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DATE	FROM	TO	DESCRIPTION	FILE
10/22/93	JAMES O BAUER, DOE	T.R. STRONG, ECOLOGY	US ECOLOGY COMMERCIAL LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY	1 C
06/29/90	S.A. CARPENTER, US ECOLOGY	GARY ROBERTSON, ECOLOGY	US ECOLOGYS COMMENTS REGARDING THE WA RADIOACTIVE MATERIALS LICENSE	1 C
01/21/87	US ECOLOGY	EPA	WA RADIOACTIVE MATERIALS LICENSE	1 C
12/23/83	US ECOLOGY	EPA	WA RADIOACTIVE MATERIALS LICENSE	1 C
/ /	US ECOLOGY	EPA	WA RADIOACTIVE MATERIAL LICENSE	1 C
10/14/93	STEPHEN TRAVERS, US ECOLOGY	SIKORSKI & GEARHEARD, EPA	PART B CORRESPONDENCE	3 A
10/08/87	ECOLOGY	FILE	LEAD DISPOSAL AT THE US ECOLOGY LOW-LEVEL WASTE LANDFILL DISCUSSION PAPER	3 A
02/26/86	D.R. FETTER, US ECOLOGY	MARCIA WILLIAMS, EPA	CORRESPONDENCE REGARDING LOW-LEVEL RADIOACTIVE WASTE	3 A
/ /	RON BERKE, DOE	DAN DUNCAN, EPA	FAX REGARDING PART B APPLICATION	3 A
08/31/93	R.C. BRUNKE, WESTINGHOUSE	DAN DUNCAN, EPA	COMMENTS ON DRAFT HSWA PORTION OF RCRA PERMIT	3 B
08/26/93	GEORGE JACKSON, DOE	DAVE JANSEN, OOE	ISSUE RESOLUTION STATUS ASSESSMENT	3 B
08/17/93	BOB CAROSINO, DOE	DAN DUNCAN, EPA	DRAFT HSWA PORTION OF RCRA PERMIT WITH COMMENTS	3 B
06/25/93	JOHN WAGONER, DOE	D. RASMUSSEN, EPA	HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION CORRESPONDENCE	3 B
01/10/91	ECOLOGY	FILE	DRAFT PERMIT - ISO COMMUNICATIONS TIME LINE	3 B
08/19/70	DOE	EPA	APPENDIX C STATE LEASEHOLD LEASE AND RICHLAND FACILITY SUBLEASE	3 B
/ /	ECOLOGY	DOE	DRAFT PERMIT FOR TREATMENT, STORAGE, & DISPOSAL OF DANGEROUS WASTE-PART IV	3 B
07/29/93	EPA	FILE	RCRA APPEAL NO. 90-27 ALLIED SIGNAL	3 D
04/13/93	EPA	FILE	RCRA APPEAL NO. 91-7 GENERAL ELECTRIC CO. REMAND ORDER	3 D
08/03/92	RANDALL SMITH, EPA	R.D. IZATT, DOE	RCRA FACILITY ASSESSMENT 1000 ACRE LEASED AREA CORRESPONDENCE	3 D
12/09/88	SYLVIA LOWRANCE, EPA HQ	ALLYN M. DAVIS, EPA HQ	STAYING HSWA PERMIT CONDITIONS MEMORANDUM	3 D
04/18/86	J. WINSTON PORTER, EPA HQ	REGIONAL ADMINISTRATORS	RCRA CORRECTIVE ACTION AT FEDERAL FACILITIES	3 D
05/01/85	JOHN H. SKINNER, EPA	DIRECTORS HW DIVISION	APPLICABILITY OF RCRA TO DEPARTMENT OF ENERGY FACILITIES	3 D
/ /	J. WINSTON PORTER, EPA HQ	ALL NRC LICENSEES	GUIDANCE ON DEFINITION AND ID OF COMMERCIAL MIXED LOW-LEVEL RADIOACTIVE & HW WASTE	3 D
09/01/88	JACK BOLLER, WOO	HANFORD	INSPECTION REPORT	4 A
08/14/87	W. PIERRE, EPA	US ECOLOGY	INSPECTION REPORT	4 A
01/27/87	DANIEL T. CHOW, PRC	WAYNE PIERRE, EPA	US ECOLOGY GENERATORS INSPECTION	4 A
06/18/85	WAYNE PIERRE, EPA	US ECOLOGY	US ECOLOGY RCRA INSPECTION	4 A
06/11/85	EPA	HANFORD	HANFORD SITE HW COMPLIANCE INSPECTION	4 A
12/20/85	DAVID R. FETTER, US ECOLOGY	KEN D. FEIGNER, EPA	3007 REPLY	4 B
12/16/85	RONALD E. GERTON, OOE	KEN FEIGNER, EPA	REQUEST FOR INFORMATION UNDER SECTION 3007 RCRA	4 B
12/12/85	US ECOLOGY	KEN FEIGNER, EPA	3007 REPLY, MAP ATTACHED	4 B
