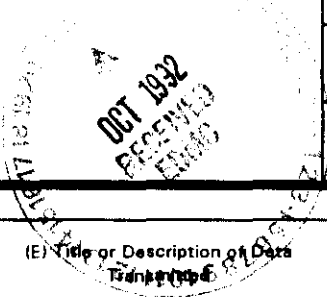


2. To: (Receiving Organization) Environmental Engineering	3. From: (Originating Organization) Environmental Project Safety Documentation	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: N/A	6. Cog. Engr.: S.W. Clark	7. Purchase Order No.:
8. Originator Remarks: This safety assessment was previously approved in correspondence control format. The document has been revised in supporting document format. Only editorial changes have been made.		9. Equip./Component No.: N/A
11. Receiver Remarks:		10. System/Bldg./Facility: N/A
		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: August 31, 1992



15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmittal	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-EN-SAD-019		0	Safety Assessment for the Characterization of the Horn Rapids Landfill at the Hanford Site 1100-EM-1 Operable Unit	2 ESQ	1		

16. KEY					
Impact Level (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
1, 2, 3, or 4 (see MRP 5.43)		1. Approval	4. Review	1. Approved	4. Reviewed no/comment
		2. Release	5. Post-Review	2. Approved w/comment	5. Reviewed w/comment
		3. Information	6. Dist. (Receipt Acknow. Required)	3. Disapproved w/comment	6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)											
(G)	(H)	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog. Eng. S.W. Clark	<i>S.W. Clark</i>	9/23/92							
1	1	Cog. Mgr. M.G. Lauterbach	<i>M.G. Lauterbach</i>	9/23/92	H4-55						
1	1	QA T.L. Bennington	<i>T.L. Bennington</i>	10/1/92	H4-16						
1	1	Safety F.A. Schmorde	<i>F.A. Schmorde</i>	10/2/92	H2-57						
1	1	Env. E.M. Greagor	<i>E.M. Greagor</i>	9/29/92	H6-60						
1	1	SA&R N.R. Kerr	<i>N.R. Kerr</i>	9/23/92	N1-75						
1	1	SA&R J.J. Zimmer	<i>J.J. Zimmer</i>	9/23/92	N1-83						

18. Signature of ED Originator <i>H.E. Marquez</i> Date: 9/23/92	19. Authorized Representative Date for Receiving Organization <i>S.W. Clark</i> Date: 9/23/92	20. Cognizant/Project Engineer's Manager <i>M.J. Lauterbach</i> Date: 9/23/92	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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SUPPORTING DOCUMENT

1. Total Pages 1819

2. Title

Safety Assessment for the Characterization of the Horn Rapids Landfill at the Hanford Site 1100-EM-1 Operable Unit

3. Number

WHC-SD-EN-SAD-019

4. Rev No.

0

5. Key Words

Safety Assessment
Horn Rapids Landfill
Characterization Work
Hazards

6. Author

Name: W.E. Taylor

Signature

W.E. Taylor 9/23/92

APPROVED FOR
PUBLIC RELEASE

Organization/Charge Code 29550/PHIAC

7. Abstract

10/7/92 m. d. d. d.

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10.

RELEASE STAMP

OFFICIAL RELEASE
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DATE OCT 08 1992

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9. Impact Level 2 ESQ

CONTENTS

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2.0 WORK DESCRIPTION AND SITE LOCATION 1

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 3.3 NATURALLY OCCURRING EVENTS 5

4.0 OPERATIONAL SAFETY LIMIT 5

4.0 REFERENCES 6

ATTACHMENTS:

A- SAFETY DOCUMENTATION FOR THE CHARACTERIZATION OF THE HORN RAPIDS
LANDFILL AT THE HANFORD SITE 1100-EM-1 OPERABLE UNIT, REV 1 A-1

B- CHARACTERIZATION OF THE HORN RAPIDS LANDFILL 1100-EM-1 OPERABLE UNIT
SUMMARY INVENTORY INFORMATION B-1

FIGURES:

1. Horn Rapids Landfill Site Map Showing Trench Locations 2

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0 4 1 2 1 5 1 9 7 6

1.0 INTRODUCTION AND SUMMARY

This document describes the characterization activities planned to determine the contents of burial trenches in the Horn Rapids Landfill (HRL) in the 1100-EM-1 Operable Unit. This document provides an assessment for the hazards associated with using mechanized earth-moving equipment in this characterization activity. This excavation activity was classified as a general use activity (WHC 1990). No additional safety documentation is required beyond that required for occupational safety. One operational safety limit (OSL) has been specified to minimize the potential for the release of fugitive dust and asbestos fibers to the environment by this activity (see Section 4.0).

Occupational safety documentation, i.e., the Radiation Work Permit (RWP) and the Hazardous Waste Operations Permit, will be provided as part of the project work plan normally associated with remedial investigations. The RWP will provide radiological controls to the Health Physics staff in the event radioactive material is found.

