Department of Energy
Idaho Operations Office
West Valley Project Office
P.O. Box 191
West Valley, NY 14171

December 4, 1990

Mr. R. Davis Hurt
U. S. Nuclear Regulatory Commission
Headquarters
Washington, D. C. 20555

SUBJECT: Potential Site Closure Alternatives for Review in the Environmental Impact Statement Development Process for the Western New York Nuclear Service Center

Dear Mr. Hurt:

Enclosed for your review are six copies of the "Potential Site Closure Alternatives for Review in the Environmental Impact Statement (EIS) Process for the Western New York Nuclear Service Center." The six closure alternatives presented in this report were developed based on broad criteria suggested in the EIS Notice of Intent and other regulatory documents. These alternatives are conceptual and are intended to form the basis for the development of site closure criteria and more definitive site closure alternatives for evaluation in the EIS.

Please note that in accordance with 6 NYCRR Section 373-3.7 "Interim Status Standards for Owners and Operators of Hazardous Waste Facilities," the West Valley Demonstration Project (WVDP) is concurrently in the process of submitting closure plans to the U. S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC). These plans are descriptive documents that address potential closure alternatives for the six permitted treatment and storage facilities at the WVDP. The plans are consistent with those developed for the EIS.

We look forward to further discussing our site closure alternatives with you during your suggested visit to the WVDP during the week of December 17, 1990.

Sincerely,

Tom Rowland

T. J. Rowland, Acting Director
West Valley Project Office

Enclosures

cc: J. E. Solecki, DOE-ID
S. J. Szalinski, WVNS

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POTENTIAL SITE CLOSURE ALTERNATIVES

FOR REVIEW IN THE EIS PROCESS

WESTERN NEW YORK NUCLEAR SERVICE CENTER

JULY 12, 1990

INTRODUCTION

As required by NEPA and SEQRA, the West Valley Demonstration Project has begun to prepare an Environmental Impact Statement (EIS) for the completion of the project and the closure of the Western New York Nuclear Service Center (WNYNSC). The Department of Energy (DOE) has the lead responsibility for the completion of the project. The New York State Energy Research and Development Authority (NYSERDA) has the lead for site closure. Both organizations have agreed to coordinate their activities and perspectives in the EIS.

The EIS process is an invaluable tool for DOE and NYSERDA managers to use early in the decision making process to examine proposed actions on project completion and site closure in terms of impacts upon our human and natural environments. The procedural steps in this process (and their status) for West Valley include:

- publishing a Notice of Intent (complete)
- collecting comments on the scope of the EIS from the public and others (complete)
- preparing and issuing an EIS Implementation Plan (draft in review)
- preparing a Draft EIS (DEIS) that includes evaluation of alternatives (estimated October 1993)
- collecting and responding to review comments on the DEIS from governmental agencies and the general public and others (estimated March 1994)
- preparing a Final EIS (FEIS) that includes declaring a preferred alternative (estimated March 1995)
- publishing a Record of Decision (estimated October 1995)

The DEIS and FEIS will be prepared by an independent EIS contractor. WVNS, as the on-site contractor to DOE, will provide data and information including the identification of a range of alternatives for project completion and site closure. This report provides a starting point for DOE and NYSERDA to begin the formulation of project completion and site closure alternatives and criteria.

DESCRIPTION

This report presents six potential site closure alternatives. As the EIS process develops, these alternatives will be further defined according to detailed criteria which have yet to be developed. Any additional viable alternatives identified during EIS preparation will also be evaluated.

The potential alternatives described herein are concepts which come from several important sources. Foremost are the requirements of NEPA and SEQRA which require that all proposed federal and state actions be environmentally evaluated, including alternatives to the proposed action and no action. More specifically the many courses of action for the major buildings, structures, and disposal systems at West Valley are defined in the Notice of Intent[1] (NOI). Similar to the major components and alternatives for closure actions listed in the NOI, this section, as illustrated in Table 1, groups the courses of action for facilities and wastes under each alternative.

