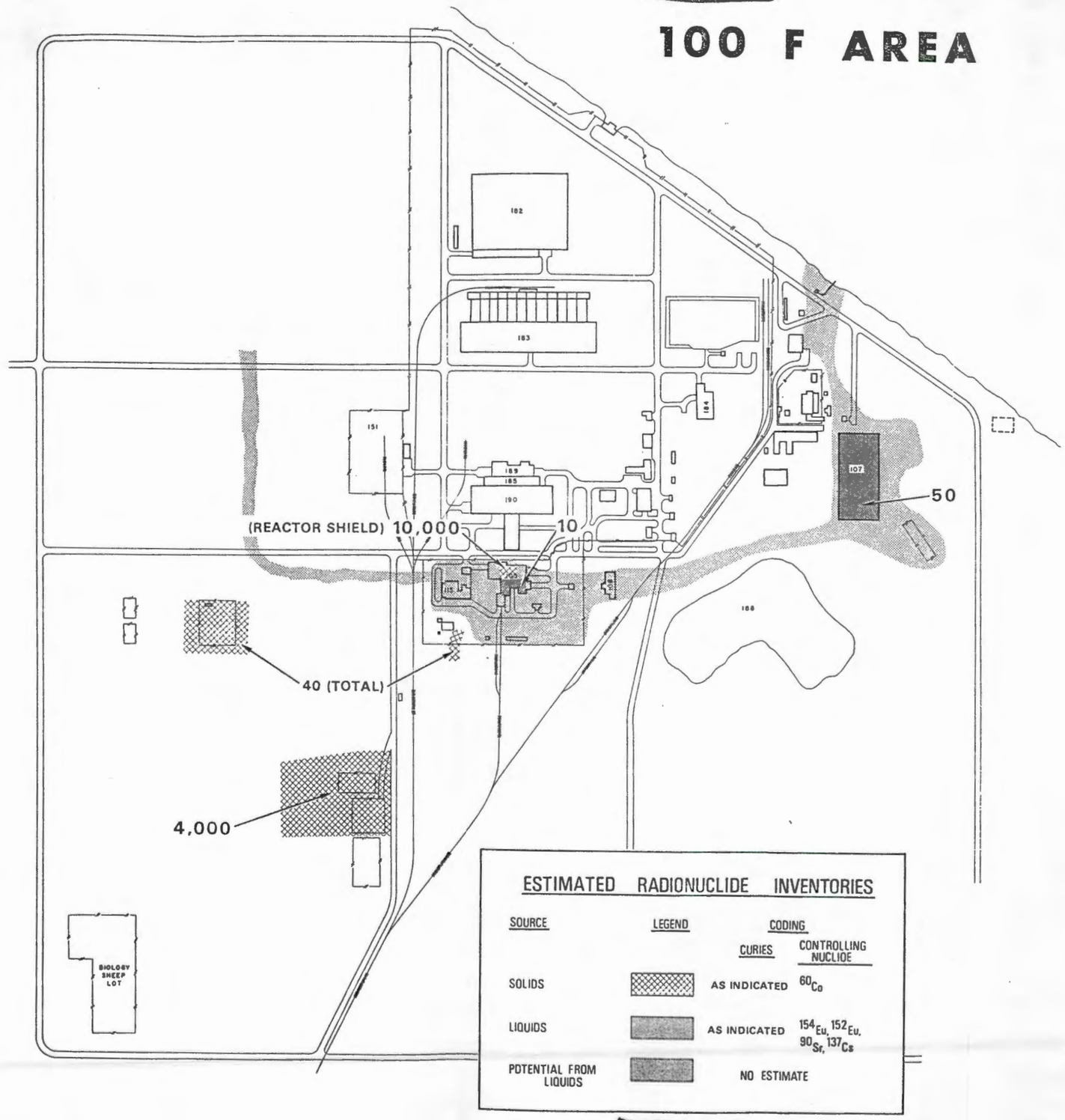


FIGURE 9 100 H AREA

[redacted]

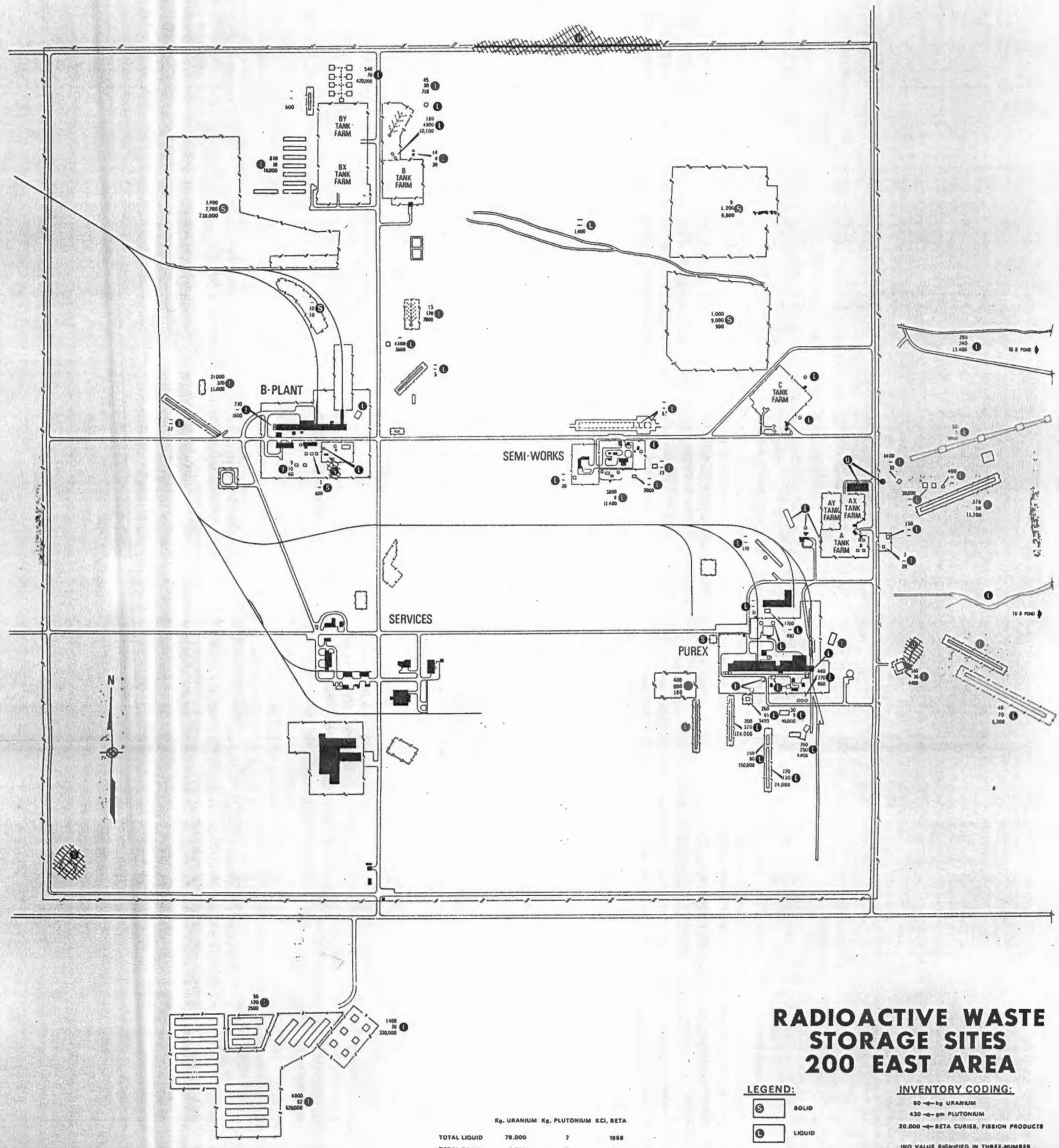
100 F AREA



[redacted]

FIGURE 10 100 F AREA

[redacted]



	Kg. URANIUM	Kg. PLUTONIUM	KCi, BETA
TOTAL LIQUID	79,000	7	1959
TOTAL SOLID	2,700	19	246
200E TOTAL	81,700	26	2,204
KILOCURIES REMAINING AFTER DECAY			103

[redacted]

RADIOACTIVE WASTE STORAGE SITES 200 EAST AREA

LEGEND:

- (S) SOLID
- (L) LIQUID
- (U) UNPLANNED
- RADIOACTIVITY NO LONGER DETECTABLE

INVENTORY CODING:

80 ← kg URANIUM
430 ← gm PLUTONIUM
20,000 ← BETA CURIES, FISSION PRODUCTS

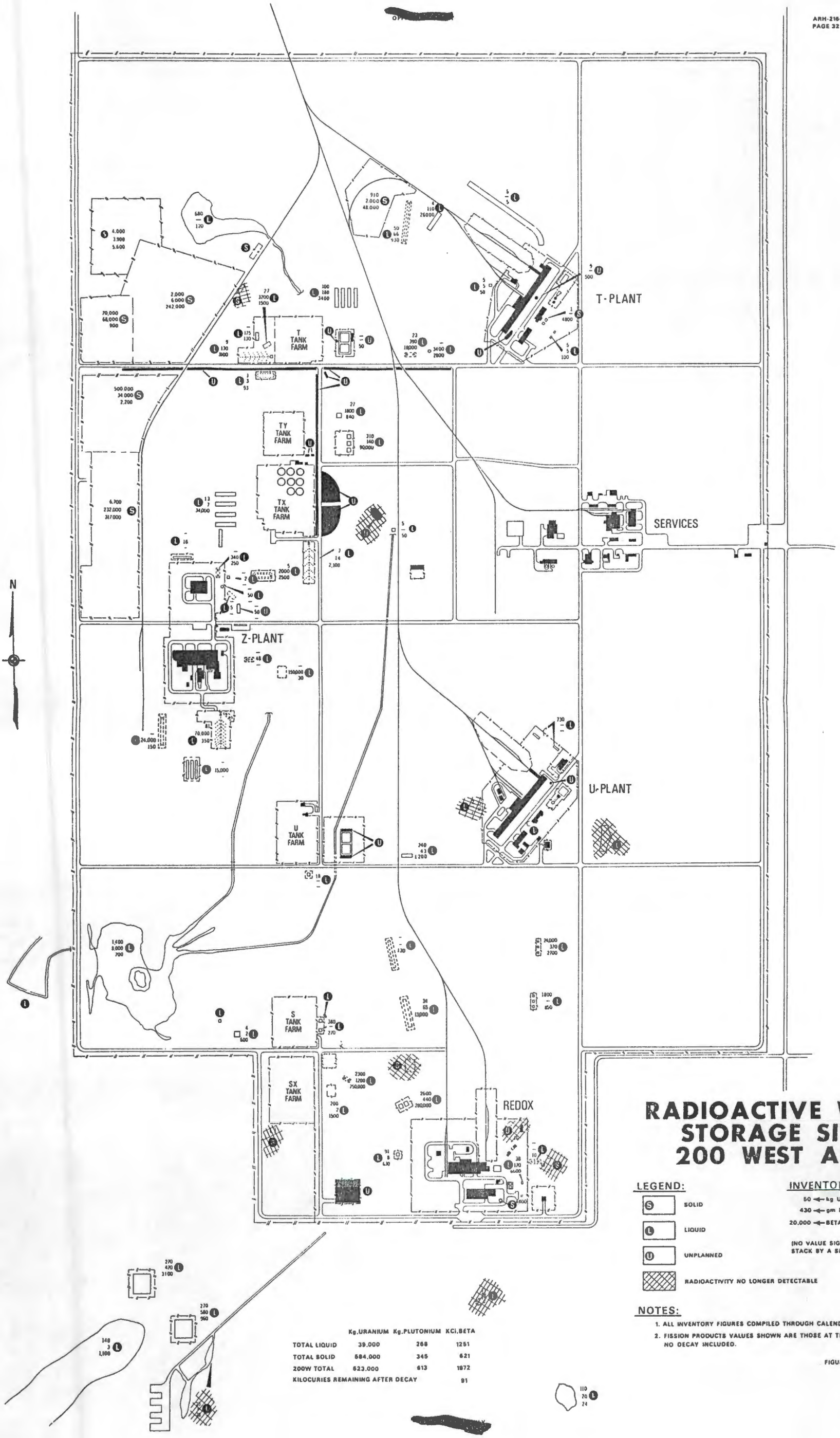
(NO VALUE SIGNIFIED IN THREE-NUMBER STACK BY A SINGLE HORIZONTAL DASH)

NOTES:

1. ALL INVENTORY FIGURES COMPILED THROUGH CALENDAR YEAR 1971
2. FISSION PRODUCTS VALUES SHOWN ARE THOSE AT TIME OF DISPOSAL: NO DECAY INCLUDED.

FIGURE 11

[redacted]



RADIOACTIVE WASTE STORAGE SITES 200 WEST AREA

LEGEND:

- (S) SOLID
- (L) LIQUID
- (U) UNPLANNED
- RADIOACTIVITY NO LONGER DETECTABLE

INVENTORY CODING:

50 ◄ kg URANIUM
430 ◄ gm PLUTONIUM
20,000 ◄ BETA CURIES, FISSION PRODUCTS

(NO VALUE SIGNIFIED IN THREE-NUMBER STACK BY A SINGLE HORIZONTAL DASH)

	Kg.URANIUM	Kg.PLUTONIUM	KCi.BETA
TOTAL LIQUID	39.000	268	1251
TOTAL SOLID	584.000	345	621
200W TOTAL	623.000	613	1872
KILOCURIES REMAINING AFTER DECAY			91

NOTES:

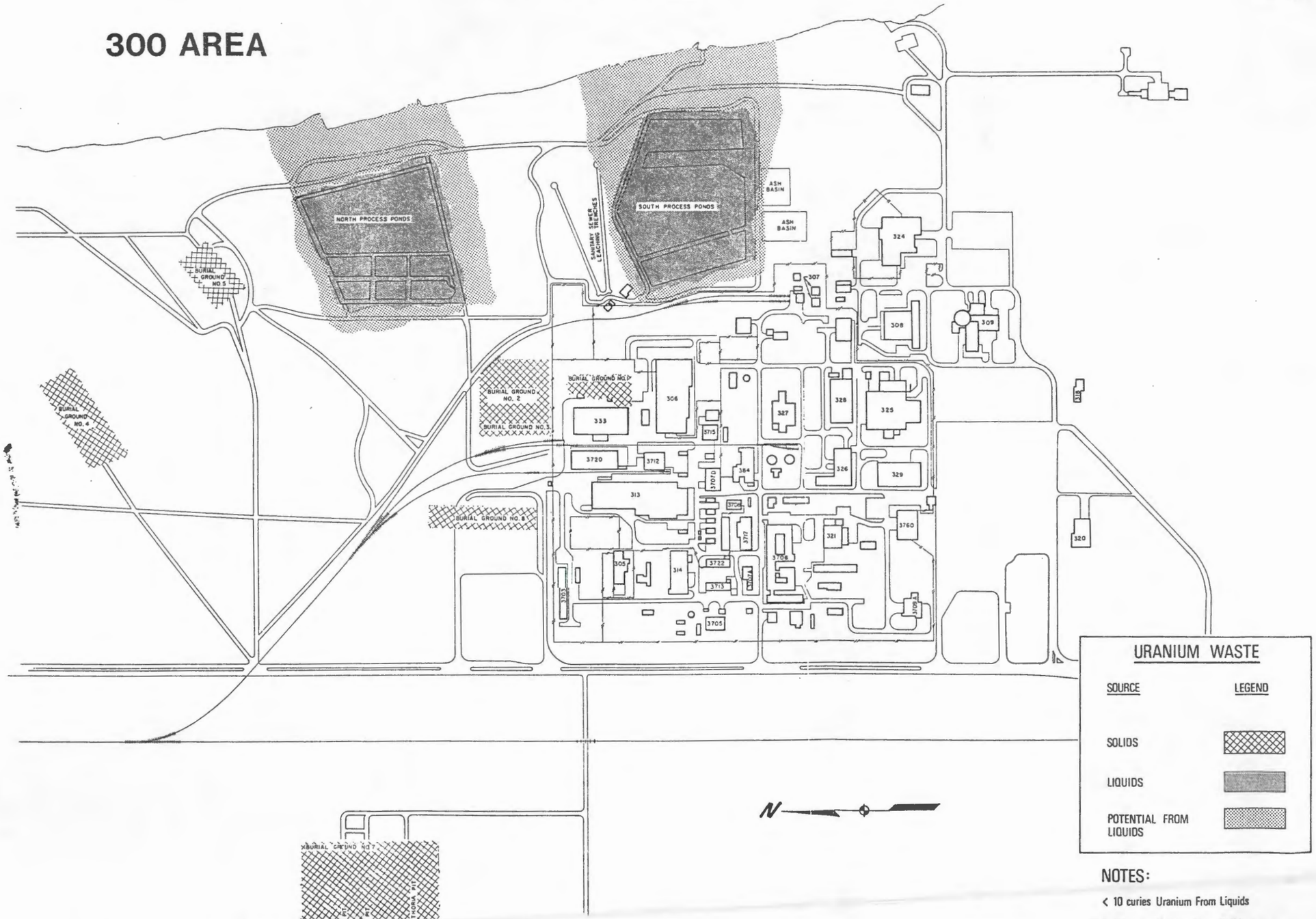
1. ALL INVENTORY FIGURES COMPILED THROUGH CALENDAR YEAR 1971.
2. FISSION PRODUCTS VALUES SHOWN ARE THOSE AT TIME OF DISPOSAL: NO DECAY INCLUDED.

FIGURE 12

[redacted]

[redacted]

300 AREA



URANIUM WASTE

SOURCE	LEGEND
SOLIDS	
LIQUIDS	
POTENTIAL FROM LIQUIDS	

NOTES:

< 10 curies Uranium From Liquids

< 0.1 curies Uranium From Solids

< 0.001 curies Uranium From Solids

.40 6 Removed

FIGURE 13 300 AREA

[redacted]

SECTION IV

PROPOSED CRITERIA

Since the preparation of Hanford-type facilities for unconditional release is without precedent, specific criteria need to be developed for the decommissioning operation. These criteria should meet the following objectives:

- Public use or access to decommissioned sites shall not result in risk to human health and welfare from noxious chemicals or radioactive materials.

- Radiation exposure to humans shall not exceed 10 percent of that listed in AEC Manual Chapter 0524, Appendix Part II.

- Attractive nuisances and physical hazards will be minimized.

- Harmful effects to naturally-occurring biota will be minimized and attention will be given to restoration of aesthetic values.

- Use of land may be limited within control zones surrounding operating or standby facilities as follows:

100 Area Reactors	5 miles
200 Area Facilities	3 miles
FFTF	1 mile
Retired Production Reactors	1 mile

- Additions of large volumes of water to the groundwater may be restricted to avoid flooding of contaminated soils.

In view of the wide range of possible actions and resultant site conditions, three categories were defined into which existing AEC facilities might be placed after appropriate preparatory action:

- <u>Category A</u> - Those facilities and areas that could be released for public use without restriction.

- <u>Category B</u> - Those facilities and areas to which the

public could have casual access but would be restricted to the actions they could take.

- Category C - Those facilities and areas to which public access would be denied because of AEC programmatic activities.