2.0 WORK DESCRIPTION AND SITE LOCATION

The characterization work will take place in the HRL at past locations of trenching and disposal of waste materials (burial trenches) using mechanized earth-moving equipment. Removal of approximately 920 m³ (1,200 yd³) is expected to result in each excavation. The holes will be approximately 21 m (70 ft) across by 6 m (20 ft) deep at each location. A flat area at the bottom of the excavation pits will be approximately 13 m² (140 ft²). Included in the 920 m³ (1,200 yd³) is that soil disturbed to prepare the backhoe staging area. A HRL site map showing trench locations is provided in Figure 1; illustrations of the proposed excavations are provided in Figures 2 and 3. Attachment B and DOE-RL 1991 describe the work plan for the HRL excavation activities.

2.1 SITE BACKGROUND

The HRL was operated as a solid waste disposal facility from 1950 to 1970. Materials suspected to have been put into the landfill include waste asbestos, used tires, and construction debris. Various types of debris such as paint cans, steel cables, sheet metal, concrete rubble, and other miscellaneous material lay scattered over much of the landfill (DOE-RL 1990). A summary description of the potential waste materials in the HRL is provided in Attachment B.

Burning of combustible material was a common practice prior to 1970. The expectation is that much of the described material was disposed of in this method. The burning would have consumed most of the combustibles and accelerated degradation of the metal cans, barrels, sheets, etc. In addition, during this period (1950 to 1970), the common practice was to use heavy earth-moving equipment to level and compact the material in landfills that remained after burning. This method most likely crushed metal and glass containers, releasing any contents that were not consumed by the burning.

Figure 1. Horn Rapids Landfill Site Map Showing Trench Locations.