Another factor considered in this list of alternatives is the West Valley Demonstration Project Act.[2] The Act mandates that the decontamination and decommissioning of the tank, facilities and waste used in operating the Project will be in accordance with such requirements as the NRC may prescribe. Therefore, consideration was given to current NRC requirements for decommissioning.[3] Three of the six potential site closure alternatives presented in this report are based on the NRC decommissioning alternatives: DECON, SAFSTOR and ENTOMB.

Table 1 defines the potential closure actions for each facility or unit at the WNYNSC and the potential disposition for each category of waste for each of the six alternatives. The closure actions for some facilities may be the same under any alternative because of some unique factors, such as strict regulatory requirements for closure.

Each course of action in Table 1 describes a future condition. However, these descriptions are not intended to provide all the information needed for their evaluation. An important next step will be to define detailed closure criteria which will include factors such as decontamination levels for radionuclides, exposure criteria, clean-up levels for hazardous constituents and technical feasibility. These alternatives will then be defined and characterized in more detail based on the criteria.

The following is a brief description of the six potential site closure alternatives.

Alternative I

This alternative proposes that the entire WNYNSC be returned to its former natural state as soon as possible. Therefore, all the structures, permanent and temporary, are demolished and removed from the site. Project generated radioactive waste and those previously buried on site will be exhumed and removed to off-site facilities.

The goal achieved by this alternative is to return the entire WNYNSC for unrestricted access and use such as farming and residential uses. This alternative called "greenfield" requires no monitoring or manpower after site closure.

Alternative II

This alternative is very similar to the "greenfield" alternative but has one distinctive difference in waste disposal. Instead of transporting the waste off site, the radioactive waste is transferred to new, on-site storage facilities. Buried wastes including the SDA and NDA will be exhumed, packaged and transferred to on-site storage facilities.

Except for the new, restricted storage areas and necessary buffer zones, the project site and the entire WNYNSC will be available for unrestricted reuse. Because of the nature of the wastes, particularly the high-level waste until the federal repository is available, the storage areas will be given perpetual care.

Alternative III

This alternative is similar to the ENTOMB alternative defined by the NRC and primarily relies on in situ decontamination and decommissioning of radioactive facilities. The goal is to decontaminate as necessary and to immobilize radionuclides. Primary facilities such as the process building complex and tank farm are decontaminated and then stabilized or demolished in place. Secondary facilities such as the parking lot, firearm range, rail spur, etc. are removed.

High-level, spent fuel and GTCC wastes will be eventually shipped off site. Low-level and mixed low-level waste, however, is disposed on site in new, engineered facilities. The existing NDA and SDA remain in place and are stabilized. The low-level waste in the drum cell remains and the building transformed to a permanent disposal facility.

Alternative IV

This alternative is similar to the DECON alternative defined by the NRC and primarily relies on in situ decontamination techniques. The goal is to identify those radioactive facilities that can be decommissioned in place from those facilities that can be decontaminated to a regulated level that permits unrestricted reuse. For example, the drum cell facility after removing the radioactive drums, will be decontaminated for unrestricted, nonresidential reuse. Some possible reuse is to convert the site as an analytical lab for the University of Buffalo or a research and development project for DOE or NYSERDA in nuclear waste management.

No new on-site disposal areas are considered under this alternative. Therefore, non-buried wastes will be transported to various off-site, licensed disposal facilities. Existing buried waste disposal areas, such as the NDA and SDA, will be stabilized in place, restricted from access and monitored for long term.

Alternative V

This alternative is similar to the SAFSTOR alternative defined by the NRC and relies primarily on an aging process. Radioactive facilities and wastes remain intact, in place and are monitored and maintained for a significant period of time, say 100 years. The goals are 1) to defer decontamination thereby allowing for the decay of radioactive wastes and reduce human hazards, risks and exposures to radioactive materials during the decontamination operation; and, 2) to await for licensed, off-site nuclear disposal facilities. All supportive facilities, roads, parking lots, etc. would remain during the aging period.

After the storage period, the radioactive facilities would be demolished and capped in place. Low-level and mixed low-level waste will be disposed on-site; high-level, spent fuel and GTCC wastes will be transported for off-site disposal. Supportive facilities would be removed. However, the NDA and SDA would be continuously monitored and maintained.