The categories can be summarized as follows:

Category	A	B	C
Ownership	Private	AEC	AEC
Private Access	Free	Free	Limited
Private Use	Free	Limited	Denied
AEC Surveillance	Minimal	Periodic	Continuous

Currently, land use at Hanford serves one of three functions:

- It serves directly to house the production and reactor development programs.
- It provides isolation from production operations.
- It provides isolation in case of an accident situation.

In the case where land has been held as a means of assuring distance between the public and a potential accident, a decision that the accident potential has disappeared would make release of the land feasible. Many facilities and areas of land have become contaminated, or have been used to store waste materials, during production operations. Complete release of these facilities and land areas will require relocation of these radioactive materials, while a restricted public use would require only stabilization and isolation.

Nationally acceptable limits for the concentration of radionuclides in solid matrices need to be set. In the absence of such standards it was assumed that solids containing less than 100 picocuries/gram plutonium, 100 nanocuries/gram ^{14}C, or two nanocuries/gram of fission products can be treated as uncontaminated. An alternative assuming less than two nanocuries/gram plutonium as uncontaminated was also considered.

SECTION V

ACTION PLANS

Plan Overview

In formulating a program many programmatic, technical, and economic decisions will have to be made. For example, a future use or disposition must be proposed for each facility or land area. The degree of desired public access must be defined. The technical and economic feasibility of various processing techniques must be evaluated. The engineering feasibility and safety of alternative storage modes must be assessed.

The task of decommissioning part or all of the Hanford site will require integration of many developmental and operational projects. A generalized functional schedule is presented in Figure 14. The individual site components need to be characterized and the feasibility and economics of alternative actions need to be determined. Technological development programs will be required to provide the "know-how" to achieve decommissioning objectives. Selection of alternatives will require engineering studies with Process Development support. A definitive plan will need to be formulated and, finally, the operating work and proof that the contamination has been removed or stabilized must be accomplished.

Three plans have been developed for the stepwise decommissioning of the Hanford site. These are:

- Plan I

  All areas are placed in Category A except for those remaining in operation and selected 100 Area facilities. The reactors would be entombed and buried radioactivity would be stabilized with concrete pads to achieve a Category B status. The 200 Areas receive and store contaminated materials and remain in Category C. Buried uranium and thorium would remain in place in the 300 Area.

- Plan II

  The 200 Areas are stabilized by sealing or entombing the processing facilities and isolating buried

radioactivity with concrete pads to achieve a Category B. Plan II could follow Plan I, or it could be initiated while Plan I is in progress.

- Plan III

  Plutonium and ^{14}C are removed from all Hanford areas. Storage of the plutonium-contaminated materials in an approved repository is assumed. Remaining fission and activation products are placed in Category B. Decay of remaining radioactivity to Category A would be in the foreseeable future (less than 1,000 years). Plutonium removed to concentrations of 100 picocuries/gram and 2 nanocuries/gram and ^{14}C at 100 nanocuries/gram and 3 microcuries/gram are considered.

Plan I would achieve the objective of releasing the maximum amount of land within the shortest practical time. It is estimated that this plan could be completed in about 10 to 15 years at a cost of about $103 million including about $19 million for technology development. It is assumed that current programs will continue and that site decommissioning work will be initiated in 1974. At the completion of Plan I most of the Hanford area would be in Category A or B condition; the 200 Areas would be considered an operating area in Category C condition and would require isolation with a control zone of three miles. Groundwater beneath the Hanford site would show contamination with radionuclides (primarily tritium) and with nitrate, however, these should be, generally, within acceptable limits.

Plan II would follow or be coordinated with Plan I. It would achieve the objective of stabilizing the large inventory of radionuclides which have accumulated in the 200 Areas for an interim storage mode acceptable for decades or centuries. It is estimated that this plan could be completed in 10 to 15 years at a cost of about $390 million beyond Plan I. Assuming sequential operation of Plan I and Plan II, the time to the completion of Plan II would be about 25 years. Alternatively, if rapid completion were to become important, Plan II could be initiated with some risk regarding the proper selection of interim and long-term storage modes as early as 1975. It then could be completed by about 1987.

Plan III would remove the long-lived plutonium and ^{14}C from the Hanford site to achieve a Category A status by decay of the remaining fission products within the foreseeable future (hundreds of years). Plan III-A with plutonium removed to a residual concentration of 100 picocuries/gram would require razing the reactors and most separations facilities and disinterment of solidified salt wastes, burial grounds, and crib disposal areas. Plan III-B with plutonium removed to a residual concentration of two nanocuries/gram and ^{14}C at 3 microcuries/gram would probably not require razing the

grounds, and cribs would not require removal. Tentatively, it is assumed that ^{14}C would not be a problem in the microcuries/gram range. The details of each plan, and hence costs, depend heavily upon site measurement work. The selection of Plan III-A or III-B depends upon the acceptable definition of "uncontaminated" for plutonium in a solid matrix. Roughly, it is estimated that Plan III-A would cost about 1400 to 4000 million dollars and Plan III-B about 500 to 1500 million dollars.

Problem Definition and Technology

Exploratory and development work will be required before a detailed operating plan can be established. Fundamentally, this work would:

- Establish the scope;
- Establish the alternatives;
- Establish the technology.

The scope of the work required would be determined by a measurement and characterization program. In some cases, particularly in measuring low level radioactivity in earth, new techniques need to be developed. Engineering studies need to be made to establish a plan.

Criteria alternatives for storage at Hanford need to be developed through geologic, hydrologic, seismic, and climatic studies.

Technology needs to be developed and demonstrated for the major tasks involved. The purpose, approach, and anticipated scope of each study is summarized in Section VII. Schedules for this work are presented in Figures 15 and 16. Key accomplishments expected assuming proposed funding levels are maintained are:

. Start Site Characterizations	FY 1972
. Technology Demonstration Program Completed	FY 1980
. Facility Decontamination	FY 1975
. Burial Ground Removal	FY 1976
. Large Equipment Disposal	FY 1977
. Surficial Storage Evaluation	FY 1981
. Deep Cavern Evaluation	FY 1984

These programs are discussed in greater detail in sections following.

PLAN I

As much as is practical, each facility would be treated by one or more of the following steps in order of preference:

- Facilities and equipment would be decontaminated, if necessary, and excessed.
- Structures having no salvage value would be razed and the site restored to a level surface.
- Contaminated materials either would be relocated to the 200 Areas plateau for storing and entombing in place or would be isolated so that the purposeful use of heavy equipment would be required to reach the contaminated materials. Buried uranium and thorium would remain in place in the 300 Area.

Reactor Areas

The largest items of consideration in the reactor areas are the 105 Buildings which contain the reactor blocks. Because of the quantity of radioactive material and difficulties of removal, the reactor block would be entombed. The cost of early removal does not appear commensurate with environmental benefits to be gained. Approximately 150 years would be required for the radionuclides to decay to below two nanocuries/gram of matrix except for ^{14}C. After about 50 years penetrating radiation no longer is a problem and the entire reactor block could be removed at reduced cost.

As shown in Figures 17 and 18 the 105 structure would be demolished except the shielding walls enclosing the reactor rear face, the inner rod room, and the experimental facilities. This would provide a reinforced concrete wall approximately three feet thick around three sides of each reactor block resting on a massive foundation. A reinforced concrete wall would be placed across the inlet face of the reactor and tied into the rod room and experimental facility walls. The roof over this area varies in thickness, and additional concrete would be poured to a thickness of three feet. All openings into the resulting reactor enclosure (i.e., rear face, X levels, inner rod rooms, basements) would be sealed with concrete. The rest of the 105 structure would be razed with the exception of the reactor gas drying facilities. Because of probable ^{14}C contamination and the proximity to the reactor block which will be entombed, it is planned to leave these structures with their three-foot shielding walls and ceiling intact. If the site characterization studies (sampling program) show the ^{14}C contamination to be sufficiently low, the gas drying facilities would also be razed.

Other contaminated structures would be filled with earth (117 Building) or razed and the rubble deposited in the basement

and sealed with a reinforced concrete slab (pump lift stations, etc.). Burial grounds, cribs, and contaminated ground would be covered with reinforced concrete. The effluent lines would be placed in the 107 effluent basin, filled with earth, and covered with concrete. Underground tunnels would be filled with earth and sealed with concrete.

All contaminated areas would be permanently marked. These areas will be classified as Category B. All the areas with the exception of the reactor block and the gas drying facility will decay to Category A within about 150 years. The ^{14}C contamination in the reactor and gas facility would keep these facilities in the Category B state for thousands of years. Similarly, the ^{14}C in the spent silica gel in the burial grounds would probably keep these facilities in Category B for an extended period. (This will be determined during the site characterization work.)

Noncontaminated facilities would be modified to eliminate hazards. Most of these facilities are of concrete block construction above grade. All practical salvage would be performed. Generally, buildings would be razed and the rubble used to fill basements. Clearwells and basins would be filled with excess rubble and earth. Concrete chimneys would be demolished. Pipe tunnels would be filled with earth and all large buried lines would be sealed.

The 181 river pump house is constructed of reinforced concrete below grade with a concrete block superstructure. The superstructure would be leveled and all openings in the reinforced concrete floor would be sealed. A three-foot high concrete wall would be constructed along the river side of the building for personnel safety. The disposition of the trash racks and river openings will be the subject of future studies.

Concentrations of up to two nanocuries/gram of ^{239}Pu have been detected in the storage basin sludge at the older reactors (F, H, D, DR). For purposes of this study it was assumed that the plutonium-bearing sludge would be entombed in place in the storage basin.

Separations Areas

During Plan I the chemical processing operations would be terminated. As a part of the operating charter processing facilities would be cleaned of accumulated inventories of process materials. This would remove the major fraction of the inventory but leave the facility in a contaminated condition. Storage areas would be prepared and materials would be received from other areas and placed in storage. The major contribution to this storage requirement would be the 300 Area burial grounds. The storage mode would meet requirements for Interim Storage to the extent that these conditions have been defined and approved.

300 Area

Contaminated portions of decommissioned laboratory buildings would be either decontaminated or packaged for relocation to the 200 Areas plateau. Noncontaminated buildings and equipment would be excessed or razed. The 300 North, 300 West, and 300 Area Number 1 burial grounds would be exhumed, packaged, and relocated to the 200 Areas plateau. Burial grounds containing uranium and thorium would be left in place. The 300 Area fuel fabrication buildings would be partially decontaminated and held in standby until released. Materials having salvage value would be excessed, contaminated residues transported to the 200 Areas plateau, and the buildings razed.

600 Area

Areas outside the exclusion areas would be surveyed to detect hazards or attractive nuisances. Equipment and structures having no further usefulness would be excessed or demolished.

PLAN II

Plan II, Stabilization of the 200 Areas, would be performed following or integrated with Plan I. At the completion of Plan I all areas other than the 200 Areas would either be released as Category A or stabilized as Category B. Plan II work would then be implemented to enable all facilities and materials including transfers of contaminated materials from the other areas to be stabilized before the program is completed.

The highly contaminated, reinforced concrete process buildings would be cleaned of readily movable contamination, the structure filled with sand or contaminated soil (to minimize "breathing"), and all openings sealed with reinforced concrete. Noncontaminated equipment would be excessed and concrete block structures razed. The 234-5-Z Building and associated buildings would be cleaned, filled with sand and/or contaminated materials, and entombed in reinforced concrete. Underground tanks, cribs, burial grounds, and other areas containing radionuclides beneath the ground surface would be stabilized by covering the contaminated materials with sufficient soil to provide biological isolation. A reinforced concrete slab would be placed over the soil to prevent inadvertent penetration.

PLAN III

Removal of long-lived plutonium and ^{14}C from the Hanford site requires the same action as complete decontamination with the exception that the large volume of earth contaminated with fission products at liquid waste disposal sites need not be removed. To remove plutonium from these disposal sites it is assumed that all plutonium can be removed by excavating two feet below either the crib bottom or point of percolation into the earth. This assumption may be optimistic for all cases; however, reasonable variation is allowed in contingency factors. Removal of all radionuclides in some cases would involve excavating disposal sites down to groundwater which would result in very high operational costs. It is assumed that processing facilities are sufficiently contaminated with plutonium to require razing to achieve a residual plutonium concentration of 100 picocuries/gram. For a concentration of two nanocuries/gram the buildings could be left in place. The amount of work required to implement Plan III will decrease with time because of radioactive decay. For example most of the ^{60}Co in the reactor areas will decay to innocuous levels in about 50 years, and the small amounts of ^{152}Eu, ^{137}Cs, ^{90}Sr, and ^{239}Pu remaining will be relatively easy to handle.

In the separations areas ^{137}Cs and ^{90}Sr in the waste salt cakes will decay in about 400 to 500 years to a point that radiation would cease to be a significant factor; in 600 to 700 years ingestion would cease to be a significant concern. In the soil beneath the disposal sites ^{137}Cs and ^{90}Sr decrease to the pico-to-nanocurie/gram range, in some cases within about 5 to 20 meters, which for this study is considered innocuous.

In most locations fission products will decay to innocuous levels in about 600 to 700 years. These facts need to be verified in a characterization program. Conversely, plutonium-contaminated areas would require nearly a million years to decay to innocuous levels. The plutonium is located relatively close to the ground surface, however, and its removal could be accomplished at a fraction of the cost of removing the cesium and strontium.

The preparation of the contaminated materials for transport could take one or more of many forms. The materials could be packaged in drums or boxes consistent with receiving site criteria. As one alternative the volume of waste salt cakes might be reduced by some factor up to perhaps ten by destroying the nitrate ion and recovering the sodium for subsequent sale. This action would substantially reduce transportation costs. As another alternative contaminated soil might be combined with waste salt cake, aluminum and crushed basalt, and the mixture ignited. The product could be a basalt-like rock. If solubility data prove to be as favorable as preliminary tests indicate, this form might be desirable for long-term

storage at either location. Contaminated metal could probably be included with the mix and be consolidated with the pseudo-basalt.

Techniques need to be developed for decontamination and disassembly of the highly contaminated process equipment and buildings, and survey equipment capable of recognizing the uncontaminated-contaminated states would be a necessity.

The current and proposed technology development programs could significantly alter the proposed decommissioning plans and estimated costs. For example, while it now appears necessary to raze a facility to achieve a Category A status, equipment and concrete decontamination studies might achieve this objective in place at substantially lower cost, and the characterization program might show current study assumptions to be overstated.

GENERALIZED FUNCTIONAL SCHEDULE

CHARACTERIZE SITE

LOCATE, MEASURE, IDENTIFY CONTAMINATION

DEVELOP TECHNOLOGY

PROVIDE "KNOW-HOW"
DETERMINE ALTERNATIVES
DEMONSTRATE TECHNOLOGY

PLAN

PERFORM ENGINEERING STUDIES
FORMULATE PLANS
FORMULATE DEFINITIVE PLANS

OPERATE

PERFORM DECOMMISSIONING PLAN

FIGURE 14

[redacted]

[redacted]