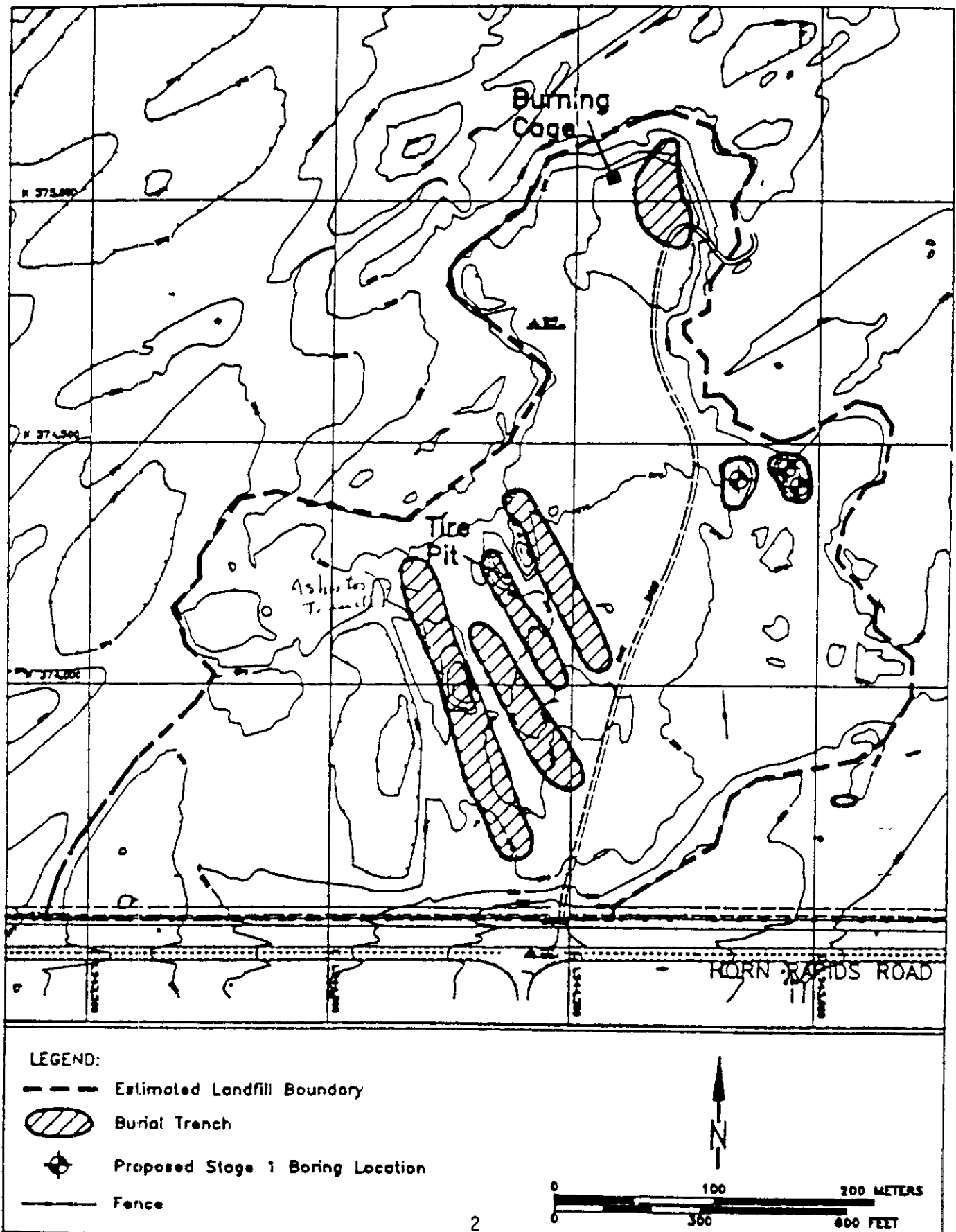
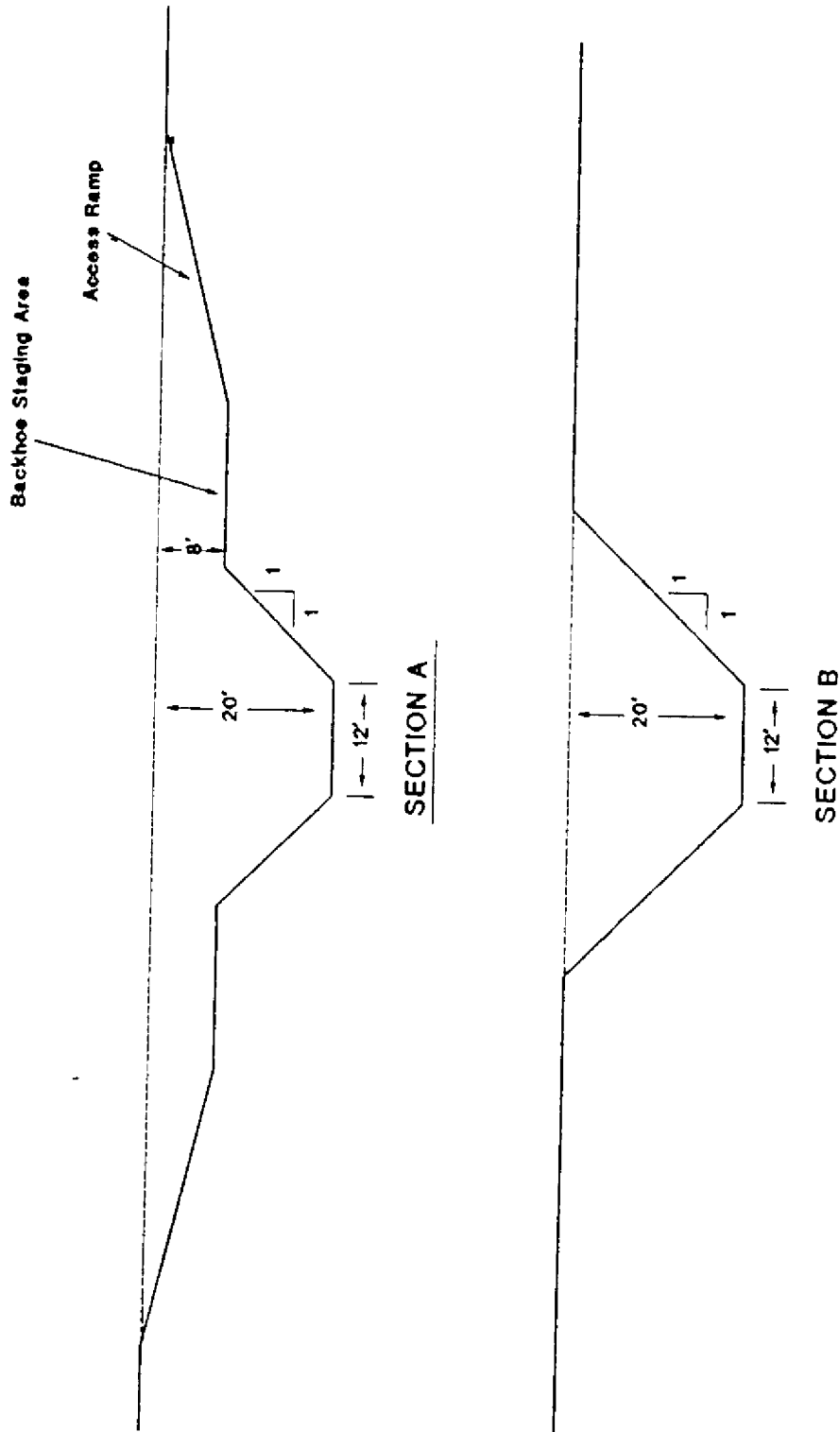
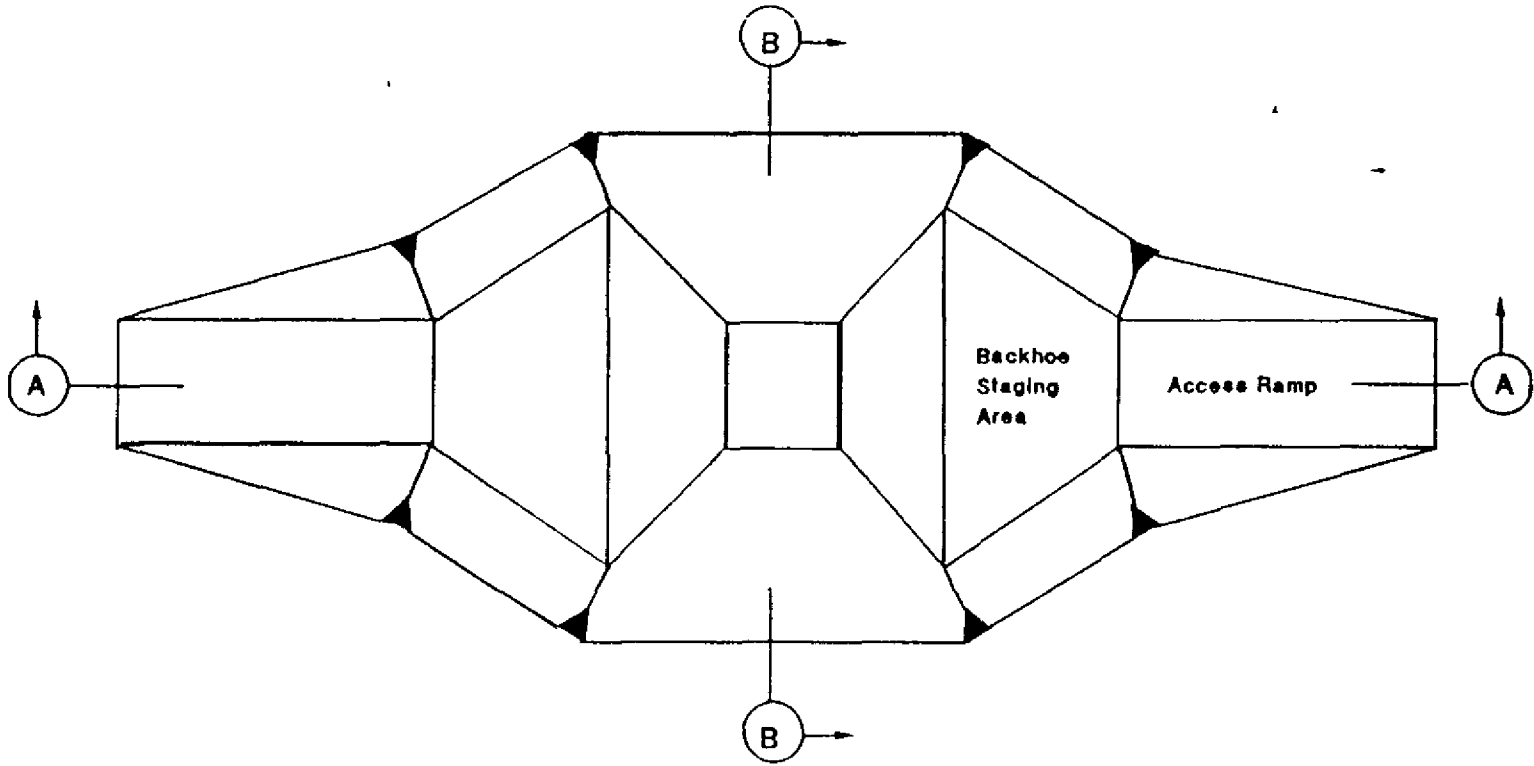