Alternative VI

This alternative is a variation of the NEPA required "no action" alternative. Since the WVDP Act mandates certain actions, it is unrealistic to consider no actions. In this alternative, the existing disposal areas such as the NDA and SDA remain as is and are monitored and maintained. High-level, spent fuel and GTCC wastes are stored on site until licensed, off-site disposal facilities are available. Low-level and mixed low-level wastes will be disposed on site in new facilities and the drum cell building will be transformed into a low-level waste disposal facility.

These alternatives have no order of preference or interest. Table 1 is not intended to adversely limit the development of the courses of action for the facilities and wastes. This development (discussed in more detail below) will include, for example, such items as: establishing requirements and criteria; specifying methods to accomplish the action; and, developing schedule and sequence information.

As noted above, an evolution of these site closure alternatives may result from a number of factors including, for example, new data and information from the site and waste characterization efforts and new project initiatives and programs. In addition, the alternatives may be influenced by the completion of future activities of the EIS process. Future activities that may have such an influence include establishing, developing, and defining:

- The overall criteria and requirements that will be used to judge and compare site closure alternatives
- The specific, limiting, and guiding criteria for such items as acceptable residual radioactivity levels after decontamination and release of site areas for unrestricted use
- The methods and technologies, including their feasibility, to be used to accomplish the individual actions
- System studies, trade-offs, and comparisons for optional features for the methods and technologies
- The sequence, timing, budgeting and schedules for the events that make up the individual actions
- The future use, such as for enhanced reuse and unrestricted use, of site facilities, buildings, structures and systems
- The availability and logistics for the use of off-site disposal facilities for West Valley wastes

In summary, Table 1 is not intended to limit the development of different combinations of individual actions. Such combinations may form entirely new and more desireable site closure alternatives. It is possible that such an evolution of the alternatives may occur as the EIS process continues. As mentioned earlier, this report establishes a starting point for this evolution.

References:

1 "Intent To Prepare an Environmental Impact Statement for Completion of West Valley Demonstration Project Activities and Closure of the Western New York Nuclear Service Center," Federal Register, Vol. 53, No. 251, pp. 53052-53057, U.S. Department of Energy, Washington D.C., December 30, 1988

2 "West Valley Demonstration Project Act" Public Law 96-368, U. S. Congress, October 1, 1980

3 "10 CFR Parts 30, 40, 50, 51, 70, and 72; General Requirements for Decommissioning Nuclear Facilities," Federal Register, Vol. 53, No. 123, pp. 24018-24056, U.S. Nuclear Regulatory Commission, Washington D.C., June 27, 1988

TABLE 1: POTENTIAL

	ALTERNATIVE I GREENFIELD	ALTERNATIVE II EXHUMATION, ON-SITE WASTE STORAGE AND PERPETUAL CARE	ALTERNATI IN-SITU DECO ON-SITE LL
A. FACILITIES			
Process Building Complex	Decontaminate, remove wastes & equipment, dismantle building & foundation.	Decontaminate, remove, wastes & equipment, dismantle building & foundation.	a. Decontaminate. previously remo wastes. Backfi cells, aisles, with stabilizin (process buildi monolith"). - OR - b. Decontaminate, cap in place.
Tank Farm	Decontaminate, exhume tanks, vaults, & foundation.	Decontaminate, exhume tanks, vaults, & foundation.	Decontaminate & ba stabilizing materi
NDA, SDA Areas	Exhume wastes & adjacent soil materials as needed.	Exhume wastes & adjacent soil materials as needed.	Stabilize as appro
Drum Cell Building	Remove waste & dismantle structure & foundation.	Remove waste & dismantle structure & foundation.	Leave wastes in pl transform into an disposal unit.
Lagoons & Sludge Ponds	Close according to regulatory requirements.	Close according to regulatory requirements.	Close according to requirements.
Storage Tents, Pads, Structures 1,2,3,...n	Remove structures, foundations, & adjacent soil materials as needed.	Remove structures, foundations, & adjacent soil materials as needed.	Decontaminate & re
Borrow Pit	Close according to regulatory requirements.	Close according to regulatory requirements.	Close according to requirements.