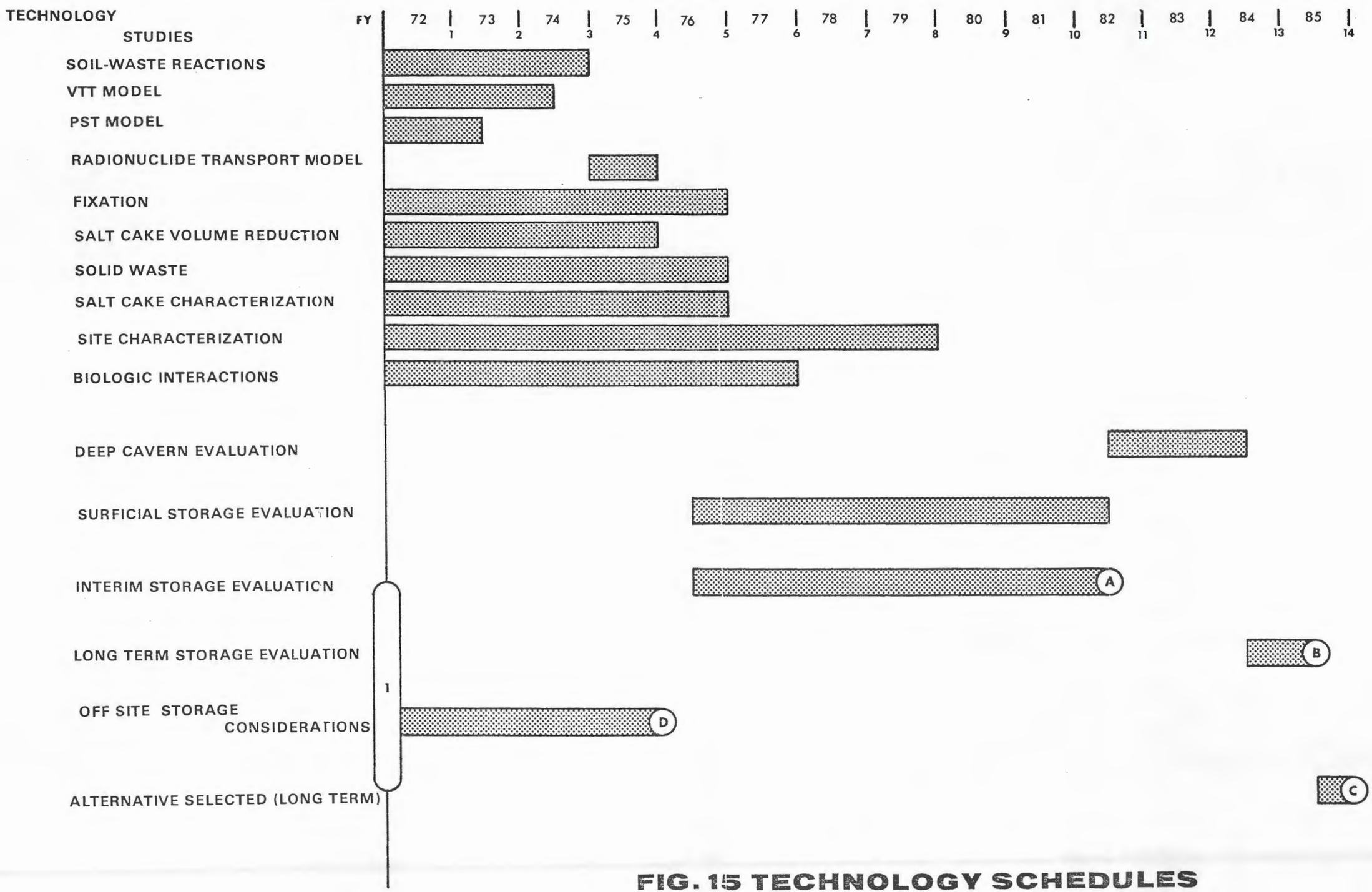


FIG. 15 TECHNOLOGY SCHEDULES

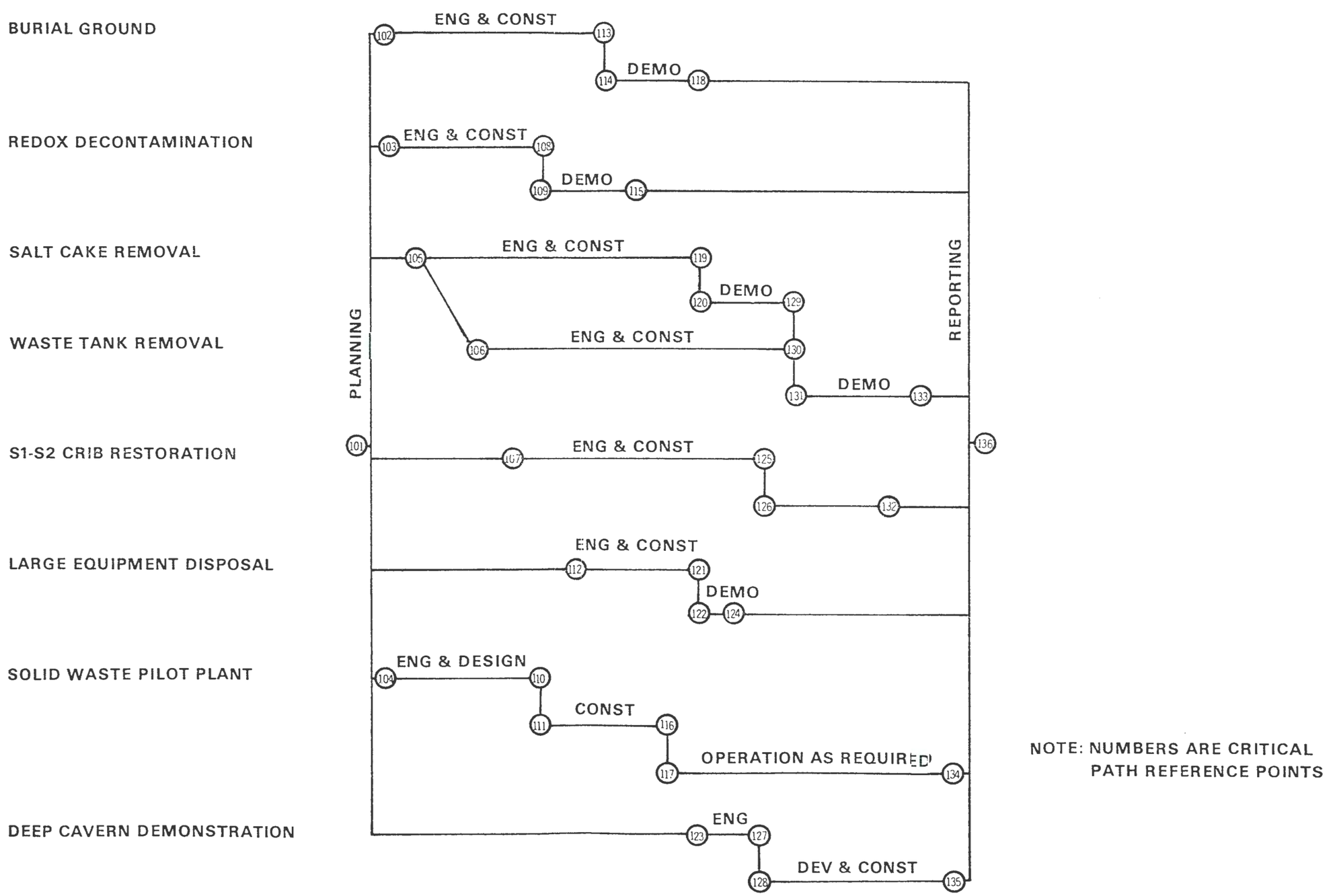


FIG. 16 SCHEDULE DEMONSTRATION PROGRAM

[redacted]

105-H

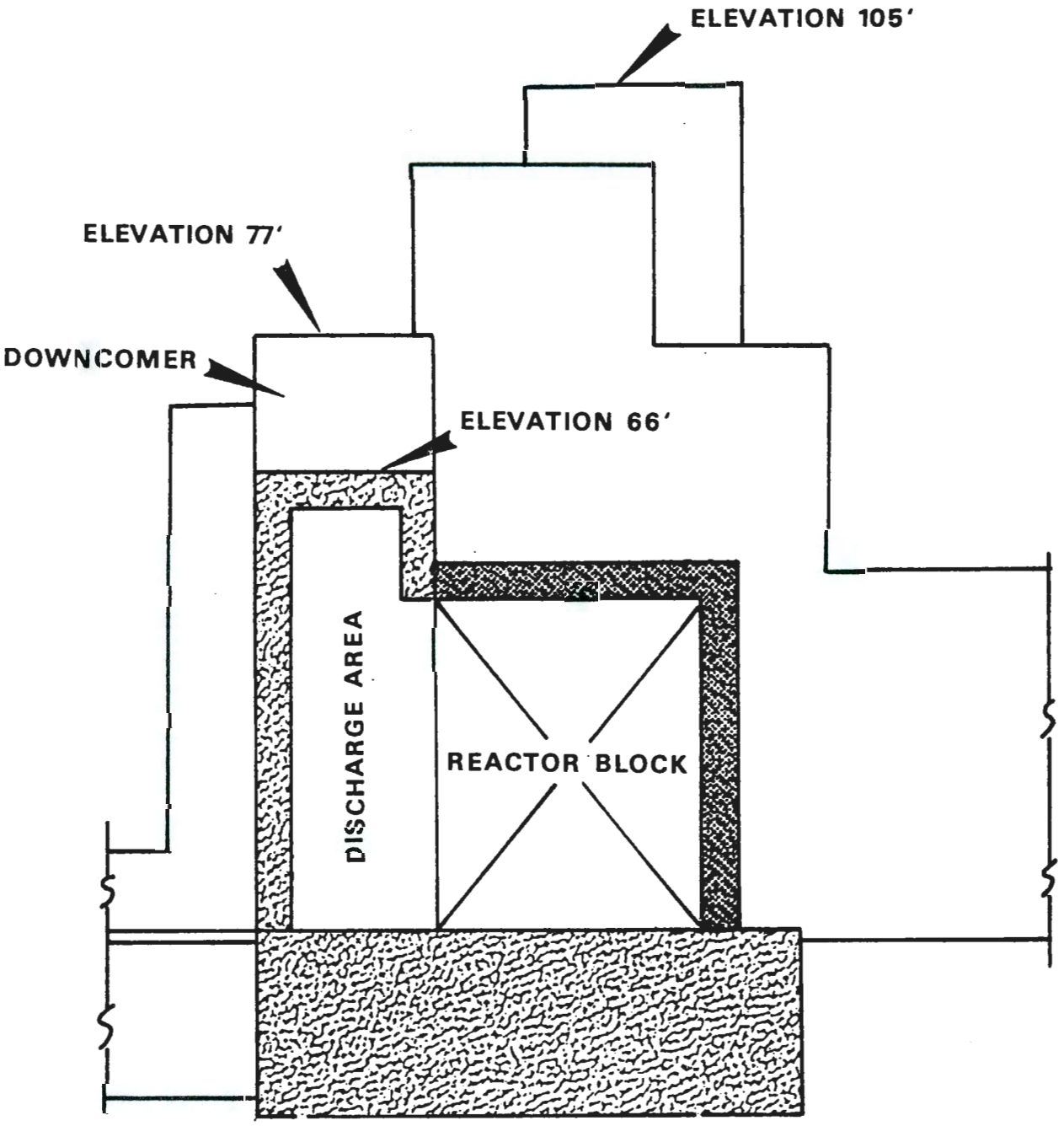


FIGURE 17

[redacted]

105-H

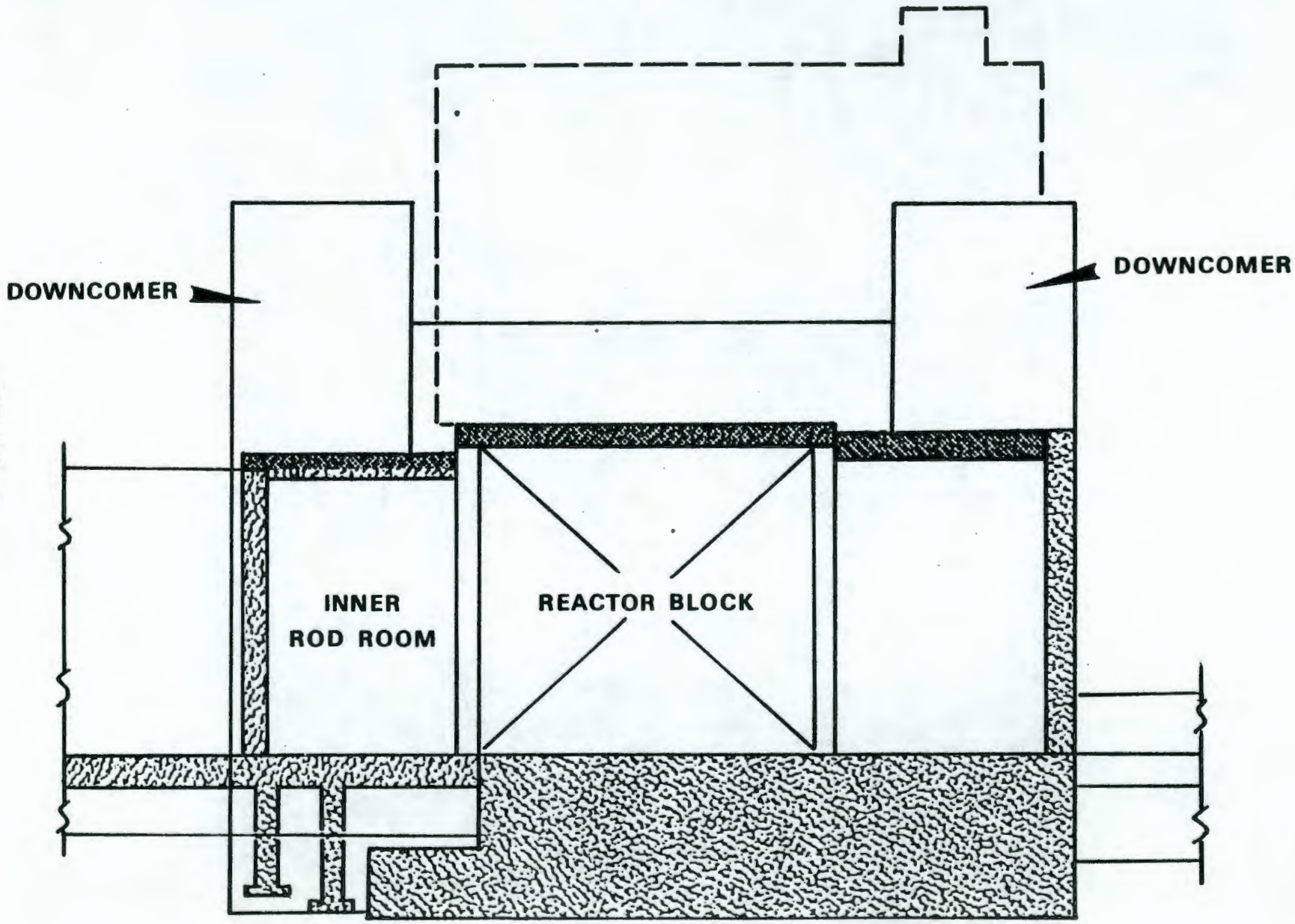


FIGURE 18

[redacted]

SECTION VI

COSTS AND SCHEDULES

Summary cost breakdowns for major facilities in the various areas are tabulated in Table VII. The operational costs for the alternative elements of each plan are tabulated in Table VIII. Technological requirements and schedules are presented in Figure 15. Development programs contingent upon large scale demonstration of technology are presented in Figure 16. The cost for these development and demonstration programs is $72 million and is summarized in Table IX. Technology costs in relation to potential program direction are discussed in further detail in Section VII. Minimum technology development in support of Plans I and II would cost about $19 million for the period through 1980. Developing and demonstrating the alternative concepts for long-term storage of high level waste would cost an additional $53 million.

A possible expenditure pattern for Plan I is presented in Table X. It is indicated that at a peak expenditure rate of about $10-11 million/year Plan I could be completed during the period 1974 through 1985, a period of 12 years, at a campaign cost of about $84 million.

An expenditure pattern for Plan II is presented in Table XI. It is indicated that at a peak expenditure rate of about $29 million per year 13 years would be required at a campaign cost of about $370 million. Assuming Plan II to be sequential with Plan I, it would be implemented during the period FY 1986 through 1998. Plan II could be initiated before Plan I is completed. A possible expenditure pattern for this alternative is presented in Table XII and Figure 19. As indicated in Figure 19, it is necessary that technology for excavating burial grounds and for decontaminating facilities be available to achieve such an operating schedule. Assuming that the proposed programs are implemented, sufficient information should be available to allow good engineering design for interim storage as early as FY 1975 or 1976 (see Figure 15).

Alternative program costs are tabulated in Table XIII.

TABLE VII

DIRECT OPERATING COSTS FOR RESTORATION ALTERNATIVES
(Millions of FY 1972 Dollars)

	1*		2*		3*	
A. 100 AREAS						
100-H	4.0		45			
100-F	5.0		45			
100-D & DR	8.5		90			
100-B & C	8.0		90			
100-KE & KW	11.0		90			
100-N	4.0		40			
TOTAL 100 AREAS		40.5		400		
B. 200 AREAS						
Facilities						
244-AR	0.75		2.15			
Purex	2.50		55.00			
B Plant	1.60		60.00			
225-B (Encapsulation)	0.20		5.00			
224-B	0.15		6.00			
Semi-Works	1.70		6.80			
Redox	1.10		36.00			
222-S	0.65		5.15			
232-S	0.50		10.00			
221-T	1.80		65.00			
224-T	0.15		6.00			
242-T	0.20		2.00			
U Plant	1.60		60.00			
224-U & UA	0.45		7.50			
231-Z	5.10		5.10			
234-5	12.50		34.00			
236-Z	0.60		4.50			
291-Z	0.08		1.70			
Misc. Uncontaminated	2.38		2.38			
Misc. Contaminated	4.75		17.00			
TOTAL 200 AREA FACILITIES		38.80		390		
C. SUBTERRANEAN						
Cribs	10.60		410.0			
French Drains	0.25		0.25			
Ponds and Ditches	165.70		560			
Contaminated Soil (Unplanned)	21.00		50			
Tank Farms	25.40		380			
Buried Lines	14.60		30			
Diversion Boxes	6.40		10			
Burial Grounds	18.90		50			
TOTAL SUBTERRANEAN		262.85		1,490.25		
D. 300 AREA						
BNW					0.8	
WHC - Facilities					0.14	
WHC - Burial Grounds					32.00	
DUN					1.4	
TOTAL 300 AREA						34.3
E. 600 AREA						
TOTAL 600 AREA						1.7

*1. Areas stabilized with concrete pads, facilities sealed or entombed.
2. Plutonium removed to 100 picocuries/gram, remaining radionuclides covered with concrete pads or entombed.
3. All radioactivity removed.

NOTE 1: Costs for Column 2 will be highly dependent upon the success of technology programs and are estimated as a range (see Table VIII).

NOTE 2: Insufficient site measurement data are available to estimate removal of plutonium to 2 nanocuries/gram. Costs are guesstimated between Columns 1 and 2 (see Table VIII and text).

TABLE VIII

SUMMARY OPERATIONAL COSTS
(Cost in Millions of FY 1972 Dollars)

PLAN							
I		II		III-A[2]		III-B[3]	
Altern. Element[1]	Cost	Altern. Element[1]	Cost	Altern. Element[1]	Cost[4]	Altern. Element[1]	Cost[5]
A-1	40			A-2	250 - 450	A-1	40
		B-1	40	B-2	200 - 400	B-1	40
		C-1	270	C-2	700-1,500	C-(1-2)	400-700
D-3	35			C-3	35	D-3	35
E-3	2			E-3	2	E-3	2
Subtotal	77		310				
TOTAL (Rounded)			390		1,400-2,400		500-900
					1,400-4,000[6]		500-1,500[6]

(1) See Table VII.

Alt. 1 - Areas stabilized with concrete pads, facilities sealed or entombed.
2 - All areas, plutonium removed, remaining radionuclides stabilized with concrete pads or entombed.
3 - All radioactivity removed except buried uranium and thorium.

A - 100 Areas
B - 200 Area Facilities
C - 200 Area Subterranean
D - 300 Area
E - 600 Area

(2) Plutonium removed to 100 picocuries/gram.
(3) Plutonium removed to 2 nanocuries/gram.
(4) Estimated range depends upon success of technology programs.
(5) Insufficient information, cost is guesstimated.
(6) Estimate with contingencies.

TABLE IX

ESTIMATED COST OF DEVELOPING AND DEMONSTRATING PERTINENT TECHNOLOGIES[1]
(In Thousands of FY 1972 Dollars)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	total
Characterization and Preliminary Engrg.		500	500	500	500	500	500	500		3500
Biological Interactions	60	100	100	75	75	75				485
Surficial Hydrology	480	530	350	250	100					1710
Water Movement in Vadose Zone	100	100	100	100	50	50				500
Site Seismicity and Engineering	140	680	655	420	160					2055
Solid Waste Handling[2]										
Technology	355	1500	750	400						3005
Demonstration			1500	5800	5750	5750	7050	4900	3900	36250[4]
Waste Processes	270	300	300	300	300	150				1620
Deep Storage Investigations[3]										
Technology	1300	2100	2600	1500	1000					8500
Demonstration						500	3000	4000	3500	11000
Packaging and Transportation		100	100	200	300	200	100	100	100	1200
TOTAL	2705	5910	6955	9545	8235	7225	10650	9500	7500	69825

(1) Does not include all costs associated with plant operations.
(2) See ARH-2075 (updated).
(3) See ARH-2065.
(4) Includes $1600 in FY 1981.