Figure 2. Horn Rapids Landfill Investigative Report.



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Figure 3. Plan of Excavation.

Excavation Volume = 1,200 cy

Surface Area = 5,800 sf

hrexplan

3.0 HAZARD ASSESSMENT

Soil and other materials removed during the excavations will be either returned to the hole, or if found to be contaminated with hazardous materials, packaged and removed from the landfill in accordance with regulations as part of this activity. There will be provisions to sample and remove liquids in the remote possibility any are encountered. There is a potential additional hazard associated with a characterization activity of a trench that has been identified as containing asbestos material (see Attachment A for detailed information).

The results of the Phase I remediation investigation (DOE-RL 1990, WHC 1992) did not indicate the existence of any imminent or substantial endangerment to site workers, the public, or the environment (receptors of concern). Phase I investigations identified several soil chemical contaminants in concentrations above background levels. The potential for these hazardous chemical materials to occur in amounts that would present a hazard to the receptors of concern is negligible. Radioactivity was not expected or found in the soil samples taken in the landfill, although the possibility exists that there may be clock dials and instrument components that contain minute quantities of radioisotopes.

There is one OSL required to assure the validity of this safety assessment (Section 4.0). The OSL requires that the potential for the release of fugitive dust from this activity be minimized.

The general use classification for the HRL characterization activities (defined in WHC 1990) is based on the small amount of potential contaminants that could be exposed to the environment during this operation. Soil sampling, soil gas and surface radiation surveys have been completed at the landfill. There have been no radioactive material detected at the landfill. While there are some concentration values of hazardous chemicals that are above background, none would pose a threat to the environment or the noninvolved person with the OSL implemented. The small risk to the facility worker will be controlled by the industrial safety requirements for protective clothing, respirators, etc., as specified in the U.S. Department of Energy and Westinghouse Hanford Company safety criteria.