SITE CLOSURE ALTERNATIVES

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VE III MISSIONING AND DISPOSAL	ALTERNATIVE IV IN-SITU DECOMMISSIONING WITH LIMITED REUSE AND NO NEW ON-SITE DISPOSAL AREAS	ALTERNATIVE V STORAGE FOLLWED BY IN-SITU DECOMMISSIONING	ALTERNATIVE VI NO ACTION
Return ed l rooms, offices) media g becomes a	Decontaminate rooms, cells, aisles, & offices for limited reuse.	Restrict access, monitor, & maintain for 100 years to allow further radioactive decay & to await availability of licensed off-site waste disposal facilities. After storage period, decontaminate, demolish, & cap in place.	Decontaminate rooms, cells, aisles, & offices as required by the Act to permit restricted use for necessary ongoing monitoring & maintenance.
molish, &			
kfill with al.	Decontaminate & backfill with stabilizing material.	After HLW solidifcation is completed, decontaminate & backfill with stabilizing material.	Decontaminate & decommission as required by the Act.
priate.	Partial exhumation & stabilize as appropriate.	Leave as is. Monitor, maintain, & perform custodial care.	Leave as is. Monitor, maintain, & perform custodial care.
ace & on-site LLW	Remove wastes for off-site disposal. Decontaminate building for limited reuse.	Restrict access, monitor, & maintain for 100 years to allow radioactive decay & to await availability of off-site waste disposal facilities. After storage period, remove wastes, dismantle structure & foundation.	Leave wastes in place & transform into an on-site LLW disposal unit. Monitor & maintain.
regulatory	Close according to regulatory requirements.	Close according to regulatory requirements.	Close according to regulatory requirements.
move.	Decontaminate & remove.	Restrict access, monitor, & maintain for 100 years to allow radioactive decay & to await availability of off-site waste disposal facilities. After storage period, process wastes for off-site disposal; remove structures, foundations, & adjacent soil materials as needed.	Decontaminate, remove, & store waste. - OR - Leave as is. Monitor & maintain.
regulatory	Close according to regulatory requirements.	Close according to regulatory requirements.	Close according to regulatory requirements.

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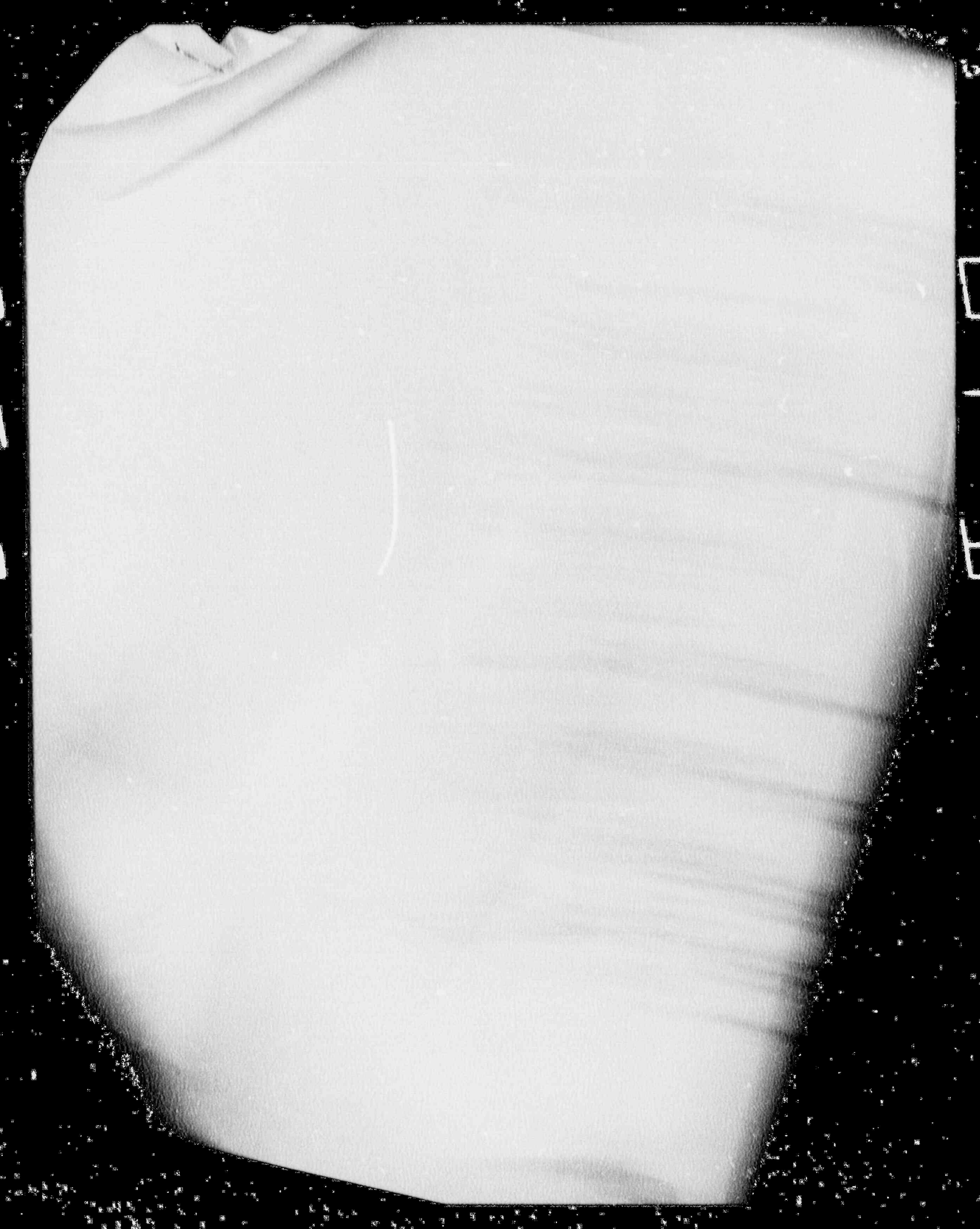
TABLE 1: POTENTIAL