[redacted]

TABLE X

PLAN I - POSSIBLE EXPENDITURE PATTERN
(Costs in Millions of 1972 Dollars)

FY	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Total	Rounded Total
100 AREAS														
Engineering Studies	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-	-	-	0.18	
Site Characterization	0.05	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-	-	-	0.65	
H	1.0	2.0	1.0										4.0	
F		1.0	2.0	2.0									5.0	
D & DR			1.5	2.5	2.5	2.0							8.5	
B & C					1.5	2.0	2.5	2.0					8.0	
N							0.8	1.0	1.5	0.7			4.0	
KE & KW							1.0	2.0	3.0	3.0	2.0	-	11.0	
TOTAL 100 AREAS	1.7	3.12	4.62	4.62	4.12	4.12	4.42	5.02	4.52	3.7	2.0	-	41.33	41.5
200 AREAS														
Engineering Studies	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1		0.3	
Site Characterization	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04		0.44	
Receipt and Burial	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	3.0	
TOTAL 200 AREAS	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.39	0.25	3.74	3.8
300 AREA														
Engineering Studies	0.2	0.2	0.2	0.01	0.02	0.02	0.02	0.02	0.02	-	-	-	0.71	
Site Characterization	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	-	-	-	0.22	
Burial Grounds				4.6	4.6	4.6	4.6	4.6	4.6	4.6	-	-	32.2	
Laboratory	0.04	0.06	0.03	0.06	0.04	0.03	0.05	-	-	-	-	-	0.31	
Fuel Fabrication					0.3	0.7	1.0	-	-	-	-	-	2.0	
TOTAL 300 AREA	0.27	0.29	0.26	4.7	4.98	5.37	5.69	4.64	4.64	4.6	-	-	35.44	35.4
600 AREA														
Engineering Studies	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	-	0.055	
Site Characterization	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	-	-	-	-	1.4	
Operations	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-	1.8	
TOTAL 600 AREA	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.105	0.105	0.105	0.105	-	3.255	3.3
TOTAL	2.055	4.125	5.595	10.035	9.815	10.205	10.825	10.075	9.575	8.715	2.495	0.25	(83.765)	
ROUNDED TOTAL	2.1	4.1	5.6	10.0	10.0	10.2	11.0	10.0	9.6	8.7	2.5	0.2		84

TABLE XI

PLAN II - POSSIBLE EXPENDITURE PATTERN
(Costs in Millions of 1972 Dollars)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13		Rounded
FY	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total	Total
200 AREAS															
Engineering Studies	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	-	-	0.38	
Site Characterization	0.2	0.2	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	-	0.95	
200 E & W Facilities	2	4	4	4	4	4	4	4	4	4	4	-	-	42	
Subterranean	25	25	25	25	25	25	25	25	25	25	25	-	-	275	
Complete Interim Storage												25	25	50	
TOTAL 200 AREAS	27.3	29.3	29.22	29.07	29.07	29.07	29.07	29.07	29.07	29.07	29.07	25	25	368	
ROUNDED TOTAL	27	29	29	29	29	29	29	29	29	29	29	25	25		370

TABLE XII

EARLY PLAN II START - POSSIBLE EXPENDITURE PATTERN
(Costs in Millions of 1972 Dollars)

FY	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Total	Rounded Total
100 AREAS	0.02															
Engineering Studies	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02						0.18	
Site Characterization	0.05	0.1	0.1	0.1	0.1	0.1	0.1								0.65	
H	1.0	2.0	1.0												4.0	
F		1.0	2.0	2.0											5.0	
D & DR			1.5	2.5	2.5	2.0									8.5	
B & C					1.5	2.0	2.5	2.0							8.0	
N							0.8	1.0	1.5	0.7					4.0	
KE & KW							1.0	2.0	3.0	3.0	2.0				11.0	
TOTAL 100 AREAS	1.07	3.12	4.62	4.62	4.12	4.12	4.42	5.02	4.52	3.7	2.0				41.33	41.5
200 AREAS																
Engineering Studies	0.1	0.1	0.1	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		0.6	
Site Characterization	0.2	0.2	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05					0.95	
200-E & W Facilities			2	4	4	4	4	4	4	4	4	4	4		42	
Subterranean		25	25	25	25	25	25	25	25	25	25	25			275	
Receipt and Burial	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25			3	
Complete Interim Storage													25	25	50	
TOTAL 200 AREAS	0.55	25.55	27.55	29.40	29.32	29.32	29.32	29.32	29.32	29.32	29.27	29.27	29.02	25.0	371.55	372
300 AREA																
Engineering Studies	0.2	0.2	0.2	0.01	0.02	0.02	0.02	0.02	0.02						0.71	
Site Characterization	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02						0.22	
Burial Grounds				4.6	4.6	4.6	4.6	4.6	4.6	4.6					32.2	
Laboratory	0.04	0.06	0.03	0.6	0.04	0.03	0.05								0.85	
Fuel Fabrication					0.3	0.7	1.0								2.0	
TOTAL 300 AREA	0.27	0.29	0.26	5.24	4.98	5.37	5.69	4.64	4.64	4.6					35.98	36
600 AREA																
Engineering Studies	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005				0.055	
Site Characterization	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	-	-	-				1.4	
Operation	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1				1.8	
TOTAL 600 AREA	0.405	0.405	0.405	0.405	0.405	0.405	0.405	0.105	0.105	0.105	0.105				3.255	3.3
TOTAL	2.295	29.365	32.835	39.665	38.825	39.215	39.835	39.085	38.585	37.725	31.375	29.27	29.02	25.0	452.115	
ROUNDED TOTAL	2.3	29.4	32.8	29.7	38.8	39.2	39.8	39.1	38.6	37.7	31.4	29.3	29.0	25.0		452

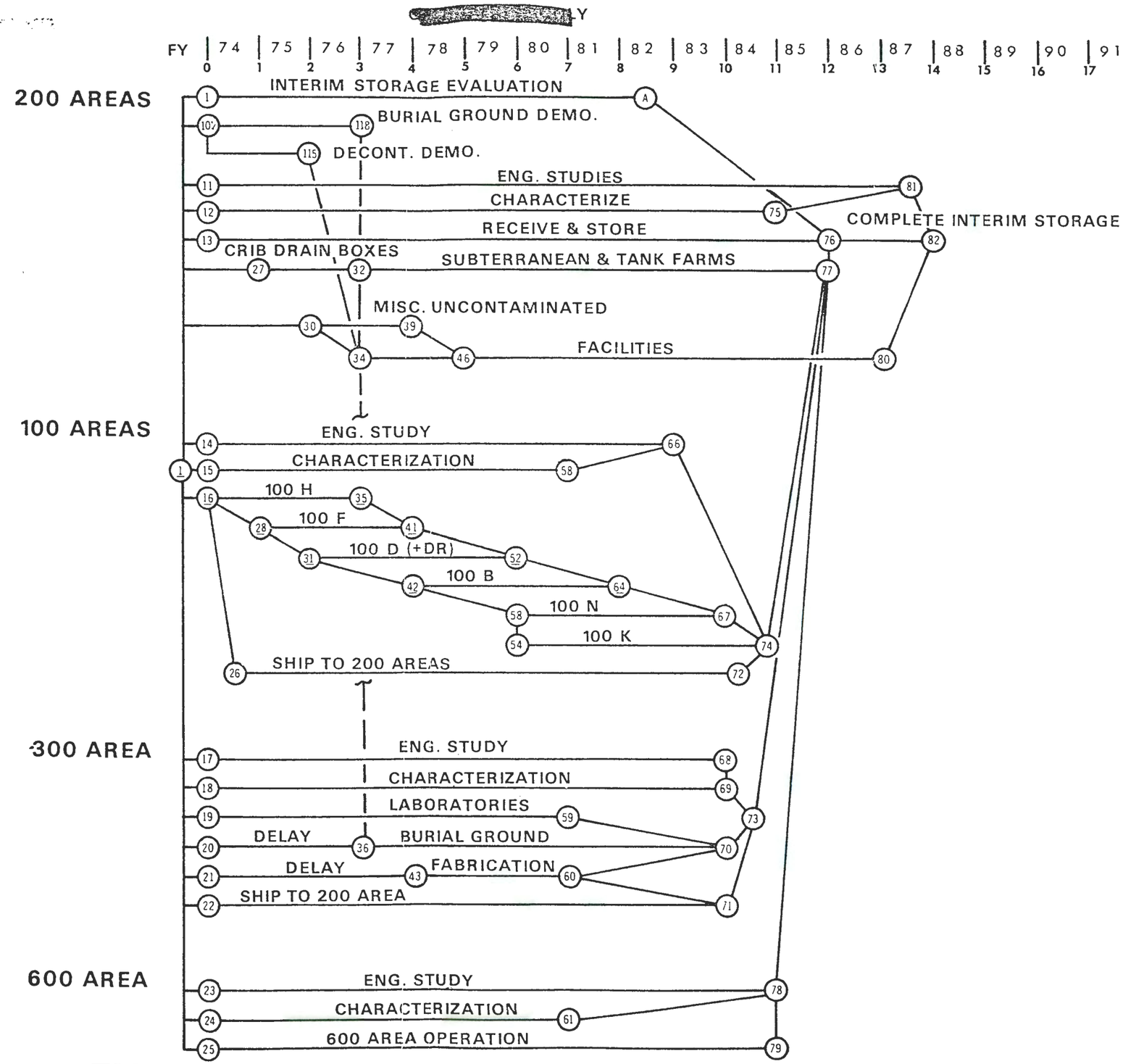


FIG. 19 PLAN 1 WITH EARLIEST PLAN 2 START

SECTION VII

TECHNOLOGY REQUIREMENTS

Technology development programs directed at solution of waste management problems and formulation of action alternatives are summarized in Table IX. The need, or the requirement, for these individual programs will depend upon the program objectives and the planning for the future status of the Hanford site. Resolution of these Hanford waste management problems will require work in:

- Geology
- Hydrology
- Climatology
- Biology
- Seismic-Earthquake
- Engineering

Basic work in these disciplines will provide information establishing alternatives for storage modes at Hanford and provide further bases for the AEC's general Waste Management Programs. Further, operational support of selected program plans will be necessary. These are proposed as process development programs followed in some cases by demonstration programs.

The first five items, and part of the sixth, of Table IX describes technologies associated with Plan I and II activities while part of the sixth and the remaining three items are directed toward Plan III. Approximate accumulated costs are summarized in Table XIII. Technology in support of Plans I and II will cost about $19 million. Further programs in support of the long-term storage requirements of Plan III will require an additional $53 million. If an early decision is made to implement only Plans I and II, it will be highly desirable to develop the long-term storage alternatives with their supporting technologies proposed in the $53 million in support of Plan III. This information will be particularly valuable in waste management decisions that might be required in the future and will also provide information relevant to general AEC waste management considerations.

As indicated in Table IX the technology programs currently in effect or proposed are:

- Characterization and Preliminary Engineering
- Biological Interactions
- Surficial Hydrology
- Water Movement in Vadose Zone
- Site Seismicity and Earthquake Engineering
- Solid Waste Handling
- Waste Processes
- Deep Storage Investigations
- Packaging and Transportation

Characterization and Preliminary Engineering

The objective of this work is to determine the precise location, extent, and nature of contamination at the Hanford site and to devise definitive action plans with realistic cost estimate.

Operation of the reactors has induced substantial quantities of ^{14}C and ^{60}Co in the core and structure. Uranium, plutonium, and fission products are stored in the soil at scattered locations in the 100, 200 and 300 Areas. In many cases the boundaries of soil contamination and the nuclide concentration profiles within the contaminated zones are not known accurately. A program to develop this information as a basis for planning and cost estimating is required.

In the 100 Areas a total of 300 samples per reactor area are planned. Of particular concern are the induced radioactivity (principally ^{14}C and ^{60}Co) in the reactor structure and the activation and fission products (^{152}Eu, ^{154}Eu, ^{90}Sr, ^{137}Cs, and ^{239}Pu) associated with the reactor cooling water effluent and the irradiated metal storage basins. In the 200 Areas an average of five wells per crib, or leak area, will be needed to define the lateral and vertical extent of the contamination. In the 300 Areas similar sampling programs are required to define the contamination levels in building surfaces, ducts, and effluent systems potentially available for excess. In the 600 Area and portions of other areas, land areas and facilities would have to be surveyed and spot-sampled to determine compliance with the established criteria prior to release. This same data would establish a baseline of contaminant levels at the time of release.

Work will also be required to develop the concept and test the validity of isolating buried contamination with concrete pads.

Biological Interactions

The objective of this work is to develop the information required to establish criteria for effective isolation of buried radioactive nuclides from botanical and animal life.

Currently, subsurface contamination does not constitute a health hazard to humans since these areas are under continual surveillance and rigid control. Potential radiological problems associated with these areas, however, include the up-take of radioactive materials by plants with roots that tap the contaminated region, and the burrowing of small animals into the contaminated materials.

Work needs to be done to systematically study the characteristics and habits of the relevant life forms (other than human) to determine the degree of isolation required to permit an intermediate- or long-term storage mode. The nature of contamination in soils needs to be studied in order to provide a basis for establishing limits defining the uncontaminated state.

Surficial Hydrology

The objective of this work is to develop information which will allow prediction of the movement of groundwater and radionuclides through Hanford soils as a function of time and space.

Currently, computer programs have been developed to simulate:

- The movement of water in the partially saturated zones, and

- The movement of radionuclides with the water as inhibited by the ion exchange properties of the soil.

As an adjunct to this program, laboratory tests are being made to determine the rates at which cesium, strontium, and plutonium might migrate in the very unlikely condition that water was to percolate through the waste salt cakes and soil to the groundwater.

Work needs to be done to provide information to permit an analysis of the safety of storing the waste salt cakes in underground tanks and of maintaining subterranean depositions of radionuclides for decades or centuries. This program is described in greater detail in reference 6.

Water Movement in the Vadose Zone

The objective of this work is to define the natural movement of water between the ground surface and the water table as such water movements might affect the safety of storing radionuclides in this zone. This work will contribute to the safety analysis of surficial storage considerations at Hanford.

Because of the arid climate at Hanford water precipitated as rain or snow tends to evaporate rather than percolate to the water table. Water movement in the vadose zone is known to be very slow; however, the water balance and critical precipitation (precipitation rate at which percolation to the water table is achieved) is not known with certainty. Tritium concentration measurements indicate that surface water has penetrated about 20 feet during the last 20 years and soil moisture, humidity, and temperature measurements indicate that there may be a net vapor phase migration of water upward from the water table. The program is discussed in greater detail in reference 7.

Site Seismicity and Earthquake Engineering

The objective of this work is to provide a sound technical base for evaluating the probable magnitude and frequency of earthquakes and the resistance of existing and projected structures to the maximum probable earthquake at Hanford.

A five-year program has been designed to utilize available expertise including that of the U. S. Geologic Survey (USGS), the National Ocean Survey (NOS), and University Consultants. Currently, the program elements are as follows:

- Consult with the nation's leaders (in universities, USGS, NOS) on the various aspects of the study program.

- Collect and interpret time-dependent seismic data. Micro-earthquakes are now being measured via a network of geophones by the USGS. The NOS has located a recording seismograph at Gable Mountain and ARHCO has placed six recording seismographs on typical structures and ground surfaces.

- Characterize Hanford soils in qualified laboratories to determine the constants needed for computing coupling between soils and structures as a function of frequency spectra. Sensitive accelerographs are being installed on existing structures to determine if micro-earthquakes that are characteristic of the region can be used to measure building response to earth motions.

- Develop an earthquake model of the Hanford area to predict the behavior of surface and subsurface structures during a postulated severe earthquake.

The program is discussed in greater detail in reference 5. The schedule has been delayed beyond that first proposed. The costs presented in Table IX differ from those in reference 5 in that it is assumed that the work of evaluating reactor structures after FY 1971 would be cut in half to cover the K Reactors only.

Solid Waste Handling

The objective of this work is to develop the technology for dismantling radioactive facilities, packaging their components, and releasing the sites for unrestricted use.

Examples of needed technologies include the following:

- Decontamination of metal and concrete surfaces to releasable limits.
- Measurement, sorting, and packaging techniques.
- Segmentation of massive equipment.
- Solid waste volume reduction (incineration, melting, or alternatives).
- Removal and packaging of contaminated salt cakes.
- Demolition and packaging of underground storage tanks.
- Removal of contaminated wastes and solids from the ground.

A program designed to acquire and demonstrate the needed technologies has been proposed and is described in reference 12. In this program the developed technologies would be demonstrated by actually cleaning and/or removing part or all of five facilities. The techniques involved are felt to be representative of those required in decommissioning the Hanford site. The demonstration areas selected are:

- A burial ground: At least a portion of the contents would be packaged and buried on the 200 Areas plateau for interim storage.
- Redox dissolver cells: In one cell equipment would be removed, compacted, and packaged for storage; in other cells equipment and surfaces would be cleaned for "storage in place."

- 116-TX waste storage tank: The salt cake would be removed and packaged and the tank demolished and packaged (at least partially) for storage.

- S1-S2 crib: The soil would be removed to a depth of about 65 feet (30 feet beneath crib bottom which includes 99 percent of contained activity) and packaged for storage.

- Purex burial tunnel: Three massive pieces of equipment would be removed, segmented, and packaged for storage.

The program is envisioned to require about nine years to complete. The program is divided into two parts:

- Development of technology in support of the demonstration.

- Full-scale demonstration.

Individually, the technologies for each of the five operations are estimated to require about 1.5 to 2.0 million dollars. Economies resulting from the similarities of required technologies would permit technology in support of the integrated demonstration program to be developed for about 3.0 million dollars. As indicated in Table IX, the demonstration phase of the programs would cost about 36.3 million dollars.

Waste Processes

The objective of this work is to develop the technology for processing various types of wastes in order to improve their inherent characteristics for transportation or long-term storage or to reduce overall campaign costs.

Large volumes of contaminated materials will be held in storage on the 200 Areas plateau at the termination of processing operations. Although the mass of actual fission products produced during the production period at Hanford is reasonably small, it is estimated that up to about 10^{10} cubic feet of materials are contaminated to some extent with both fission products and plutonium. Basically, the contaminated materials may be classed as:

- Encapsulated cesium and strontium

- Salt cakes

- Buried solids

- Contaminated soils

The composition and contamination level of these materials varies over a very wide range. For example, it is estimated that about 10^7 cubic feet of salt cake will be in storage with fission product concentrations of about 1 to 100 curies per cubic foot. Most of the fission products, other than the encapsulated cesium and strontium, are contained in the salt cake. Buried solids consisting of cellulosic materials, rubber, glass, plastics, and discarded metal equipment are also estimated at about 10^7 cubic feet with contamination levels varying from uncontaminated to about 100 Ci/cu ft. Contamimated soils in crib disposal areas and ponds are estimated roughly at 10^8 to 10^{10} cubic feet with contamination levels up to about 1 Ci/cu ft. Plutonium in these materials varies from uncontaminated to about 25 grams/cu ft.

The technology for handling these diverse materials and for determining alternative processes is covered in two programs:

- Volume Reduction Methods
- Immobilization Processes

The objective of volume reduction work is to determine the technical and economic feasibility of separating radionuclides from their nonradioactive matrices such that the quantity of material requiring high-level disposal methods is minimized. The application of industrial and nuclear separations processes will be explored. The challenge is the high degree of decontamination required to achieve the low residual radioactivity levels which may acceptably be defined as uncontaminated. This work is discussed in greater detail in reference 11.

The objective of immobilization process work is to define the technology for immobilizing the radioactivity in process wastes as essentially insoluble compounds. For example, the long-lived radioisotopes of concern - cesium, strontium, and plutonium - are capable of forming simple or compound silicates of very low solubility similar to natural minerals which have remained intact in nature for millennia; cesium is found in pollucite (cesium aluminosilicate), strontium silicate resembles anorthite (calcium aluminosilicate), and plutonium resembles zircon (zirconium silicate). The silicate products can be formed by a hydrothermal process in which the reactions take place slowly at high temperatures and pressures. Scouting laboratory studies have shown that cesium can be converted to a synthetic pollucite. Considerable work is required to establish the effect of reaction variables on conversion efficiency and product characteristics.

Alternatively, the silicates might be formed by a thermite-type reaction involving salt waste, sand, aluminum, and, possibly, crushed basalt. In nonradioactive demonstrations of this process a dense rock having the approximate composition

of basalt has been obtained. Preliminary data indicate that the solubility of the rock is in the order of 10^{-7} grams per square centimeter per day. The program requires laboratory characterization and experiments with radioactive wastes before its potential can be assessed.

These programs are discussed in greater detail in references 3, 8, and 9.

Deep Storage Investigations

The objective of this work is to determine the feasibility of storing radioactive waste in caverns mined in basalt formations beneath the water table.

The geology of the Pasco basin is unique in that the area is covered with successive basalt flows to a depth in excess of 10,000 feet. Preliminary data indicate that a 200-foot-thick layer of rock at a depth of 3500 feet is dense and hard, that deep aquifers are effectively isolated from upper aquifers, and that water migration past the location is very slow. While available information is not yet sufficient to recommend this concept, current data indicate that storage of radioactive materials in this formation may be feasible. This concept and development program are discussed in greater detail in reference 10.