3.3 NATURALLY OCCURRING EVENTS

The impact of naturally occurring events such as floods, seismic events, temperature extremes, lightning and range fires, as well as the potential hazards associated with the activities of the Hanford Patrol, industrial, and agriculture facilities, were assessed. These events and associated hazards did not alter the general use classification conclusion for this activity.

4.0 OPERATIONAL SAFETY LIMIT

There is one OSL necessary to assure the validity of the HRL characterization activities. It requires that the potential for fugitive dust from this activity be minimized.

Operational Safety Limit

- 1.0 **Title** - The potential for the release of fugitive dust must be minimized.
- 1.1 **Applicability** - This limit applies to the investigative excavations in trenches at the HRL described in Section 3.0.
- 1.2 **Objective** - To reduce the potential for airborne release of fugitive dust.
- 1.3 **Requirements** - The work surfaces that include the excavation area, equipment location area, and spoil pile(s) will be maintained in a moist condition to the extent required to assure the release of fugitive dusts are minimized. Work surfaces will be wetted at the start of the day, at the end of the work day, and during the work day as required. Precipitation if sufficient, may relieve additional wetting of the work surfaces.
- 1.4 **Surveillance** - Project documents will specifically require that the landfill surfaces disturbed by this excavation, including any spoil piles, will be maintained moist. Project documents will confirm that the disturbed soil surface moisture condition is periodically assessed.
- 1.5 **Recovery** - In the event that the requirements of this OSL are not complied with, all operations at the excavation site will cease. Prompt action will be taken to wet the surface of disturbed soil to the satisfaction of the site safety officer. The deficiency will be reviewed with the site safety officer and independent safety who determine additional recovery actions, if any.
- 1.6 **Audit Point** - Program work documents and Environmental Engineering site surveillances.
- 1.7 **Basis** - The reduction of the emission of fugitive dusts from the excavation will reduce the potential for the release of hazardous materials to the environment and noninvolved individuals.

4.0 REFERENCES

- WHC, 1990, *Implementation Guideline for Hazard Documentation*, WHC-SD-GN-ER-301, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- DOE-RL, 1990, *Phase 1 Remedial Investigation Report for the Hanford Site 1100-EM-1 Operable Unit*, DOE-RL 90-18, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- DOE-RL, 1991, *Remedial Investigations Phase 2 Supplemental Work Plan for the Hanford Site 1100-EM-1 Operable Unit*, DOE-RL 90-37, Rev. 1, U.S. Department of Energy, Richland Field Office, Richland, Washington.
- WHC, 1992, *Soil Gas Sampling and Analysis at the 1100-EM-1 Operable Unit*, WHC-MR-378, Westinghouse Hanford Company, Richland, Washington.

**ATTACHMENT A
SAFETY DOCUMENTATION FOR THE
CHARACTERIZATION OF THE HORN RAPIDS
LANDFILL AT THE HANFORD SITE 1100-EM-1
OPERABLE UNIT,
REV. 1**

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P.O. Box 1970 Richland, WA 99352

August 28, 1991

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Distribution: (See attached list)

SAFETY DOCUMENTATION FOR THE CHARACTERIZATION OF THE HORN RAPIDS LANDFILL AT THE HANFORD SITE 1100-EM-1 OPERABLE UNIT, REV. 1

Reference: "Safety Documentation for the Characterization of the Horn Rapids Landfill at the Hanford Site 1100-EM-1 Operable Unit", W. E. Taylor to Distribution, dated June 11, 1991, Correspondence Number 9154275.

The referenced letter documents the safety assessment for characterization activities in the Horn Rapids Landfill. Activities involve the sampling of several trenches to determine if hazardous materials are present. The safety assessment specifically excludes excavations in known hazardous materials trenches such as asbestos, PCB's, etc. The hazard classification of General Use was determined based on the small amount of potential contaminant that could be exposed to the environment from the characterization operation. Hazard classification provides the basis for the level of Department of Energy and Westinghouse Hanford Company review and approval within a facility or encountered in an activity.

The purpose of this letter is to assess the potential additional hazard of a characterization activity in a trench identified as containing asbestos materials. The material has been in the trench for 20 to 40 years. There are no definitive data regarding the contents of the "asbestos" trench although it is known to have been covered with several feet of clean fill material. -- Asbestos material suspected to have been buried includes pipe insulation and asphalt/asbestos shingles and roofing.

An evaluation determined that there is a small potential for asbestos fibers to be released to the environment by this activity. It is expected that any friable asbestos is entrained in the soil and rock fill material. It is unlikely that it would be in a form to create a source term that would be detectable a few meters from the work location. The Operational Safety Limit in the reference requiring the minimization of fugitive dust is also applicable to this activity. The Hazardous Waste Operations Permit (HWOP) safety requirements provide for the protection of the site workers, the control of potential dust at the worksite, and prompt isolation of materials brought to the surface. These worker safety controls will assure that the environment and uninvolved individuals will not suffer adverse effects because

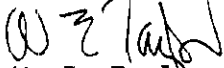
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Page 2
August 28, 1991

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of this sampling activity. Additional controls are not necessary. The General Use classification conclusion in the reference is also applicable to this sampling activity.