	ALTERNATIVE I GREENFIELD	ALTERNATIVE II EXHUMATION, ON-SITE WASTE STORAGE AND PERPETUAL CARE	ALTERNA IN-SITU DEC ON-SITE L
Trailers	Remove.	Remove.	Remove.
Warehouse & Other Similar Buildings	Remove.	Remove.	Remove.
Office Building	Remove.	Remove.	Remove.
Cold Dump	Close according to regulatory requirements.	Close according to regulatory requirements.	Close according to requirements.
Railroad Spur	Remove according to applicable requirements.	Remove according to applicable requirements.	Close according to requirements.
Firearms Range	Remove according to applicable requirements.	Remove according to applicable requirements.	Close according to requirements.
Bulk Storage Warehouse	Remove.	Remove.	Remove.
Earthen Dams & Reservoir	Close according to applicable requirements.	Close according to applicable requirements.	Close according to requirements.
Paved On Site Parking Areas & Roads	Remove.	Remove.	Remove as needed.
Electrical Distribution System; Substation	Remove according to applicable requirements.	Remove according to applicable requirements.	Remove as needed applicable requir unrestricted area
Sewage Treatment Plant	Disaantle & remove.	Disaantle & remove.	Close according requirements.
Injection Well	Close according to applicable requirements.	Close according to applicable requirements.	Close according requirements.
Gravel Pit Quarry	WILL NOT BE CONSIDERED IN EIS		
Schoolhouse	WILL NOT BE CONSIDERED IN EIS		

IVE III OMMISSIONING LW DISPOSAL	ALTERNATIVE IV IN-SITU DECOMISSIONING WITH LIMITED REUSE AND NO NEW ON-SITE DISPOSAL AREAS	ALTERNATIVE V STORAGE FOLLOWED BY IN-SITU DECOMISSIONING	ALTERNATIVE VI NO ACTION
	Remove.	Except where needed for storage period, remove.	Except where needed, remove.
	Clean for reuse.	Remove.	Leave as is. Maintain as needed.
	Clean for reuse. Close according to regulatory requirements.	Restrict access & maintain as needed for 100 year period, then demolish in place as rubble. Close according to regulatory requirements.	Leave as is & maintain as needed. Close according to regulatory requirements.
applicable	Close according to applicable requirements.	Restrict access & maintain as needed for 100 years. After storage period, close according to applicable requirements.	Leave as is. Maintain as needed.
applicable	Close according to applicable requirements.	Restrict access & maintain as needed to 100 years. After storage period, close according to applicable requirements.	Leave as is. Maintain as needed.
	Clean for reuse.	Remove	Leave as is. Maintain as needed.
applicable	Close according to applicable requirements.	Restrict access & maintain as needed for 100 years. After storage period, close according to applicable requirements.	Leave as is. Maintain as needed.
	Clean for reuse.	Restrict access & maintain as needed to 100 years. After storage period, remove, survey, and release.	Leave as is. Maintain as needed.
according to ements in s.	Remove as needed according to applicable requirements in unrestricted areas.	Restrict access & maintain as needed for 100 years. After storage period, remove as needed according to applicable requirements.	Leave as is. Maintain as needed.
o applicable	Close according to applicable requirements.	Leave as is for duration of storage period, then demolish in place as rubble.	Leave as is. Maintain as needed.
o applicable	Close according to applicable requirements.	Close according to applicable requirements.	Close according to applicable requirements.