To date, one well has been dug to 5660 feet for hydrological testing and three core wells to about 1200, 600, and 3500 feet, respectively, for rock studies. Currently, two deep core wells are being drilled. Analytical methods have been developed to permit positive identification of some basalt flow units wherever they occur. Coupled with information available from the Rattlesnake Hills well, a preliminary picture of the stratigraphy has been obtained and some tentative conclusions made with regard to historical structural movements associated with the formation of the hills in the area. A comprehensive program is in progress to define the regional and local stratigraphy, the hydrology, the geothermal gradient, the rock mechanics of the basalts of interest, the age of the rock and formation waters, and possible interactions between the rock and waste materials. Simultaneously, engineering studies are planned to determine the feasibility of mining a cavern and transporting waste materials into the burial site. Assuming that the availability of funds would not be a limiting factor, it is estimated that the investigations could be complete by the end of fiscal year 1976 and that a demonstration shaft and cavern could be constructed during the 1978-80 period.

Packaging and Transportation

The objective of this work is to develop and define a safe

and efficient transportation system compatible with Federal regulations and receiving site restrictions.

Packaging and transportation problems will be unique to the Hanford decommissioning plan and work will be required to achieve an economic optimization. New designs would likely have to be developed and prototyped.

TABLE XIII

ALTERNATIVE PROGRAM COSTS

Alternative	R&D	Operations	Surveillance	Total to Year 2000
Status Quo - Category C	19	-	52 (1)	71
Plan I	19	84	26 (2)	129
Plan I & II	19	450	8 (3)	480
Plan III	72	500 to 4,000	-	500 to 4,000 (4)

(1) At $2 million/year.

(2) At $1.6 million/year.

(3) At $0.5 million/year.

(4) To end of program.

Includes only removal and packaging costs. Processing, transportation, and storage costs, if any, would be additive.

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APPENDIX

SITE INVENTORY

AND

RESTORATION COSTS

APPENDIX A

100 AREAS

COST SUMMARY
100 AREAS DECOMMISSIONING

100-H	Category A	$1,000,000	
	Category B	3,000,000	
	Total		$4,000,000
100-F	Category A	$1,200,000	
	Category B	3,800,000	
	Total		$5,000,000
100-D & DR	Category A	$1,900,000	
	Category B	6,600,000	
	Total		$8,500,000
100-B & C	Category A	$1,700,000	
	Category B	6,300,000	
	Total		$8,000,000
100-KW & KE	Category A	$1,500,000	
	Category B	9,500,000	
	Total		$11,000,000
100-N	Category A	$ 900,000	
	Category B	3,100,000	
	Total		$4,000,000
	GRAND TOTAL		$40,500,000

CODE FOR APPENDIX A

Contamination Status

N - Not normally contaminated
S - Measurable contamination
G - Grossly contaminated

Construction

C - Reinforced Concrete
CB - Concrete Block
T - Transite
TS - Transite Shakes
M - Steel

Proposed Action - Contaminated Facilities

1. Entomb reactor; seal doors on gas dryer, filter rooms; demolish remaining building and cover with earth and gravel; fill gas tunnels and valve pit; pour concrete slab over storage basin.

2. Cover with concrete slab.

3. Fill with earth; cover with concrete slab.

4. Demolish, cover with earth and gravel.

5. Excavate, remove pipe, and place in 107 Basin.

6. Fill with earth; seal side and top openings with concrete slab.

7. Demolish building; place equipment in 107 Basin, cover with earth and gravel.

8. Fill with earth. Cover with concrete slab.

9. Remove covers and fill building with earth rubble; replace concrete covers.

10. Demolish building; fill pit with earth and rubble; seal openings in floor with concrete slab.

11. Demolish tank, cover with earth and concrete slab.

Proposed Action - Noncontaminated Facilities

A. Sell building.

B. Demolish building; salvage and sell steel; fill trenches and pipe gallery; dump rubble into clear well.

C. Demolish building; fill pit with rubble and earth.

D. Demolish building; fill filters and pipe gallery with rubble and earth.

E. Demolish superstructure; construct concrete wall along river side of remaining structure; concrete cover over all openings in the floor.

F. Fill with rubble and earth.

G. Demolish building; dump rubble in pump room.

H. Demolish roof; fill with rubble and earth.

J. Demolish.

K. Sell equipment, demolish building, put rubble in clear well.

L. Demolish building; place rubble in clear well.

M. Fill with earth.

N. Salvage equipment. Remove pump room roof; fill with earth and rubble.

P. Sell equipment and building.

Q. Sell tanks.

100-B & C AREAS - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-B	Reactor Building	42,500 Sq.Ft.	C/CB	G	1
105-C	Reactor Building	65,000 Sq.Ft.	C/CB	G	1
108-B		9,600 Sq.Ft.	CB	S	7
108-B	Stack	250' High	C	S	4
107-B	Retention Basin	110,000 Sq.Ft.	C	G	3
107-C	Retention Tanks (2)	340' Dia.	M	G	11
115-B	Gas Pur. Building	16,500 Sq.Ft.	CB	G	1
103-B		1,300 Sq.Ft.	CB	S	7
105-B	Stack	250' High	C	S	4
105-C	Stack	250' High	C	S	4
	Burial Ground 1	6,400,000 Cu.Ft.		G	2
	Burial Ground 2	7,200,000 Cu.Ft.		G	2
	M.C. Burial Ground	1,920,000 Cu.Ft.		G	2
	Effluent Lines	12,000 Ft.		S	5
	Junction Boxes (20)		C	S	6
1904-B	Outfall Structure	300 Sq.Ft.	C	S	8
1904-BA	Outfall Structure	300 Sq.Ft.	C	S	8
1904-C		300 Sq.Ft.	C	S	8
	Crib	5,000 Sq.Ft.		G	8
1608-B	Lift Station	2,000 Sq.Ft.	C	S	10
117-F	Confinement Filter Building	6,000 Sq.Ft.	C	G	9
105-B	Storage Basin	7,500 Sq.Ft.	C	G	10
105-C	Storage Basin	7,500 Sq.Ft.	C	G	10
13	Small Cribs B&C 105 Area	40,000 Sq.Ft.		G	2

100-B & C AREAS - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
181-B	River Pump House	12,500 Sq.Ft.	CB	N	E
182-B	Basin	220,000 Sq.Ft.	C	N	F
182-B	Pump Room	14,000 Sq.Ft.	C	N	N
182-B	Switch Gear Room	1,300 Sq.Ft.	CB	N	G
183-B	Head House	4,300 Sq.Ft.	CB	N	C
183-B	Filter Building	26,000 Sq.Ft.	CB	N	D
183-B	Settling Basin	100,000 Sq.Ft.	C	N	F
183-B	Clearwell and Pump House	81,000 Sq.Ft.	C	N	H
190-B	Storage Tank and Pump Room	77,000 Sq.Ft.	CB	N	B
185-B		15,000 Sq.Ft.	CB	N	B
190-B	Pump Room Annex	16,000 Sq.Ft.	T	N	A
184-B	Power House	16,500 Sq.Ft.	CB	N	B
184-B	Stacks (2)	250' High	C	N	J
183-C	Head House	1,500 Sq.Ft.		N	C
183-C	Filter Bldg. and Pump House	90,000 Sq.Ft.	T	N	B
183-C	Settling Basins	190,000 Sq.Ft.	C	N	F
183-C	Storage Tanks (4)	180' Dia.	M	N	A
190-C	Pump House	32,000 Sq.Ft.	T	N	B
1902-B	Water Tank	100,000 Gallon	M	N	A
187	Water Tanks (4)	300,000 Gallon	M	N	A
151-B	Switch Gear House	4,300 Sq.Ft.	C/CB	N	K
1704-B	Office	8,100 Sq.Ft.	T	N	A

100-B & C AREAS - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
1707-B	Change House	2,000 Sq.Ft.	T	N	A
1707-BA	Office	2,000 Sq.Ft.	T	N	A
1716-B	Garage	2,000 Sq.Ft.	T	N	L
1719-B	First Aid	800 Sq.Ft.	T	N	A
	Pipe Tunnels 190 to 105 B & C		C	N	M

100-D & DR AREAS - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-D	Reactor Building	42,500 Sq.Ft.	C/CB	G	1
105-DR	Reactor Building	42,500 Sq.Ft.	C/CB	G	1
105	Stacks (2)	250' High	C	G	4
108-D		4,500 Sq.Ft.	CB	S	7
103-D	Metal Storage Building	1,300 Sq.Ft.	CB	S	7
115-D	Gas Pur. Building	16,500 Sq.Ft.	CB	G	1
117-D	Conf. Filter Building	8,000 Sq.Ft.	C	G	9
117-DR	Conf. Filter Building	8,000 Sq.Ft.	C	G	9
1608-D	Lift Station	2,000 Sq.Ft.	C	G	10
107-D	Retention Basin	110,000 Sq.Ft.	C	G	3
107-DR	Retention Basin	180,000 Sq.Ft.	C	G	3
1904-D	Outfall Structure	250 Sq.Ft.	C	S	8
1904-DR	Outfall Structure	250 Sq.Ft.	C	S	8
	Effluent Lines	16,000 Lin.Ft.		S	5
	Junction Boxes (18)		C	S	6
	Burial Ground 1	3,400,000 Cu.Ft.		G	2
	Burial Ground 2	10,000,000 Cu.Ft.		G	2
	Burial Ground 3	10,000,000 Cu.Ft.		G	2
108-D	Laboratory	9,600 Sq.Ft.		S	7
105-D	Metal Storage Basin	7,200 Sq.Ft.	C	G	10
105-DR	Metal Storage Basin	7,200 Sq.Ft.	C	G	10
15 Small Cribs D & DR - 105 Area		4,500 Sq.Ft.		G	2

100-D & DR AREAS - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
181-D	River Pump House	8,700 Sq.Ft.	C/CB	N	E
182-D	Basin	220,000 Sq.Ft.	C	N	F
182-D	Pump Room	14,000 Sq.Ft.	C	N	N
182-D	Switch Gear Room	1,300 Sq.Ft.	CB	N	G
183-D	Head House	4,300 Sq.Ft.	CB	N	C
183-D	Filter Building	36,000 Sq.Ft.	CB	N	D
183-D	Settling Basins	134,000 Sq.Ft.	C	N	F
183-D	Clearwell and Pump Room	81,000 Sq.Ft.	C	N	H
186-D	Storage Building	68,000 Sq.Ft.	CB	N	C
190-D	Storage Tank and P.R.	77,000 Sq.Ft.	CB	N	B
190-D	Pump Room Annex	16,000 Sq.Ft.	T	N	A
183-DR	Head House	3,500 Sq.Ft.	CB	N	C
183-DR	Filter Building	32,000 Sq.Ft.	CB	N	D
183-DR	Settling Basin	97,000 Sq.Ft.	C	N	F
183-DR	Clearwell Tanks	180' Dia.	M	N	A
190-DR	Pump Room	44,000 Sq.Ft.	CB	N	B
190-DR	Pump Room Annex	14,400 Sq.Ft.	T	N	A
184-D	Power House	21,000 Sq.Ft.	CB	N	K
184	Stacks (3)	250' High	C	N	J
184-DA	Boiler House	2,200 Sq.Ft.	M	N	A
1902-D	Water Tank	120' High	M	N	A
187-D	105 Water Tanks (4)	120' High	M	N	A
1717-D	Office and Shop	11,000 Sq.Ft.	T	N	A
1713-D	Office	4,100 Sq.Ft.	TS	N	A

100-D & DR AREAS - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
1707-DA	Office	3,000 Sq.Ft.	TS	N	A
1722-D	Laboratory	1,200 Sq.Ft.	TS	N	A
1704-D	Office	8,100 Sq.Ft.	TS	N	A
1703-D	Office	7,000 Sq.Ft.	TS	N	A
1707-D	Office	2,200 Sq.Ft.	TS	N	A
1709-D	First Aid	800 Sq.Ft.	TS	N	A
1716-D	Garage	2,200 Sq.Ft.	TS	N	A
185-D	Laboratory	14,000 Sq.Ft.	CB	N	B
189-D	Laboratory	17,000 Sq.Ft.	CB	N	B
190 to 105	Pipe Tunnels				

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100-K AREA - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-KE	Reactor Building	60,000 Sq.Ft.	C	G	1
105-KW	Reactor Building	60,000 Sq.Ft.	C	G	1
115-KE	Ventilation Building	5,300 Sq.Ft.	C	G	1
115-KW	Ventilation Building	5,300 Sq.Ft.	C	G	1
1706-KE		6,000 Sq.Ft.	CB/T	S	10
1706-KER		18,700 Sq.Ft.	CB/T	G	10
1904-K	Outfall Structure	1,200 Sq.Ft.	C	S	8
107-KE	Retention Tanks (3)	250' Dia.	M	G	11
107-KW	Retention Tanks (3)	250' Dia.	M	G	11
	Effluent Lines	6,000 Lin.Ft.		S	5
	Junction Boxes (6)		C	S	6
105	Stacks (2)	250' High	C	G	4
	Burial Ground	7,200,000 Cu.Ft.		G	2
	Crib			G	2
	Trench			G	2
105-KE	Metal Storage Basin		C	G	10
105-KW	Metal Storage Basin		C	G	10
117-KE	Confinement Filter Building			G	
117-KW	Confinement Filter Building			G	

100-K AREA - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
181-KE	River Pumping Station	4,250 Sq.Ft.	C	N	N
181-KW	River Pumping Station	4,250 Sq.Ft.	C	N	N
183-KE	Head House	8,000 Sq.Ft.		N	C
183-KW	Head House	8,000 Sq.Ft.		N	C
183-KE	Settling Basins	290,000 Sq.Ft.	C	N	F
183-KW	Settling Basins	290,000 Sq.Ft.	C	N	F
183-KE	Filter Building	65,000 Sq.Ft.	C	N	B
183-KW	Filter Building	5,000 Sq.Ft.	C	N	B
183-KE	Clearwell	125,000 Sq.Ft.	C	N	H
183-KW	Clearwell	125,000 Sq.Ft.	C	N	H
190-KE	Pump Room	25,000 Sq.Ft.	T	N	B
190-KW	Pump Room	25,000 Sq.Ft.	T	N	B
165-KE	Control Building	30,000 Sq.Ft.	C	N	B
165-KW	Control Building	30,000 Sq.Ft.	C	N	B
166-KE	Boiler House	12,000 Sq.Ft.	C	N	B
166-KW	Boiler House	12,000 Sq.Ft.	C	N	B
166-KE	Chlorine Car Building	3,400 Sq.Ft.	C	N	G
166-KW	Chlorine Car Building	3,400 Sq.Ft.	C	N	G
166-KE	Pipe Tunnel	6,250 Sq.Ft.	C	N	N
166-KW	Pipe Tunnel	6,250 Sq.Ft.	C	N	N
166-KE/KW	Cross Tunnel	27,000	C	N	A
183-KE	Tanks (8)		M	N	A
183-KW	Tanks (8)		M	N	A
182-K	Diesel Pump House	2,600 Sq.Ft.	T	N	N

100-K AREA - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
1704-K	Office	12,000 Sq.Ft.	T	N	A
1720-K	Office	6,400 Sq.Ft.	T	N	A
1717-K	Shops	10,500 Sq.Ft.	T	N	A
1702-KE/KW	Patrol Building (2)	150 Sq.Ft.	T	N	A

100-F AREA - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-F	Reactor Building	42,500 Sq.Ft.	C/CB	G	1
115-F	Gas Pur. Building	16,500 Sq.Ft.	CB	G	1
117-F	Confinement Filter Building	8,000 Sq.Ft.	C	G	9
105	Stack	250' High	C	S	4
103-F	Metal Storage	1,300 Sq.Ft.	CB	S	7
107-F	Retention Basin	110,000 Sq.Ft.	C	G	3
1904-F	Outfall Structure	250 Sq.Ft.	C	S	8
	Effluent Lines	2,600 Lin.Ft.		S	5
	Junction Boxes (6)			S	6
1608-F	Lift Station	2,000 Sq.Ft.	C	S	10
	Burial Ground 1	5,500,000 Cu.Ft.		G	2
	Burial Ground 2	2,500,000 Cu.Ft.		G	2
	Burial Ground 3	200,000 Cu.Ft.		G	2
	Crib	180,000 Sq.Ft.		S	2
108-F	Office and Laboratory	9,000 Sq.Ft.	CB	S	7
105	Metal Storage Basin	7,200 Sq.Ft.	C	G	2

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100-F AREA - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
181-F	River Pump House	7,400 Sq.Ft.	C/CB	N	E
182-F	Basin	220,000 Sq.Ft.	C	N	F
182-F	Pump Room	14,000 Sq.Ft.	C	N	N
182-F	Switch Gear Room	1,300 Sq.Ft.	CB	N	G
183-F	Head House	4,300 Sq.Ft.	CB	N	C
183-F	Filter Building	26,000 Sq.Ft.	CB	N	D
183-F	Settling Basins	100,000 Sq.Ft.	C	N	F
183-F	Clearwell and Pump Room	81,000 Sq.Ft.	C	N	H
185-F		15,000 Sq.Ft.	CB	N	B
190-F	Storage Tank and Pump Room	77,000 Sq.Ft.	CB	N	B
190-F	Pump House Annex	16,000 Sq.Ft.	T	N	A
184-F	Stacks (2)	250' High	C	N	J
1904-F	Water Tank	120' High	M	N	A
151-F	Switch Gear House	4,400 Sq.Ft.	CB	N	K
1701-FA	Badge House	625 Sq.Ft.		N	A
1707-F	Change House	2,200 Sq.Ft.	TS	N	A
1717-F	Boiler House	12,000 Sq.Ft.	TS	N	J
1704	Vault	225 Sq.Ft.	C	N	J
1713-F	Drafting Room	4,200 Sq.Ft.	TS	N	A
1719-F	First Aid	800 Sq.Ft.	TS	N	A
1707-FA	Office and Laboratory	2,000 Sq.Ft.	TS	N	A
1716-F	Garage	2,000 Sq.Ft.	TS	N	A
	Pipe Tunnels			N	M

100-H AREA - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-H	Reactor Building	62,000 Sq.Ft.	C/CB	G	1
117-H	Confinement Filter Building	8,000 Sq.Ft.	C	G	9
1608-H	Lift Station	2,000 Sq.Ft.	C	G	10
1709-H	Lift Station	200 Sq.Ft.	C/CB	G	10
107-H	Outlet Shack	200 Sq.Ft.	CB	G	7
107-H	Retention Basin	167,000 Sq.Ft.	C	G	3
107-H	Crib	80,000 Sq.Ft.		G	2
1004-H	Outfall Structure	400 Sq.Ft.		S	2
	Burial Ground 1	315,000 Sq.Ft.		G	2
	Burial Ground 2	60,000 Sq.Ft.		G	2
	Pluto Cribs (3)	5,000 Sq.Ft.		G	2
105-H	Stack	250' High		G	4
	Effluent Lines	2,600 Lin.Ft.		S	5
	Effluent Junction Boxes			S	6