The impact of naturally occurring events and potential hazards to nearby facilities do not change from that in the reference.

Very truly yours,



W. E. Taylor
Principal Engineer
Environmental Project Safety Documentation

bab

Concurrence:

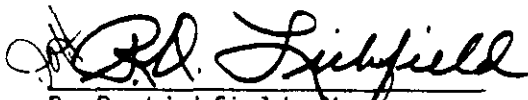


N. R. Kerr, Acting Manager
Environmental Project Safety Documentation



8/29

M. R. Adams, Manager
Environmental Engineering



R. D. Lichfield, Manager
Environmental Safety Assurance

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**ATTACHMENT B
CHARACTERIZATION OF THE HORN RAPIDS
LANDFILL 1100-EM-1 OPERABLE UNIT
SUMMARY INVENTORY INFORMATION**

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WHC-SD-EN-SAD-019, REV. 0

DON'T SAY IT --- Write It!

DATE: June 10, 1991

TO: W. E. Taylor WHCFROM: S. W. Clark  WHC
W. R. Greenwald USACE

Telephone: 6-9698

cc: M. J. Lauterbach WHC

SUBJECT: WASTE MATERIAL DISPOSED OF AT THE HORN RAPIDS LANDFILL

As requested, a discussion of the Horn Rapids Landfill (HRL) waste materials is provided for your use in preparing safety documentation for test pit work at the HRL.

The majority of the waste materials disposed of in the HRL were construction and demolition debris from the 1100 area. Burning of combustible materials was a common practice for landfills prior to the 1970's and much of the wastes at the HRL may have been disposed of in this manner. Additionally, the waste material was probably spread in layers over the bottom of the trench using a dozer which would tend to crush containers and compact the material. Some other materials from the 1100, 300, and other units were also disposed of in the landfill. Until the 1970's, all types of wastes were disposed of in the landfill. In the early 1970's, DOE directed that hazardous materials should be disposed of in a 200 area landfill and not in landfills such as the HRL.

Wastes are observed to be sparsely scattered over the surface of the landfill and consist of paint cans, steel cables, sheet metal, concrete rubble, and sewage sludge. Anecdotal information indicates past disposal of waste liquids, slurried fly ash, possibly 200 drums of carbon tetrachloride and small amounts of explosive compounds (picric acid and ethers). Soil gas surveys at the HRL detected measurable concentrations of trichloroethene, tetrachloroethane, and 1,1,1-trichloroethane. These contaminants appear to be carried into the ground water from a release on the property of Advanced Nuclear Fuels Corp.

Soil gas surveys conducted at the HRL by Golder Associates Inc. (GAI) indicate that significant quantities of contaminants, such as carbon tetrachloride, do not exist. Carbon tetrachloride was detected in only one sample location and the concentration was very low (26 ppbv). PCE was detected in only 5 sample locations and at low concentrations varying from 5 to 28 ppbv. TCE was detected at low concentrations varying from 2 to 255 ppbv over the HRL. GAI has stated that if free liquids did exist, the concentrations measured in the soil gas would be several orders of magnitude higher than those observed at the HRL.

Based upon process knowledge of the operations conducted in the vicinity of the HRL, small quantities of the following wastes could have been disposed of in the landfill. However, there is no information to indicate that such disposal occurred:

antifreeze
automotive cleaners
battery acid
contact cement
degreasers
gasoline
hydraulic oils
industrial lubricants
lacquer thinners
metal cleaners
paint, latex
paints, oil-based
paints, other
paint removers
paint thinners
penetrating oils
roof patching sealant
solvents
stains
undercoating material
vinyl adhesives
waste oil

Scope of Work

Characterization of the Horn Rapids Landfill Burial Trenches 1100-EM-1 Operable Unit

1.0 Objectives and Scope

1.1 Objectives of Activity

This Scope of Work describes characterization activities planned to determine the contents of burial trenches in the Horn Rapids Landfill (HRL) in the 1100-EM-1 Operable Unit. This work is necessary to implement the CERCLA Phase-2 Remedial Investigation for the 1100-EM-1 Operable Unit.

The characterization work will take place in the Horn Rapids Landfill at past locations of trenching and disposal of waste materials (burial trenches). The number of test pits and specific locations have not been determined, but it is assumed that there will be 11 test pits located within the burial trenches shown on Attachment 1. The specific locations will be determined by 15 July 1991 following completion of geophysical survey reports which will identify areas where significant quantities of metallic materials (possibly drums of waste) have been buried. The final locations will be outside of areas of known hazards such as the burial trench containing asbestos material, a PCB spill area, and areas where surface chromium contamination of chromium were found.

The test pits will be excavated to identify the types of waste material disposed of in the trench, and to substantiate or disprove anecdotal information alluding to the disposal of significant quantities of solvents and other hazardous materials. Handling and containerizing of contaminated material encountered during the excavation of the test pit will be required.