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SURE ALTERNATIVES

II SIONING SPOSAL	ALTERNATIVE IV IN-SITU DECOMISSIONING WITH LIMITED REUSE AND NO NEW ON-SITE DISPOSAL AREAS	ALTERNATIVE V STORAGE FOLLOWED BY IN-SITU DECOMISSIONING	ALTERNATIVE VI NO ACTION
ort for off-site	Interim storage, then transport for off-site disposal.	Store for 100 years, then transport to off-site disposal area.	Interim storage, then transport for off-site disposal.
	Interim storage, then transport for off-site disposal.	Store for 100 years, then dispose on-site.	Store on-site.
	Transport for off-site disposal.	Transport for off-site disposal.	Transport for off-site disposal.
estricted area, ain as-needed.	Find, excavate, & package for off-site disposal for area of unrestricted access.	If found during the 100 year period, monitor & maintain as needed. After storage period, excavate & package for on-site disposal.	If found, monitor & maintain needed.
tricted area, ose according to egents.	Dispose on-site.	Dispose on-site.	Dispose on-site.

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TABLE 1: POTENTIAL

	ALTERNATIVE I GREENFIELD	ALTERNATIVE II EXHUMATION, ON-SITE WASTE STORAGE AND PERPETUAL CARE	ALTERN IN-SITU D ON-SITE
B. WASTES			
HLW Packages Including Mixed HLW, if any	Transport for off-site disposal.	Store on-site.	Lag store, transp disposal.
Spent Fuel Assemblies			
GTCC, including Mixed GTCC, if any			
TRU, including eixed TRU, if any			
LLW Class A	Transport for off-site disposal.	Store on-site.	Dispose on-site.
LLW Class B & C			
Mixed LLW			
Hazardous	Transport for off-site disposal.	Transport for off-site disposal.	Transport for off-site disposa
Contaminated Soil	a. Find, excavate, & package for off-site disposal.	a. Find, excavate, & package for on-site disposal.	If found within monitor and main
	b. Find, excavate, package, & store on-site.	b. Find, excavate, package, & store on-site.	If found in unre excavate and dis applicable requi
Nonradioactive rubble	Dispose on-site.	Dispose on-site.	Dispose on-site.

LOSURE ALTERNATIVES

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II IONING SPOSAL	ALTERNATIVE IV IN-SITU DECOMISSIONING WITH LIMITED REUSE AND NO NEW ON-SITE DISPOSAL AREAS	ALTERNATIVE V STORAGE FOLLOWED BY IN-SITU DECOMISSIONING	ALTERNATIVE VI NO ACTION
off-site	Interim storage, then transport for off-site disposal.	Store for 100 years, then transport to off-site disposal area.	Interim storage, then transport for off-site disposal.
	Interim storage, then transport for off-site disposal.	Store for 100 years, then dispose on-site.	Store on-site.
	Transport for off-site disposal.	Transport for off-site disposal.	Transport for off-site disposal.
ted area, -needed. d area, cording to .	Find, excavate, & package for off-site disposal for area of unrestricted access.	If found during the 100 year period, monitor & maintain as needed. After storage period, excavate & package for on-site disposal.	If found, monitor & maintain as needed.
	Dispose on-site.	Dispose on-site.	Dispose on-site.

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