100-H AREA - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
190-H	Annex	16,000 Sq.Ft.	T	N	A
190-H	Pipe Tunnel		C	N	M
190-H	Storage Tank and Pump Room	77,000 Sq.Ft.	CB	N	B
183-H	Head House	4,300 Sq.Ft.	C/CB	N	C
183-H	Filter Building	26,000 Sq.Ft.	CB	N	D
183-H	Settling Basin		C	N	F
183-H	Clearwells and Pump Room			N	H
182-H	Basin	100,000 Sq.Ft.	C	N	F
182-H	Pump Room	14,000 Sq.Ft.	C	N	N
182-H	Switchgear Room	1,300 Sq.Ft.	CB	N	K
181-H	River Pump House	6,500 Sq.Ft.	CB	N	E
184-H	HA	250' High	C	N	J
184-H	Hi-Tank	100,000 Gallons	M	N	A
151-H	Switchgear House	4,300 Sq.Ft.	CB/T	N	K
1717-H	Shop	21,000 Sq.Ft.	C/T	N	A
1713-H	W.H.	4,100 Sq.Ft.	C/T	N	L
	Change House	900 Sq.Ft.	TS	N	L
1906-H	Lift Station	1,200 Sq.Ft.	CB	N	H
1702-H	Badge House	224 Sq.Ft.	TS	N	J
	Coal Storage	16,000 Sq.Ft.	TS	N	J
	300' Wall	300' Long	C	N	J

100-N AREA - CONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
105-N	Reactor Building	96,000 Sq.Ft.	C/T	G	1
109-N	Zone I	95,000 Sq.Ft.	C	G	10
1705-N		12,000 Sq.Ft.	M	S	10
117-N	Confinement Filter Building	4,100 Sq.Ft.	G	G	
	Stack		C	G	4
1310-N	Waste Tank	60' Dia.	M	G	
	Waste Disp. Pump House	600 Sq.Ft.	M	G	
	Emergency Dump Basin		C	S	8
	Emergency Dump Tank		M	S	
105	Metal Storage Basin			G	8
	Waste Disposal Valve Pit			G	8
	Crib			G	8
	Trench, 1500' x 50'	75,000 Sq.Ft.		G	8
	Effluent Piping, Outside Zone I				

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100-N AREA - NONCONTAMINATED

FACILITY					PROPOSED ACTION
Number	Description	Size	Walls	Contamination Status (See Code)	See Code
181-N	River Pump House	1,500 Sq.Ft.	C	N	K
182-N	High Lift Pump House	12,000 Sq.Ft.	CB	N	K
163-N	Demineralization Plant	12,000 Sq.Ft.	M	N	K
183-N	Coagulators	13,700 Sq.Ft.	C	N	F
183-N	Head House	2,000 Sq.Ft.	CB	N	K
184-N	Boiler House	9,800 Sq.Ft.	M	N	R
184-N	Boiler House Annex	4,800 Sq.Ft.	M	N	A
153-N	Electrical Substation	3,750 Sq.Ft.	CB	N	K
151-N	Electrical Substation	2,500 Sq.Ft.	CB	N	K
183-N	Clearwell	4,800 Sq.Ft.	C	N	F
108-N	Chemical Unloading Facility	2,000 Sq.Ft.	M	N	Q
166-N	Fuel Oil Storage Tank	3,900 Sq.Ft.	M	N	Q
1715-N	Diesel Oil Storage Tanks (4)				
1714-N	Warehouse	3,400 Sq.Ft.	M	N	A
1734-N	Paint, Oil Storage Building	1,000 Sq.Ft.	C	N	L
	Fuel Oil Pump House	800 Sq.Ft.	CB	N	K
1100-N	Office	8,000 Sq.Ft.	TS	N	A
1101-N	Office	26,000 Sq.Ft.	TS	N	A
	Demin. Water Tank			N	Q
	Filtered Water Tank			N	Q
	Raw Water Tank			N	Q
	AHR Water Tank			N	Q
109-N	Zone III			N	K

APPENDIX B

200 AREAS

200-East Area Facilities

200-West Area Facilities

Subterranean Activity

Active Cribs

Currently Inactive or Deactivated Cribs

Active Ponds and Ditches

Currently Inactive or Deactivated Ponds and Ditches

Unplanned Surface Contamination

CODE FOR APPENDIX B

Contamination Status

N - Not contaminated
S - Measurably contaminated
G - Grossly contaminated

Construction

C - Reinforced Concrete
CB - Concrete Block
T - Transite
TS - Transite Shakes
M - Steel
W - Wooden

Proposed Action - Category B

1. Remove contaminated equipment and loose debris. Package for storage. Excess cold equipment. Fill structure. Plug openings.

2. Fill tank. Cap openings. Mound 20 feet over salt cake. Cap with reinforced concrete.

3. Mound and cap with reinforced concrete.

4. Remove contaminated soil to 20 feet below grade. Fill hole. Mound and cap with reinforced concrete.

5. Mound 20 feet over contamination. Cap with reinforced concrete.

6. Fill void volume. Mound 20 feet over contamination. Cap with reinforced concrete.

Proposed Action - Category A

A. Excess equipment. Sell structure in place. If no sale, raze structure - bury debris.

B. Raze structure and package for storage. Fill hole.

C. Remove tank contents and package. Raze structure and package. Package contaminated soil. Fill hole.

D. Remove all contaminated soil. Fill hole.

E. Remove and package contaminated material and soil. Fill hole.

F. Remove and package equipment. Raze structure and package. Fill depression.

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
241-A-401	Condenser Building	2000 Sq.Ft.	C	S	83	1	210	300
241-A-431	Ventilation Building	346 Sq.Ft.	C	S	83	1	5	15
244-AR	Waste Handling Station	110x21x38 45x22x15		G	80	1	750	2,150
241-A-701	Compressor Building	902 Sq.Ft.	M	S	83	1	5	15
241-AX	Tank Farm Building	2754 Sq.Ft.	M	N	83	1	5	25
272-A	Tank Farm Shop	256 Sq.Ft.	W	N	80	A		5
276-A	Cold Solvent Storage	1500 Sq.Ft.	C	G	80	1	10	50
291-A(1&2)	Control Houses	72 Sq.Ft.	W	G	80	B	-	5
291-A	Stack	200' High	C	G	80	B	-	200
291-A4	Control House	300 Sq.Ft.	C	G	80	1	-	20
291-A	Filters (2)	10000 Sq.Ft.	-	G	80	1	150	1,000
291-AR	Exhaust Air Filter Stack and Plenum	672 Sq.Ft.	C/M	G	80	B	-	250
292-A	Stack Monitor	336 Sq.Ft.	W	S	80	B	-	5
293-A	Off-Gas Treatment	1888 Sq.Ft.	C	G	80	1	20	200
294-A	Off-Gas Filter & Inst.	96 Sq.Ft.	C	S	80	1	2	20
295-A	NH_3 Scrubber Sampling House	40 Sq.Ft.	M	S	80	1	1	5
2701-A	Badge House	224 Sq.Ft.	W	N	80	A	-	2
2707-AR	Change House	432 Sq.Ft.	M	N	83	A	-	2
2707-AX	Change House	-	-	N	83	A	-	2
2714-A	Chemical Warehouse	300 Sq.Ft.	C	N	80	A	-	3
2714-AR	Storage	2250 Sq.Ft.	C	N	83	A	-	10

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
2715-A	Sample and Storage	-	-	N	83	A	-	5
2716-A	RM Check Station	182 Sq.Ft.	M	N	83	A	-	2
202-A	Purex Plant	1005x119x64	C	G	80	1	2,500	55,000
	Purex Tunnels	2500	-	G	80	6	1,000	4,200
203-A	Acid Pump House	816 Sq.Ft.	C	G	80	1	5	50
204-A	Acid Storage Vault	-	-	N	80	A	-	10
205-A	Silica Gel Treatment	120 Sq.Ft.	T	G	80	2	10	50
206-A	Fractionation Building	1256 Sq.Ft.	C	G	80	1	100	600
211-A	Pump House	2916 Sq.Ft.	C	S	80	1	200	900
211-A	Chemical Tank Farm	-	-	N	80	A	-	50
212-A	Loadout Station	384 Sq.Ft.	M	S	80	B	-	10
213-A	Loadin Station	512 Sq.Ft.	M	G	80	B	-	15
216-A-271	Valve Control House	-	-	G	80	B	-	15
241-A-271	Control House	555 Sq.Ft.	M	S	83	B	-	10
241-A-272	Tank Farm Fan House	-	-	-	83	B	-	15
2901-A	High Tank	-	M	N	83	A	-	
207-B	Retention Basin	-	C	G	80	6	200	400
211-B	Chemical Tank Farm	-	-	N	80	A	-	50
212-B	Loadin Station	2000 Sq.Ft.	C	G	80	1	10	50
221-B	B Plant	875x85x102	C	G	80	1	1,600	60,000
225-B	Encapsulation Plant	157x103x40	C	G	80	1	200	5,000
221-BB	Process and Steam Condensate Building	286 Sq.Ft.	M	G	80	B	-	10

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
221-BC	Change House	775 Sq.Ft.		N	80	A	-	-
221-BD	Laundry Storage	576 Sq.Ft.	M	N	80	A	-	-
222-B	Office	161x59x15	C	S	78	A	-	25
224-B	Process Building	197x69x60	C	G	78	1	150	6,000
291-BA	Sampler Building	49x7.5x6	W	S	80	B	-	2
291-B	Stack	200' High	C	G	80	B	-	200
291-BB	Air Filter Instruments	144 Sq.Ft.	M	S	80	B	-	10
291-BC	Cell Air Instruments	-	-	S	80	B	-	10
291-BD	3rd Air Filter Cell	-	-	G	80	1	5	15
292-B	Stack Monitor Building	336 Sq.Ft.	-	N	80	A	-	3
2707-BY	Change House	800 Sq.Ft.	W	N	78	A	-	-
2711-B	Compressor House	84 Sq.Ft.	C	N	80	A	-	5
2715-B	Paint Storage	-	-	N	78	A	-	-
2716-B	RM Check Station	-	-	N	78	A	-	-
2902-B	High Tank	-	-	N	78	A	-	-
241-BX	Tank Farm Building	228 Sq.Ft.	M	S	78	B	-	5
241-BX-254	Control House ITS-2	-	-	N	76	A	-	2
241-BX-302	Control House ITS-1	228 Sq.Ft.	M	N	76	A	-	-
242-B	Evaporator Building	43x43x37	C	G	76	1	20	200
242-BL	Cask Handling Facility	24x20x10	M	G	76	B	-	100
271-B	Office	30000 Sq.Ft.	C	N	80	A	-	200
271-BA	Laundry	-	-	N	80	A	-	15
272-B	Shop	1760 Sq.Ft.	M	N	80	A	-	-

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
276-B	Solvent Storage	500 Sq.Ft.	C	N	80	A	-	5
282-B	Pump House	228 Sq.Ft.	C	N	80	A	-	-
282-BA	Pump House	228 Sq.Ft.	M	N	80	A	-	-
291-B	Blower Control House	330 Sq.Ft.	C	S	80	1	5	20
201-C	Semiworks	104x100x30	C/M	G	74	1	1,700	6,800
215-C	Gas Preparation	35x21x13	C	N	74	A	-	10
217-C	Water Treatment	-	-	N	74	A	-	10
241-CX	Control House	120 Sq.Ft.	W	N	83	A	-	-
241-C-601	Chemical Make-up	714 Sq.Ft.	W	S	74	B	-	5
241-C-801	Cesium Loadout	-	-	G	74	B	-	100
271-C	Aqueous Make-up	3200 Sq.Ft.	M	N	74	A	-	-
271-CR	Development Laboratory	58x32x18	M	N	74	A	-	-
272-C	Maintenance	1184 Sq.Ft.	M	N	74	A	-	-
276-C	Solvent Handling	2300 Sq.Ft.	M	S	74	B	-	5
291-C	Ventilation Building	860 Sq.Ft.	W	N	81	B	-	5
291-C	Stack	200' High	C	G	81	B	-	200
2704-C	Office	1025 Sq.Ft.	W	N	74	A	-	-
2707-C	Change House	1440 Sq.Ft.	W	N	74	A	-	-
2713-C	Storage	160 Sq.Ft.	W	N	74	A	-	-
2714-C	Storage	225 Sq.Ft.	W	N	74	A	-	-
2715-C	Storage	400 Sq.Ft.	W	N	74	A	-	-
TC-61	SWP Storage	209 Sq.Ft.	W	S	74	B	-	5
209-E	BNW Laboratory	113x45x44	C	G	81	1	130	500

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
2719-E	First Aid	26x32x12	W	N	80	A	-	-
2720-E	Office	67x32x15	W	N	80	A	-	-
2722-E	Office	40x30x15	W	N	80	A	-	-
2734-E	Gas Cylinder Storage	240 Sq.Ft.	W	N	80	A	-	2
2901-E	High Tank-Power	-	M	N	83	A	-	-
2902-E	High Tank-Shop	-	M	N	83	A	-	-
TC-62,63	Gate House	118 Sq.Ft.	W	N	80	A	-	-
2614-E	Monitor Station (4)	7.5x6x8	W	N	76	A	-	-
2701-E	Gate House	40x29x23	W	N	80	A	-	-
2704-E	Office	178x36x25	W	N	78	A	-	-
2706-E	Storage	224 Sq.Ft.	-	N	78	A	-	-
2707-E	Change House	88x38x16	W	N	78	A	-	-
2709-E	Maintenance	50x38x16	W	N	81	A	-	-
2710-E	Shelter-Coal Handler	-	W	N	80	A	-	-
2713-E	Office	77x54x16	W	N	78	A	-	-
2714-E	Critical Mass Storage	512 Sq.Ft.	W	N	74	A	-	-
2715-E	Storage	42x14x18	W	N	78	A	-	-
2718-E	Critical Mass-Annex	60x30x12	M	N	81	A	-	-
252-E	Switch House	364 Sq.Ft.	C	N	83	A	-	2
272-E	Shop	220x56x81	W/M	N	78	A	-	-
272-EA	SWP Change Shelter	-	-	N	78	A	-	-
274-E	Maintenance	96x40x21	W	N	78	A	-	5
275-E	Shop	-	W	N	78	A	-	-

200-EAST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
275-EB	Warehouse	-	W	N	78	A	-	5
282-E	Pump House and Reservoir	-	CB	N	83	A	-	5
282-E1	Water Inlet House	-	-	N	83	A	-	10
282-EB	Reservoir House	-	C	N	83	A	-	10
283-E	Filter Plant	-	C	N	83	A	-	20
284-E	Power House and 2 Stacks	-	CB/C	N	83	A	-	20
2101-M	Warehouse	-	C	N	80	A	-	25
2701-M	Gate House	-	W	N	80	A	-	-
2715-M	Storage	-	W	N	78	A	-	-

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200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
202-S	Redox Plant	468x161x50	C	G	75	1	1,100	36,000
204-S	Pump House	120 Sq.Ft.	M	G	75	B	-	15
205-S	Silica Gel House	432 Sq.Ft.	M	G	75	B	-	20
207-S	Retention Basin	-	C	G	75	6	200	400
207-SL	Retention Basin	48x58x5	C	G	75	6	150	300
211-S	Chemical Tank Farm	-	-	N	75	A	-	-
219-S	Waste Treatment Building	286 Sq.Ft.	C	G	80	1	5	25
220-S	Dry Work Storage	96 Sq.Ft.	M	G	80	B	-	15
2614-WD	Cooling Water Sampler	-	-	S	75	B	-	20
2701-S	Gate House	300 Sq.Ft.	W	N	80	A	-	-
2704-S	Monitoring	64 Sq.Ft.	M	S	75	B	-	2
2706-S	Storage	180 Sq.Ft.	M	N	75	A	-	-
2708-S	Laggers Shop	144 Sq.Ft.	M	N	75	A	-	-
2710-S	Propane Gas Burning	400 Sq.Ft.	W	N	75	A	-	-
2711-S	Stack Gas Monitoring	64 Sq.Ft.	W	S	75	B	-	2
2712-S	Stack Gas Monitoring	64 Sq.Ft.	M	S	75	B	-	2
2713-S	Storage	-	-	N	75	A	-	-
2715-S	Oil Storage	-	-	N	75	A	-	-
2718-S	Sand Filter Monitoring	144 Sq.Ft.	W	G	75	B	-	5
2726-S	Propane Storage	1080 Sq.Ft.	-	S	75	B	-	4
222-S	Control Laboratory	322x107x20	C	G	80	1	650	5,150
232-S	Concentration Building	85x37x32	C	G	75	1	500	10,000
233-SA	Exhaust Filter	-	-	G	75	B	-	100

200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
241-SX-281	Pump House	384 Sq.Ft.	M	N	83	A	-	-
241-SX-402	Condenser House	970 Sq.Ft.	C	G	83	1	5	20
241-SX-701	Compressor Building	533 Sq.Ft.	M	N	83	A	-	-
276-S	Solvent Storage	2500 Sq.Ft.	C	G	75	1	5	20
291-S	Control House	670 Sq.Ft.	C	G	75	1	5	50
291-S	Stack	200' High	C	G	75	B	-	500
292-S	Vet Pit House	250 Sq.Ft.	C	G	75	1	5	25
293-S	Acid Recovery - Off-Gas	1361 Sq.Ft.	C	G	75	1	15	100
2901-S	High Tank	-	M	N	80	A	-	-
2901-SX	High Tank	-	M	N	83	A	-	-
2902-SX	High Tank	-	M	N	83	A	-	-
2904-S	Water Sampler	-	-	S	75	B	-	20
207-T	Retention Basin	-	-	G	87	6	200	400
211-T	Chemical Tank Farm	-	-	N	87	A	-	-
221-T	T Plant	876x85x102	C	G	87	1	1,800	65,000
221-TH	Supply Fan House	1291 Sq.Ft.	C	N	87	A	-	15
222-T	Office	7531 Sq.Ft.	CB	N	76	A	-	50
224-T	Concentration	32050 Sq.Ft.	C	G	83	1	150	6,000
242-T	Evaporator	2769 Sq.Ft.	M	G	75	1	200	2,000
242-T-601	Chemical Make-up	-	-	S	76	B	-	100
271-T	Services	160x48x40	CB	N	87	A	-	200
271-TXR	Control House	1454 Sq.Ft.	W	S	74	B	-	10
277-T	Laboratory	40x32x28	M	N	76	A	-	-

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200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
291-T	Control House	330 Sq.Ft.	C	G	87	1	20	500
291-T	Stack	200' High	C	-	87	B	-	200
292-T	F.D. Release Laboratory	16x11x9	C	G	76	1	10	400
2715-T	Paint Storage	576 Sq.Ft.	M	N	87	A	-	-
2716-T	RM Checkout	60 Sq.Ft.	M	N	87	A	-	-
275-UR	Chemical Warehouse	60x48x16	M	N	80	A	-	-
276-U	Solvent Recovery Tanks	-	-	G	74	B	-	200
291-U	Control House	19x18x18	CB	G	83	1	5	200
291-U	Stack	200' High	C	G	83	B	-	200
292-U	Gas Sampling	21x16x20	C	G	83	1	5	200
2701-U	Gate House	300 Sq.Ft.	W	N	80	A	-	-
2707-U	Sample Storage	1236 Sq.Ft.	-	S	80	B	-	100
2714-U	Warehouse	4320 Sq.Ft.	M	G	80	B	-	100
2715-U	Oil and Paint Storage	192 Sq.Ft.	M	S	80	B	50	-
2715-UA	Maintenance Storage	800 Sq.Ft.	M	N	80	A	-	-
2726-U	Propane Storage	1080 Sq.Ft.	M	N	80	A	-	-
241-WR	Thorium Vault	-	M	G	76	B	50	-
2725-W	Sodium Storage	2700 Sq.Ft.	-	N	80	A	-	-
203-U	Gas Storage Tank (2)	-	-	G	80	B	50	-
203-UX	Gas Storage	252 Sq.Ft.	M	G	80	B	50	-
204-U	Contractor Reflux Tower	-	-		80	B	10	-
207-U	Retention Basin	-	-	G	80	6	200	400
211-U	Chemical Tank Farm	-	-	G	80	B	-	300