1.2 Scope of Work

The test pit excavations and sampling will be conducted in accordance with EII 5.2 Appendix F, Surface Sampling Method (Test Pits/Trenches). The depth of the test pit excavation will be to undisturbed material (the bottom of the trenches may be up to 20 feet deep) and will vary from one test pit to the next. The excavation will not proceed into or beyond the water table or any perched water bearing intervals. The lateral extent of the excavation will be sufficient to achieve the required depth maintaining a 1:1 slope to prevent collapses of the test pit. The backhoes available on-site do not have a sufficient reach to excavate to the 20 foot depth without construction of a staging area at an intermediate depth (see Attachment 2 for assumed plan

and section for excavation). If possible, backhoes having a 35 foot reach will be leased or rented so the test pit can be excavated entirely from the existing ground surface.

Containers or articles suspected of being contaminated and soils with visual indications of contamination will be sampled and containerized as directed by the field coordinator (see Sampling Plan for Characterization of Waste Encountered During Excavation at Horn Rapids Landfill Burial Trenches).

WHC has completed radiation and monitoring activities and the site has been released. All work shall be carried out in accordance with a pre-job safety plan as described in EII 2.1 of WHC-CM-7-7.

2. Task Descriptions

2.1 General: Prior to beginning excavation, site specific geophysical surveys will provide guidance as to the location and depth of suspected wastes. It is anticipated that backhoes and crawler tractors (dozers) will be used to remove any material which overlies the suspected waste materials (identified by the geophysical surveys). Top soil (if any) shall be stripped from the excavation area and stockpiled separately from all other materials. This top soil shall be spread over the excavation area upon completion of backfilling the test pit.

The backhoe will be located at the east or west end of the test pit, up-wind of the excavation, and the spoil pile accumulated to the south of the backhoe. An effort will be made to segregate material having high concentrations of trash and debris from soil material that is relatively free of debris into separate spoil piles. As the excavation nears the zone containing the suspected waste material, the excavation will be more cautious and will principally be by backhoe.

The initial excavation will not be closer than 12 inches to suspected buried waste. A pilot hole will be excavated by hand, for the last 12 inches, into the waste zone. The shovels and other equipment used will be spark-proof. Vapors and gases will be carefully monitored during the excavation of the pilot hole. If the target zone consists of innocuous debris, then excavation will proceed using the backhoe. If drums of wastes or contaminated soil is present in the target zone, then contingency procedures will be followed.

2.2 Investigation Derived Waste: The investigation derived wastes generated in the course of the test pit excavation shall be handled in accordance with the provisions which follows and portions of EII 4.3, Investigative Derived Waste as indicated

below. Based upon observed surface debris and the types of local operations which may have disposed of wastes in the landfill, the debris is believed to generally be innocuous construction debris and trash. The excavated material from the test pit will be subjected to field screening as outlined in section 6.4, "Suspected Hazardous Waste Field Determination and Collection" of EII 4.3. The control, use, handling, maintenance, and calibration of the field screening equipment shall be in accordance with WHC-CM-7-7, EII 3.2, "Health and Safety Monitoring Instruments." The screening shall be conducted at regular intervals not to exceed every 10th bucket of material excavated by the backhoe and as directed by the Field Team Leader based upon his observations of the materials being excavated. Material identified by the field screening as suspected hazardous materials will be containerized within 72 hours of being excavated. The stockpile of material waiting to be containerized shall not exceed 50 cubic yards at any time.

Excavated 55 gallon drums, found to be empty, will be stored in salvage drum overpacks. Small items and soil will be stored in 55 gallon drums, and large or awkward items will be stored in 448 wood burial boxes. Waste containers shall comply with section 5 (including subsections), "Requirements," Section 6.1, "Container Preparation," section 6.6, "Sealing Container," section 6.7 (including subsections), "Management of Waste Containers," section 6.8, "Final Disposal," section 6.9, "Reporting," and section 6.10, "Records."

Non hazardous wastes, such as wood, construction debris, municipal type trash and soil materials determined not to be contaminated (based upon field screening) and materials classified as "Unknown Waste" in EII 4.3 will be stockpiled (spoil stockpile) adjacent to the test pit. Soil material which is relatively free of trash and debris will be stockpiled in a stockpile separately from the spoil stockpile containing trash and debris. Water shall be sprayed over the surface of the pit and the spoil stockpiles as outlined in the Safety Documentation for the Characterization of the Horn Rapids Landfill at the Hanford Site 1100-EM-1 Operable Unit, Operational Safety Limit, to prevent problems with blowing dust.

Decontamination fluids, Personal Protection Equipment and other materials used in the work (such as rags) shall be managed in accordance with section 6, "Procedure" of EII 4.3.