200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
221-U	U Plant	811x85x102	C	G	83	1	1,600	60,000
224-U	UO_3 Plant	200x67x40	C	G	80	1	150	6,000
224-UA	UO_3 Plant	10133 Sq.Ft.	C	G	80	1	300	1,500
271-U	Office	160x48x68	CB	N	83	A	-	200
271-UR	Tank Farm Control House	145 Sq.Ft.	TS	S	74	B	-	50
272-UA	Maintenance Shop	2160 Sq.Ft.	M	S	80	B	-	50
211-Z	Chemical Tank Farm	-	-	S	82	B	-	100
231-Z	Plutonium Metallurgy (675,000 Cu.Ft. Vol.)	185x146x25	CB	G	86	B	-	5,100
232-Z	Waste Incinerator	56x36x15	C	G	82	1	200	500
234-ZC	Storage	132 Sq.Ft.	M	S	82	B	-	10
234-5-Z	Plutonium Finishing	209000 Sq.Ft.	M	G	82	2	12,500	34,000
234-ZB	Waste Storage Hut	1078 Sq.Ft.	M	S	80	1	5	25
236-Z	Product Recovery	5540 Sq.Ft.	C	G	82	1	600	4,500
241-ZA	Sampling	-	-	S	80	B	-	15
242-Z	Waste Treatment	40x25x23	M	G	82	B	-	25
242-ZA	Sampling	144 Sq.Ft.	M	N	82	A	-	-
291-Z	Ventilation Building	13680 Sq.Ft.	C	G	82	1	75	1,500
291-Z	Stack	200 Sq.Ft.	C	G	82	B	-	200
2701-Z	Gate House	300 Sq.Ft.	W	N	82	A	-	-
2704-Z	Offices	3852 Sq.Ft.	W	N	78	A	-	-
2715-Z	Oil Storage	-	-	N	82	A	-	-
2715-ZL	Oil Storage	192 Sq.Ft.	M	N	76	A	-	-

200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
2725-Z	Laundry Storage	400 Sq.Ft.	M	N	82	A	-	-
2727-Z	Storage	2090 Sq.Ft.	C	N	82	A	-	15
2729-Z	Storage	1600 Sq.Ft.	M	N	82	A	-	-
2731-Z	Storage (PR Cans)	768 Sq.Ft.	M	S	82	B	-	15
2732-Z	Storage (PR-RC Cans)	-	-	S	82	B	-	10
2734-Z	Gas Bottle Storage	1163 Sq.Ft.	W	N	82	A	-	-
2735-Z	Pump House	96 Sq.Ft.	M	N	82	A	-	-
2902-Z	High Tank	-	M	N	86	A	-	-
252-W	Electrical Substation	-	-	N	87	A	-	-
272-W	Shop	202x86x69	W	N	86	A	-	-
274-W	Offices	39x96x21	W	N	86	A	-	5
275-W	Shop	39x96x21	W	N	86	A	-	5
277-W	Shop	202x142x69	M	N	86	A	-	-
282-W	Pump House and Reservoir	1616 Sq.Ft.	CB	N	87	A	-	50
282-WA	Water Inlet House	-	-	N	87	A	-	5
283-W	Filter Plant	193x143x55	C	N	87	A	-	20
284-W	Power House	279x73x80	M	N	87	A	-	-
	Incl. 2 Stacks	200' High	C	N	87	A	-	20
2614-5 -W2 -W5	Environmental Monitoring Stations, Each	7.5x6.8	W	N	76	A	-	-
2701-W	Gate House	2020 Sq.Ft.	W	N	82	A	-	-
2704-W	Office	119x36x25	W	N	83	A	-	-

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200-WEST AREA FACILITIES

FACILITY					PROPOSED ACTION		ESTIMATED COST $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
2706-W	Decontamination	3300 Sq.Ft.	M	G	87	B	-	50
2707-W	Change House	88x38x16	W	N	83	A	-	-
2709-W	Mail and Duplicating	3600 Sq.Ft.	W	N	87	A	-	-
2710-W	Coal Handler's Shelter	-	-	N	87	A	-	-
2713-W	Garage	77x54x14	W	N	87	A	-	-
2713-WB	Storage	77x41x26	M	S	87	B	-	-
2715-W	Storage	42x14x18	W	N	87	A	-	-
2719-W	Offices	1060 Sq.Ft.	W	N	76	A	-	-
2719-WA	First Aid	57x61x15	W	N	87	A	-	-
2720-W	Old Patrol Headquarters	67x32x15	W	N	74	A	-	-
2722-W	Shop Storage	40x30x15	W	N	87	A	-	-
2723-W	Mask Cleaning	107x59x23	W	S	87	B	-	15
2724-W	Laundry	11595 Sq.Ft.	C	S	87	1	50	200
2724-WA	Laundry Storage	3200 Sq.Ft.	M	N	87	A	-	-
2902-W	High Tank	-	M	N	87	A	-	-
TC-64	Gate Shelter	32 Sq.Ft.	W	N	82	A	-	-
TC-65	Gate Shelter	25 Sq.Ft.	W	N	82	A	-	-

SUBTERRANEAN ACTIVITY - 200 AREAS
SUMMARY

TANK FARMS	TANKS	AREA OF COMPLEX	FINAL SALT CAKE VOLUME (000's Gals)	CONTAMINATED SOIL (Ft.^{3})	PROPOSED ACTION FY	PROPOSED ACTION See Code	ESTIMATED COST, $1000 Total Cat. B	ESTIMATED COST, $1000 Total Cat. A
T-TX-TY Complex	40	1,146,000	10,160	24,500	75	3	7,100	100,000
U Complex	16	467,000	845	37,900	83	3	2,800	40,000
S-SX Complex	27	619,000	11,042	46,300	83	C	4,800	67,500
B-BX-BY Complex	40	666,000	12,727	31,200	80	C	5,800	100,000
C	16	300,000	1,688		83		2,800	40,000
A-AZ-AY Complex	12	391,000	734	1,300	83		2,100	30,000
All Tank Farms-Encasements		10,000'						
Direct Buried Lines		450,000'						
BURIED PROCESS LINES (Outside Tank Farms)		LENGTH (Ft.)			83	6	14,600	
Encasements		85,000		378,000		E		27,800
Direct Buried Lines		75,000						
DIVERSION BOXES (Including Associated Catch Tanks)		NUMBER						
On Latest Standby		25			83	E		2,700
Others		35			80	E		3,700
BURIAL GROUNDS	TANKS	VOLUME BURIED (Ft.^{3})		TOTAL AREA FENCED (Ft.^{2})				
Industrial Waste	8	2,400,000		2,800,000	78	6	8,400	21,000
Dry Waste	11	2,800,000		3,500,000	78	E	10,500	24,500

SUBTERRANEAN ACTIVITY - 200 AREAS
SUMMARY

CRIBS (Including Reverse Wells)	NUMBER	TOTAL BOTTOM AREA (Sq.Ft.)	PROPOSED ACTION FY	PROPOSED ACTION See Code	ESTIMATED COST, $1000 Total Cat. B	ESTIMATED COST, $1000 Plutonium Removal
All Inactive or Deactivated	144	434,500	74		7,300	
All Active Serving A Area	12	61,000	83	4	1,000	
All Active Serving B Area	7	27,000	80	D	500	
All Active Serving C Area	2	400	81			
All Active Serving S Area	4	51,800	83		900	
All Active Serving T Area	3	39,300	85		700	
All Active Serving U Area	1	1,000	80			
All Active Serving Z Area	3	14,000	82		200	
TOTAL						410,000
FRENCH DRAINS						
All Inactive or Deactivated	16	195	74			
All Active Serving A Area	5	28	80	5		
All Active Serving B Area	1	13	80	D		
All Active Serving C Area	0					
All Active Serving S Area	0					
All Active Serving T Area	0					
All Active Serving Z Area	3	85	82			
TOTAL				D	250	250

SUBTERRANEAN ACTIVITY - 200 AREAS
SUMMARY

PONDS AND DITCHES	NUMBER	ACRES	PROPOSED ACTION FY	PROPOSED ACTION See Code	ESTIMATED COST, $1000 Total Cat. B	ESTIMATED COST, $1000 Plutonium Removal
All Inactive or Deactivated	12	37	74			
All Active Serving A Area	2	72	83			
All Active Serving B Area	3	48	80			
All Active Serving C Area	1	2	81			
All Active Serving S Area	5	40	80			
All Active Serving T Area	3	3	85			
All Active Serving U Area	3	23	82			
All Active Serving Z Area	1	0.25	82			
TOTAL				3	165,700	560,000
CONTAMINATED SOIL	**LOCATIONS**	**VOLUME OF SOIL (Cu.Ft.)**				
From Surface Spills	13	12,200,000	74	D	21,000	50,000

ACTIVE CRIBS

Facility	Function	Bottom Area (Sq.Ft.)
216-A-3	203-A Wastes	400
216-A-7	241-A-152 Diversion Box Drainage	100
216-A-8	Tank Farm Process and Steam Condensate	17,600
216-A-10	Process Condensate	12,375
216-A-11	Trap Pit No. 1 Drainage	30" diameter
216-A-12	Trap Pit No. 3 Drainage	30" diameter
216-A-14	Vacuum Cleaner and Blower Pit Drainage	30" diameter
216-A-15	216-A-10 Sampler Pit Drainage	2' diameter
216-A-22	203-A Wastes	6' diameter
216-A-26B	291-A Floor Drainage	4' diameter
216-A-27	293-A Building; 202-A Laboratory Waste	2,000
216-A-30	Steam Condensate and Drainage	14,000
216-A-32	202-A Crane Facility	560
216-A-36B	202-A Ammonia Scrubber Waste	5,500
216-A-39	241-AX-801-B Building Drainage	360
216-A-40	Diverted 244-AR Wastes	8,000
216-A-41	296-A-13 Stack Drainage	100
216-B-10A	292-B Floor Drainage	196
216-B-10B	292-B Floor Drainage	196
216-B-12	Process Condensate	8,000
216-B-13	291-B-1 Stack Drainage	4' diameter
216-B-50	ITS-1 Condensate	900
216-B-55	Steam Condensate	7,500
216-B-57	ITS-2 Condensate	3,000
216-B-59	221-B Diversion Waste	8,000
216-C-2	291-C-1 Stack Drainage	12" diameter
216-C-7	209-E Waste	400
216-S-6	Steam Condensate	44,100
216-S-13	204-S Sump Waste	1,600

ACTIVE CRIBS

Facility	Function	Bottom Area (Sq.Ft.)
216-S-21	401-SX Condenser Cooling Water	2,500
216-S-23	Process Condensate	3,600
216-T-19	242-T Process and Steam Condensate	33,200
216-T-35	300 Area Waste	4,500
216-T-36	2706-T Waste	1,600
216-U-12	224-U Waste	1,000
216-Z-12	234-5 Laboratory Waste	6,000
216-Z-13	Exhaust Fan Drainage	36" diameter
216-Z-14	Exhaust Fan Drainage	36" diameter
216-Z-15	Evaporator Cooler Drainage	36" diameter
216-Z-16	BNW Waste	1,800
216-Z-18	236-Z and 242-Z Waste	6,210
	TOTAL	183,022

CURRENTLY INACTIVE OR DEACTIVATED CRIBS

Facility	Bottom Area (Sq.Ft.)	Facility	Bottom Area (Sq.Ft.)
216-A-1	900	216-B-11A	4' diameter
216-A-2	400	216-B-11B	4' diameter
216-A-4	400	216-B-14	1,600
216-A-5	1,225	216-B-15	1,600
216-A-6	10,000	216-B-16	1,600
216-A-9	8,400	216-B-17	1,600
216-A-13	2' diameter	216-B-18	1,600
216-A-16	4' diameter	216-B-19	1,600
216-A-17	4' diameter	216-B-20	5,000
216-A-18	6,400	216-B-21	5,000
216-A-19	625	216-B-22	5,000
216-A-20	625	216-B-23	5,000
216-A-21	960	216-B-24	5,000
216-A-23A	42" diameter	216-B-25	5,000
216-A-23B	42" diameter	216-B-26	5,000
216-A-24	28,000	216-B-27	5,000
216-A-26A	3' diameter	216-B-28	5,000
216-A-28	10' diameter	216-B-29	5,000
216-A-31	700	216-B-30	5,000
216-A-33	6' diameter	216-B-31	5,000
216-A-34	12,300	216-B-32	5,000
216-A-35	6' diameter	216-B-33	5,000
216-A-36A	1,100	216-B-34	5,000
216-A-37-1	7,000	216-B-35	2,520
216-A-38-1	7,800	216-B-36	2,520
216-B-4	8" diameter	216-B-37	2,520
216-B-5	8" diameter	216-B-38	2,520
216-B-6	8" diameter	216-B-39	2,520
216-B-7A	196	216-B-40	2,520
216-B-7B	196	216-B-41	2,520
216-B-8	1,344	216-B-42	2,520
216-B-9	864	216-B-43	900

CURRENTLY INACTIVE OR DEACTIVATED CRIBS

Facility	Bottom Area (Sq.Ft.)	Facility	Bottom Area (Sq.Ft.)
216-B-44	900	216-S-5	44,100
216-B-45	900	216-S-7	5,000
216-B-46	900	216-S-8	6,000
216-B-47	900	216-S-9	9,000
216-B-48	900	216-S-12	1,800
216-B-49	900	216-S-14	800
216-B-51	5' diameter	216-S-15	175
216-B-52	5,800	216-S-18	1,500
216-B-53A	600	216-S-20	3,600
216-B-53B	1,500	216-S-22	350
216-B-54	2,000	216-T-2	3" diameter
216-B-56	700	216-T-3	8" diameter
216-B-58	2,000	216-T-5	500
216-B-60	Two (Ea. 8' diameter)	216-T-6	1,260
216-B-61	1,750	216-T-7	26,200
216-B-62	5,000	216-T-8	1,260
216-C-1	184	216-T-9	500
216-C-3	500	216-T-10	500
216-C-4	200	216-T-11	500
216-C-5	200	216-T-12	150
216-C-6	200	216-T-13	400
216-C-8	6' diameter	216-T-14	2,200
216-C-10	160	216-T-15	2,400
216-N-2	500	216-T-16	2,400
216-N-3	500	216-T-17	2,400
216-N-5	1,200	216-T-18	100
216-N-7	1,200	216-T-20	100
216-S-1	900	216-T-21	2,400
216-S-2	900	216-T-22	2,400
216-S-3	1,000	216-T-23	2,400
216-S-4	30" diameter	216-T-24	2,400

CURRENTLY INACTIVE OR DEACTIVATED CRIBS

Facility	Bottom Area (Sq.Ft.)
216-T-25	1,800
216-T-26	900
216-T-27	900
216-T-28	900
216-T-29	5,280
216-T-30	14,400
216-T-31	36" diameter
216-T-32	950
216-T-33	150
216-T-34	6,000
216-U-1	196
216-U-2	196
216-U-3	72" diameter
216-U-4	6" diameter
216-U-4A	36" diameter
216-U-4B	36" diameter
216-U-5	400
216-U-6	750
216-U-7	30" diameter
216-U-8	8,000
216-U-13	8,000
216-U-15	400

Facility	Bottom Area (Sq.Ft.)
216-Z-1Crib	196
216-Z-1A	26,000
216-Z-2	196
216-Z-3	350
216-Z-4	100
216-Z-5	1,120
216-Z-6	300
216-Z-7	1,400
216-Z-8	36" diameter
216-Z-9	1,800
216-Z-10	6" diameter
216-Z-17	3,000
216-Z-17	3,000
TOTAL	434,635

ACTIVE PONDS AND DITCHES

Facility	Function	Bottom Area (Sq. Ft.)
216-A-25 Pond	202-A Cooling Water and 224-AR Cooling Water and Steam Condensate	71 acres
216-A-29 Ditch	202-A Chemical Sewer, Acid Fractionator Condenser Cooling Water	39,000
216-B-2 Ditch	221-B Process Cooling Water and Steam Condensate	24,570
216-B-2-3 Ditch	221-B Process Cooling Water and Steam Condensate	23,532
216-B-3 Pond (Present)	221-B Process Cooling Water and Steam Condensate	46 acres
216-C-9 Pond	209-E Waste	80,000
216-S-10 Ditch	Chemical Sewer Waste	13,500
216-S-10 Pond	Chemical Sewer Waste	5 acres
216-S-16 Ditch	Condenser Cooling Water	6,800
216-S-16 Pond	Condenser Cooling Water	31 acres
216-S-19 Pond	222-S Laboratory Waste	3.5 acres
216-T-1 Ditch	Steam Heating Condensate	5,475
216-T-4 Ditch	Process Cooling Water and Steam Condensate	6,800
216-T-4 Pond	Process Cooling Water and Steam Condensate	2.5 acres
216-U-10 Pond	216-U-14 and 216-Z-11 Waste	22 acres
216-U-11 Ditch (New)	Overflow from 216-U-10	17,200
216-U-14 Ditch	Chemical Sewer Waste - 224-U Cooling Water, Laundry Waste	44,800
216-Z-11 Ditch	Process Cooling Water and Steam Condensate	10,680
	TOTAL	187 acres

CURRENTLY INACTIVE OR DEACTIVATED PONDS AND DITCHES

Facility	Bottom Area (Sq.Ft.)
216-B-2-1 Ditch	19,980
216-B-2-2	14,200
216-B-3 Ditch	7,100
216-B-3 Pond (Old)	11.5 acres
216-N-1 Pond	50,000
216-N-4 Pond	100,000
216-N-6 Pond	75,000
216-S-11 Pond	1.5 acres
216-S-17 Pond	17 acres
216-U-9 Ditch	19,800
216-U-11 Ditch (Old)	5,750
216-Z-1 Ditch	14,040
TOTAL	37.0 acres

UNPLANNED SURFACE CONTAMINATION

VOLUME OF CONTAMINATED EARTH

Identification	Area	Size (Ft.)	Volume (000's Cu.Ft.)
218-E-13 - Concrete from Encasement	East	10x10x10	1.0
Route 4-S - Spill	East	20x50x2	2.0
241-CR - Steam Cleaning Pit	East	20x50x10	1.0
B-C Cribs - Outer Area - Gross Contamination	East	250 acres	10,890
B-C Cribs - Scattered Contamination	East	3000 acres	1,000
216-S-207 - Redox Retention Basin	West	60x60x6	21.6
216-S-15 - Cooling Water Pond, 241-S Tank Farm	West	40x100x6	2.4
233-S - Filter Room - Floor Drain Overflow	West	30x45x3	4.05
South Shoulder of 23rd Street	West	3500x10x1	35.0
Ground Areas East of Camden Avenue between 19th and 22nd Streets	West	250x750x1	187.5
Acid Spill - 221-U Building, Section 1-R through 5-R	West	65x90x1	5.9
U-152 - Interface Crud Burial	West	20x20x10	4.0
Cold Burning Pit	West	10x15x6	0.9
		TOTAL	12,155.35

APPENDIX C

300 AREA

Battelle - Pacific Northwest Laboratory

Westinghouse Hanford Company

Douglas United Nuclear - Fuels Section

CODE FOR APPENDIX C

Contamination Status

N - Not contaminated
S - Measurably contaminated
G - Grossly contaminated

Construction

C - Reinforced Concrete
CB - Concrete Block
T - Transite
TS - Transite Shakes
M - Steel
W - Wooden
Al - Aluminum

Proposed Action - Category B

1. Remove contaminated equipment and loose debris. Package for storage. Excess cold equipment. Fill structure. Plug openings.

2. Fill tank. Cap openings. Mound 20 feet over salt cake. Cap with reinforced concrete.

3. Mound and cap with reinforced concrete.

4. Remove contaminated soil to 20 feet below grade. Fill hole. Mound and cap with reinforced concrete.

5. Mound 20 feet over contamination. Cap with reinforced concrete.

6. Fill void volume. Mound 20 feet over contamination. Cap with reinforced concrete.

Proposed Action - Category A

A. Excess equipment. Sell structure in place. If no sale, raze structure - bury debris.

B. Raze structure and package for storage. Fill hole.

C. Remove tank contents and package. Raze structure and package. Package contaminated soil. Fill hole.

D. Remove all contaminated soil. Fill hole.

E. Remove and package contaminated material and soil. Fill hole.

F. Remove and package equipment. Raze structure and package. Fill depression.

BATTELLE - PACIFIC NORTHWEST LABORATORY - 300 AREA

FACILITY				PROPOSED OPERATION		ESTIMATED COST, $1000	
Number	Description	DIMENSIONS, FEET (LxWxH)	Walls	FY	Action	Total Cat. B	Total Cat. A
303-C	Magazine	48x27x10	CB	80	Raze		4
TC-10	Service Building	64 Sq.Ft.		73	Excess		Nil
305-B	PC Test Reactor	71x38x9	CB		Continue		
		121x18x9	C		Continue		
308-TR	Trailer	NA		75	Excess		24
314	Engineering Development Lab	110x25x12	CB	79	Raze		24
		63x42x32	M	79	Continue/ Remove		
318	HTLTR	55x42x26	C		Continue		
318-A	Detector Building	51x16x11	M		Continue		Nil
320	Lo Level Laboratory	144x84x16	C		Continue		
324-TR	Trailer	NA		73	Excess		
329	Biophysics Laboratory	218x122x34	M		Continue		
330	Stress Rupt.	31x24x9	C		Continue		4
		116x15x12					
331	Biology Laboratory	90x49x18	C		Continue		
		280x130x35					
331-A	Biology Annex	67x20x12	CB		Continue		
		44x33x12	CB		Continue		
331-B	Biology Annex	72x15x10	CB		Continue		
		36x35x10	CB		Continue		
3614-A	Monitor Station	121 Sq.Ft.	W	80	Excess/Raze		Nil
3701-A	Gate House	64 Sq.Ft.	W		WHC		Nil
3701-L	Gate House	61x46x24	W		WHC		Nil
2701-Z	Badge House	14x10x8	CB		Jones		0.5

[redacted]

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BATTELLE - PACIFIC NORTHWEST LABORATORY - 300 AREA

FACILITY				PROPOSED OPERATION		ESTIMATED COST, $1000	
Number	Description	DIMENSIONS, FEET (LxWxH)	Walls	FY	Action	Total Cat. B	Total Cat. A
3705	Radiation Protection Lab	94x68x23	C		Continue		
3706	Laboratory/Office	328x140x30	W/CB	75	Raze		50
3706-A	Equipment Building	74x25x20	CB	75	Raze		9
3708	Trans U Prod. Plant	75x51x10	C		Continue		
3714	Organic Chemistry Laboratory	42x24x12	C		Continue		
3716-A	Laboratory	28x22x12	CB	80	Replace		
		80x40x18	M	80	Replace		
3718-B	Central	80x40x18	M	80	Replace		
3718-C	Pool	80x40x18	M	80	Replace		
3720					Continue		
3721	Incinerator	231 Sq.Ft.	CB		Continue		
3730	Material Laboratory	98x32x19	M		Continue		
		19x16x10	C		Continue		
3731	Fissile Material Storage	80x40x18	M	75	Excess		2.5
3731-A	Graphite	80x40x18	M	73	Excess		2.5
3745	Radiation Development	117x36x36	W/C	80	Excess/Replace		3
3745-A	Accelerator	73x17x29	C/CB		Continue		17
3745-B	Accelerator	86x31x19	W/C		Continue		17
3746	Laboratory Maintenance	73x31x17	W	73	Excess/Raze		2
3746-D	Hutment	57x21x18	W/M	73	Raze		3
3760	Technical Information	152x103x32	M		Continue		
3762	Laboratory Pool	120x33x24	W Pre	80	Excess		1
	100-B						
1614-B2	Monitor Station	40 Sq.Ft.	W	73	Raze		0.1

BATTELLE - PACIFIC NORTHWEST LABORATORY - 300 AREA

FACILITY				PROPOSED OPERATION		ESTIMATED COST, $1000	
Number	Description	DIMENSIONS, FEET (LxWxH)	Walls	FY	Action	Total Cat. B	Total Cat. A
	100-D						
1614-D3	Monitor Station	40 Sq.Ft.	W	73	Raze		0.1
108-F	Biology Laboratory	37x31x29	M/CB	75	Raze		80
		108x31x60	M/CB	75	Raze		
108-FC	Glass Shop	45x22x15	M	75	Excess		1
141-B	Barn	41x41x18	M	75	Excess		1
141-C	Barn	4908 Sq.Ft.	M	75	Raze		15
141-F	Barn	136x35x9	CB	75	Raze		17
141-F	Barn	41x8x6	CB	75	Raze		1.5
141-H	Animal Laboratory	43x36x11	CB	75	Raze		4
141-L	Hay Barn	62x15x10	None	75	Raze		
141-M	Animal Care	16x16x9	CB	75	Raze		3
		68x14					
141-N	Sewage Pump House	410 Sq.Ft.	CB	75	Raze		
141-P	Barn	26x9x9	M	75	Excess		0.5
141-S	Barn	20x20x9	M	75	Excess		0.5
142-F	Storage	64x15x10	M	75	Excess		1
143-F	Pump House	64 Sq.Ft.		75	Raze		0.5
144-F	Inhalation Laboratory	9130 Sq.Ft.	CB	75	Raze		25
144-FB	Inhalation Laboratory E	24x12x9	CB	75	Raze		0.5
144-R	Inhalation Laboratory	50x25x9	CB	75	Raze		3
145-F	Whole Body Counter	24x18x9	C	75	Raze		3
146-FR	Aquatic Biology	116x79x11	CB	75	Raze		
149-F	Storage-Boat	24x18x9	W	75	Excess		0.2
1614-FR	Monitor Station	45 Sq.Ft.	W	75	Excess		0.1

BATTELLE - PACIFIC NORTHWEST LABORATORY - 300 AREA

FACILITY				PROPOSED OPERATION		ESTIMATED COST, $1000	
Number	Description	DIMENSIONS, FEET (LxWxH)	Walls	FY	Action	Total Cat. B	Total Cat. A
1701-FA	Annex	20x32x9	C	75	Raze		2
1705-F	Ashing Laboratory	56x20x15	M	75	Raze		4
1707-FA	Inhalation Laboratory	67x30x16	W/TS	75	Excess		2
1707-F	Inhalation Laboratory	67x30x16	W/TS	75	Raze		2
1513-F	Pathology Laboratory	77x54x17	W/TS	75	Excess		3
1716-F	Garage	54x40x18	W/TS	75	Raze		1.5
1717-F	Maintenance Shop	150x85x25	W/TS	75	Raze		10
1717-FA	Oil Pump Pit	72 Sq.Ft.			Raze		1
1719-F	Animal Quarters	32x26x20	W/TS	75	Excess		1
	Solvent Storage			75	Raze		
	Fish Ponds	1500 Sq.Ft.		75	Fill		
WF-61	Storage	49x21x10	M	73	Raze		1
	100-K						
146-TC	Fish Ponds/Laboratory	256 Sq.Ft.		72	Raze/Fill		
	100-N						
1102-N	Laundry	800 Sq.Ft.					
1614-N	Monitor Station	46 Sq.Ft.		71	Excess		0.1
	200-E						
209-E	Criticality Laboratory	80x41x22 113x45x22	C/CB		Continue		55
	600 Area						
213-J	Sodium Storage - Tunnel	482 Sq.Ft.			WHC		2
1	Chemical Storage	609 Sq.Ft.	M	75	Raze		1
2	Storage	140 Sq.Ft.	W	75	Raze		0.5
3	Laboratory Pool	570 Sq.Ft.	M	75	Raze		1

BATTELLE - PACIFIC NORTHWEST LABORATORY - 300 AREA

FACILITY				PROPOSED OPERATION		ESTIMATED COST, $1000	
Number	Description	DIMENSIONS, FEET (LxWxH)	Walls	FY	Action	Total Cat. B	Total Cat. A
120	P-11	40x32x18	M	74	Raze		190
622-A	Elevator Building	100 Sq.Ft.	CB		Continue		0.3
622-B	Balloon Release	14x8x12	W		Continue		0.2
622-D	Blimp Storage	42x25x11	M		Continue		1
622-E	Instrument Shop	42x25x11	M		Continue		1
622-F	Field Office	80x40x12	W		Continue		6
622-G	Battery Shed	400 Sq.Ft.	W		Continue		1
622-R	Atmospheric Physics	105x40x10	CB		Continue		
		93x37x10					22
		40x15x8					
623-B	Seism. Test	168 Sq.Ft.			Continue		0.5
646	Field Laboratory	800 Sq.Ft.			Continue		2.5
614-S	Monitor Station	90 Sq.Ft.	W		Continue		0.1
	700 Area						
747-A	Bioassay Annex		CB		Continue		
	Offsite						
614BYRL	Monitor Station	40 Sq.Ft.	W		Continue		Nil
614KENN	Monitor Station	46 Sq.Ft.	W	71	Excess		Nil
614PSCO	Monitor Station	46 Sq.Ft.	W	71	Excess		Nil
	Test Wells			75	Fill		
	Towers			80	Excess		
	ALE				Continue		
3622	Viewpoint			71	Raze		
652-C	Aronomy				Continue		

DISPOSITION OF 300 AREA FACILITIES
WESTINGHOUSE HANFORD COMPANY

FACILITY Number	Description	Size	Walls	Down Date	Proposed Action
W-309	PRTR Facility - M&M	100x61x12	M	FY 72	Continue
	- Service	100x80x12	M		
	- Vessel	80x75	M		
W-310	Condenser (PRTR)	10x10x20	C	FY 72	Excess and Raze
W-321-A	Metals Creep Laboratory	80x45x15	M	FY 76	Excess and Raze
W-327-A	Office/Laboratory Annex	30x20x10	W	FY 72	Raze
W-3201	Office Building	242x42x25	W	FY 71	Vacate (AEC sell to BNW)
		80x42x25	W		
W-3702	Office Building	216x40x18	W	FY 74	Raze
W-3707-A	Engineering Office	121x50x18	W	FY 73	Raze
W-3707-C	Reactor Metals Research	176x40x18	CB	FY 73	Raze
W-3709	Storage-Engineering	54x47x15	W	FY 72	Raze
W-3717-B	Standards Laboratory	168x41x15	CB	FY 72	Vacate (re-use for storage)
W-3718-D	Storage	40x24x14	Al	FY 72	Excess and Raze
W-3718-F	Sodium Storage	40x24x14	Al	FY 73	Excess and Raze
W-300	West Burial Ground	200x18		CY 63	Rebury at 200-A
W-300	North Burial Ground	485x570		CY 64	Rebury at 200-A
W-300	Wye Burial Ground	1000x375		CY 68	Rebury at 200-A

300 AREA FACILITIES TO REMAIN ACTIVE
WESTINGHOUSE HANFORD COMPANY

Number	Description	Size	Walls
306	Metal Fabrication Development	380x160x25	M
307	Retention Basin	100x35x10	C
308	Fuels Laboratory	142x140x33	CB
	Office	169x40x11	CB
321	Engineering Development Lab	122x87x24	C
324	Chemical and Materials Lab	240x165x35	
325	Radiochemistry	196x194x33	M
326	Physics and Met.	190x180x38	M
327	Radiometallurgy	215x140x32	M
328	Engineering Management and Technical Shops	222x110x42	M
335	Sodium Loop Facilities	100x60x30	M
336	LMFBR Facility	50x50x65	M
337	HTST Facility	170x70x90	C
		170x45x40	C
340	Retention and Neut.	80x42x23	Corr. Asb.
3707-F	Personnel Survey	15x10x10	M
3718	Janitor Service Building	80x42x18	M
	Office	28x22x12	CB
3726	Propane Storage		M
3717-B	Storage		

FACILITY					PROPOSED ACTION		ESTIMATED COST, $1000	
Number	Description	Dimensions, Feet (LxWxH)	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
301	Utility Storage (1 Story)	31x52	M	N	77	A		3
303-A	Storage	27x48x10	CB	S	77	A		3
303-B	Storage	27x48x10	CB	S	77	A		3
303-E	Storage	27x48x10	CB	S	77	A		3
303-F	Storage	27x48x10	CB	S	77	A		3
303-G	Storage	27x48x10	CB	S	77	A		3
303-K	Decontamination Building	27x48x10	CB	S	77	A		5
303-L	Oxide Burner	16x24x10	M	G	72	A		15
304-L	Fuels Laboratory	20x40x10	M	S	77	A		5
305	Test Reactor	86x161x10-40	M/CB	G	80	F		200
313	Fuels Manufacturing	182x486x10-30	M/CB	G	80	F		500
333	Fuels Manufacturing	300x140x10-30	M/CB	G	80	F		500
334	Tank Farm	20x15x10	M/CB	S	80	A		12
3106	Helium Storage	Outdoor Tanks		N	72	A		2
3701-N	Badge House	20x20x8	CB	N	77	A		1
3707-D	Change House	76x115x10	W	S	77	A		20
3707-E	Change House	20x40x10	M	S	77	A		6
3712	Warehouse	90x108x20	M	N	77	A		9
3715	Warehouse	80x80x10	M	N	77	A		12
3713	Paint Shop	120x40x15	W	N	77	A		14
3716	Engineering Development	40x80x10	MS	N	77	A		12
3717	Sheet Metal Shop	165x73x10-20	W	N	77	A		22
3734	Paint and Storage	26x30x10	W	N	77	A		2
3734-A	Paint and Storage	26x30x10	W	N	77	A		2
						TOTAL		1,355

[redacted]

[redacted]

APPENDIX D

600 AREA

600 AREA FACILITIES (INCLUDING 200-NORTH AREA)

FACILITY					PROPOSED ACTION		ESTIMATED COST, $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
601-A	Scale House	25x14	W		80	A		
609	Central Fire Station	109x95x33	C	N	80	A		75
609-A	200-W Fire Station	109x95x33		N	83	A		75
615	Road Crew Headquarters	53x40x15	W	N	80	A		
615-B	Hot Mix Plant	20x50	M	N	80	A		
	Resident Wells			N				
	Pre-1942 (number unknown)							
	Groundwater Monitoring			S				
	Wells (1500)							
	Electrical Distribution Facilities			N				
	Midway Substation	2400 Sq.Ft.	CB					
	9 Stepdown Substations (151-KE, KW, F, B, D, H, N, 251-E, 300 Area)							
	Poles and Lines							
	Telephone Exchanges (6) (702-B, 3506-A, 506-A, 506-B, 506-BY, 100-K Area)	44x20(5) 2296 Sq.Ft. (506-BY)	CB	N				
506-C	Repeater Station	15x13	CB	N				
T-25(C-25)	Tube Testing Laboratory	260x70	W		74	A		
	Chemical Building	48x20	M		74	A		
T-26	Maintenance Engineering	108x64	W		78	A		
	Patrol Barricade Structures (Richland, Prosser, Wye, Yakima, Check Points)	3896 Sq.Ft. (Total 4 Bldg.)		N	78	A		

600 AREA FACILITIES (INCLUDING 200-NORTH AREA)

FACILITY					PROPOSED ACTION		ESTIMATED COST, $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
	Batch Plant (JA Jones) Includes:	50x30(3 Story)		N	86	A		
	Compressor House	21x18	W					
	Boiler House	42x30	W					
	Service Station	60x40	MH					
	Laboratory/Office (1 Story)	41x19	W					
	Storage Sheds (3) (1 Story)	15x15	W					
	Lunchroom (1 Story)	16x16	W					
	Dispatch Office (1 Story)	20x9	W					
2901-X,Y,W	Pump Stations, Export Water Lines (3)	10x10x10	CB	N	87	A		
	Raw Water Lines	185,000 Sq.Ft.			87	A		
	Sanitary Water Lines	85,000 Sq.Ft.			87	A		
	Steam Lines	70,000 Sq.Ft.			87	A		
	Rattlesnake Mountain Installations			N	80	A		
	Gate House	8x5x10	CB					
623-A	Radio Shack	31x16	CB					
	Army Radio Building	33x19x10	CB					
	High Voltage Shack	10x11x8	CB					
	Silo (2)	35x20	SM					
	Building near Silo (2)	17x11x8	CB					
	Shack	19x12x10	CM					
	Shack	12x12x8	CM					
	Shack (Auxiliary Power Equipment)	12x8x7	W					

600 AREA FACILITIES (INCLUDING 200-NORTH AREA)

FACILITY					PROPOSED ACTION		ESTIMATED COST, $1000	
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
	Emergency Relocation Center			N	80	A		
	Gate House	6x5	CB					
	Associated Structure	10x9	CB					
	Shed	41x20	CM					
	Building No. 1	126x32	CB					
	Building No. 2	147x32	CB					
	Building No. 3	228x57	CB					
	Building No. 4	37x19	CB					
	Building No. 5	70x29	CB					
	Associated Structure	13x11	CB					
	Building No.	40x30	CB					
	Building No.	7x7	CB					
	Building No. 9	23x11	CB					
212-P	Electrical Equipment Storage	74x27x30 74x49x12 26x14x12	CB	G	74	1	500	1,600
212-N		Same as 212-P		G	74	1	500	1,600
212-R		Same as 212-P		G	74	1	500	1,600
2905-N	Pump House	10x10x12	CB	N	74	A	4	
2905-R	Pump House	10x10x12	CB	N	74	A	4	
	Green Structure near 212-R	20x20x12	CM	N	74	A		
T-101 thru T-107	Waste Storage	Quonset Huts (used at one time for ammunition)			74	A	40	
101				N		A		

600 AREA FACILITIES (INCLUDING 200-NORTH AREA)

FACILITY					PROPOSED ACTION			
Number	Description	Size	Walls	Contamination Status (See Code)	FY	See Code	Total Cat. B	Total Cat. A
102				N		A		
103				S		B		
104				S		B		
105				N		A		
106				N		A		
107				N		A		
	Structure near T-101-107	20x10x10	W	N	74	A		
	Structure 1 Mile East of 200-E on South Side of Road	9x9x10	CB	N	74	A		
	Railroad Trackage			N				
X-8	Motor Car (R.R.) Shed	No Information		N				