2.3 Backfilling the Test Pit Excavation: Upon completion of excavation, the bottom and sides of the test pit will be compacted by tamping with the bucket of the backhoe to reduce the permeability of the surface. Water will be sprayed onto the surface of the excavation during tamping to moisten the soil and facilitate compaction. The test pit will be backfilled using material from the spoil stockpile. As backfilling proceeds,

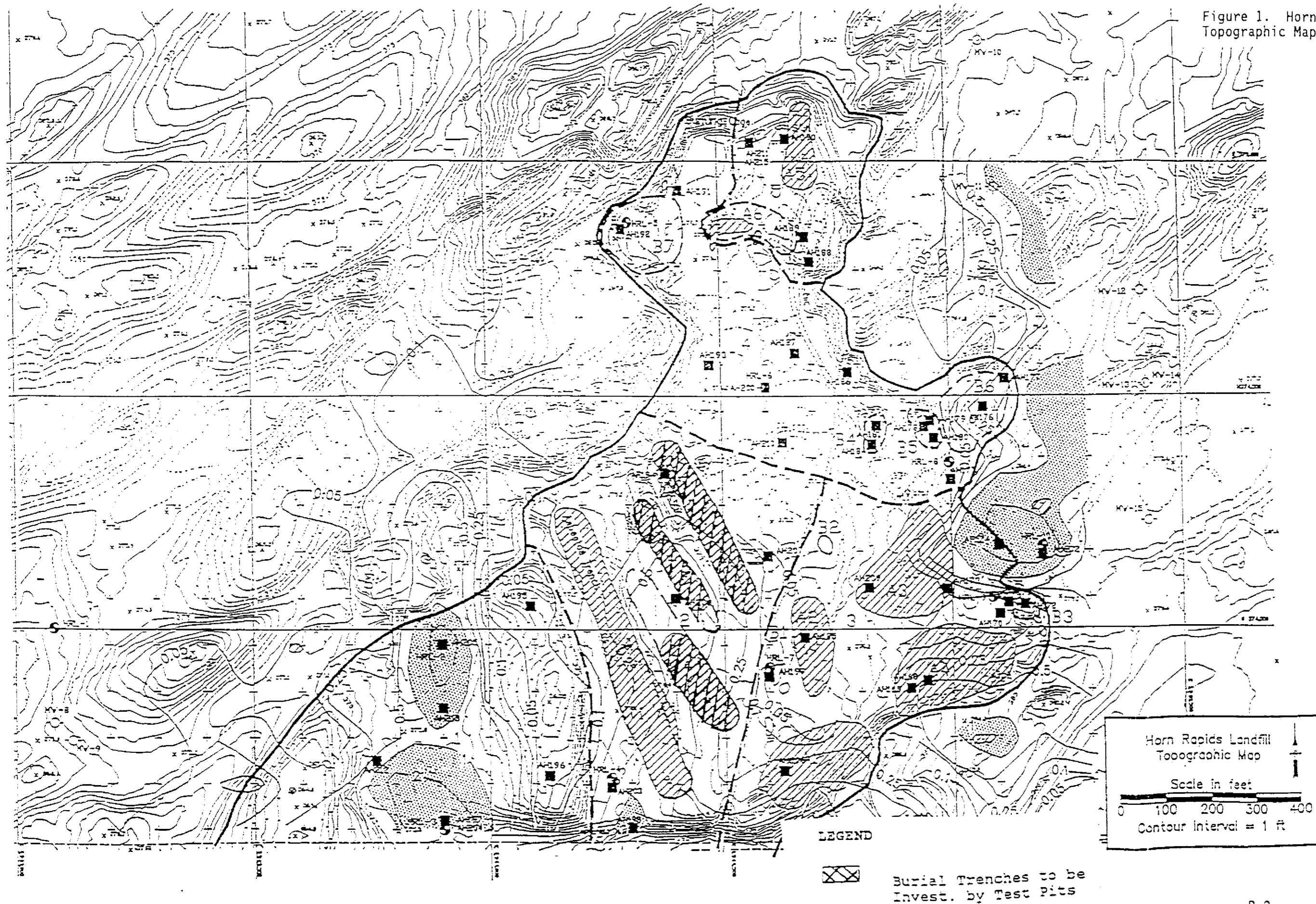
trash and debris will be placed in the lower portion of the trench and soil materials which are relatively free of debris will be used as a cap and the area dressed with top soil (if any top soil was present at the site).

2.4 Health and Safety Requirements/OA: Radiological controls and industrial safety will be in accordance with the Hazardous Waste Operations Permit (HWOP) and Radiation Work Permit (RWP).

3. Contingency procedures shall be implemented to deal with unexpected situations, such as significant quantities of contaminated soil or containers of liquid contaminants. These contingency procedures will be consistent with the safety assessment for this work. Contingency procedures are shown in Attachment 3.

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Figure 1. Horn Rapids Landfill Topographic Map.




Horn Rapids Landfill
Topographic Map

Scale in feet

0 100 200 300 400

Contour Interval = 1 ft

LEGEND

 Burial Trenches to be Invest. by Test Pits

Complete for all Types of Release

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Safety Assessment for the Characterization of the Horn Rapids Landfill at the Hanford Site
1100-EM-1 Operable Unit

EDT No.: 160039

ECN No.:

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