11/20/85	CHARLES FINDLEY, EPA	SIDNEY V. WRIGHT, US ECOLOGY	REQUEST FOR INFORMATION PURSUANT TO SECTION 3007 OF RCRA	4 B
11/19/82	ALEXANDRA B. SMITH, EPA	T.S. BAER, US ECOLOGY	3007 REQUEST	4 B

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12/02/85	E.D. MARTINEZ, US ECOLOGY	NANCY KIRNER, ECOLOGY	SAMPLES ANALYZED IN SEPTEMBER 1985	4 D
/ /	MIKE BROWN, EPA	US ECOLOGY	FIELD SAMPLE DATA SHEET FOR HANFORD	4 D
/ /		US ECOLOGY	US ECOLOGY INCORPORATED WASTE ANALYSIS BY COUNTY RICHLAND, WA FACILITY	4 D
08/10/88	KAISER ENGINEERS HANFORD	HANFORD	CHEMICAL WASTE DISPOSAL REQUEST	4 E
06/25/87	US ECOLOGY		RADIOACTIVE WASTE SHIPMENT AND DISPOSAL MANIFEST	4 E
05/28/87	US ECOLOGY	FILE	UNUSUAL OCCURRENCE REPORT RICHLAND FACILITY	4 E
11/13/87	ROGER F. STANLEY, ECOLOGY	TOM S. BAER, US ECOLOGY	ACCEPTANCE OF LEAD CONTAINING WASTES AT US ECOLOGY	5 F
08/22/85	S.V. WRIGHT, US ECOLOGY	ROBERT STAMNES, EPA	GROUNDWATER MONITORING SYSTEM CORRESPONDENCE	6 A
07/30/85	BOB STAMNES, EPA	US ECOLOGY	EPA REVIEW OF US ECOLOGY SUBMITTAL OF GROUNDWATER MONITORING PLAN	6 A
07/09/85	S.V. WRIGHT, US ECOLOGY	ROBERT STAMNES, EPA	LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY US ECOLOGY	6 A
06/25/84	MIKE BROWN, EPA	GEORGE HOFER, EPA	BRIEF SUMMARY OF RBT, US ECOLOGY, AND MOBILE GW INSPECTIONS	6 A
06/21/84	D.A. MYERS, BATTELLE	MIKE BROWN, EPA	RCRA GROUNDWATER QA/QC COMPLIANCE MONITORING CHECKLIST	6 A
06/14/84	MIKE BROWN, EPA	US ECOLOGY	RCRA GROUNDWATER INSPECTION ON 6/14/84 TRIP REPORT (HANDWRITTEN NOTES)	6 A
06/07/84	MIKE BROWN, EPA	US ECOLOGY	RCRA GROUNDWATER QA/QC PROGRAM	6 A
10/19/84	EPA	US ECOLOGY	EPA REGION X LAB MGMT. SYSTEM LAB ANALYSIS REPORT	6 B
08/30/84	EPA	US ECOLOGY	EPA REGION X LAB MGMT. SYSTEM LAB ANALYSIS REPORT	6 B
08/17/84	EPA	US ECOLOGY	EPA REGION X LAB MGMT SYSTEM LAB ANALYSIS REPORT	6 B
08/10/84	EPA	US ECOLOGY	EPA REGION X LAB MGMT. SYSTEM LAB ANALYSIS REPORT	6 B
07/20/84	EPA	US ECOLOGY	EPA REGION X LAB MGMT. SYSTEM LAB ANALYSIS REPORT	6 B
06/15/84	MIKE BROWN, EPA	US ECOLOGY	FIELD SAMPLE DATA SHEET	6 B
/ /	EPA	FILE	WELL NO. 6 DATA	6 B
09/14/93	JOHN D. WAGONER, HANFORD	MARY RIVELAND, ECOLOGY	STATE LEASEHOLD LOCATED ON HANFORD RESERVATION	7 A
06/22/92	PRC	EPA	HANFORD SITE US ECOLOGY, INC. RICHLAND WA FINAL RFA	7 B
08/18/93	DAVID DABROSKI, PERKINS COIE	D. DUNCAN, EPA	COMMENTS FROM US ECOLOGY ON THE HSWA PORTION OF THE DRAFT PERMIT	7 C
07/28/92	R.D. IZATT, DOE	DEAN INGEMANSEN, EPA	LEGAL DESCRIPTION AT HANFORD FEDERAL FACILITY	7 C
07/15/92	DEAN INGEMANSEN, EPA	ROBERT CAROSINO, DOE	LEGAL DESCRIPTION AT THE HANFORD FEDERAL FACILITY	7 C
11/05/91	RANDALL SMITH, EPA	ELIZABETH BRAKEN, DOE	RCRA FACILITY ASSESSMENT AT HANFORD FEDERAL FACILITY CORRESPONDENCE	7 C
07/09/85	US ECOLOGY	EPA	GROUNDWATER MONITORING PLAN (MAP)	15 B
07/09/85	US ECOLOGY	EPA	GROUNDWATER MONITORING PLAN (MAP)	15 B
10/17/78	US ECOLOGY	EPA	GROUNDWATER MONITORING PLAN (MAP)	15 B
11/08/93	CARRIE SIKORSKI, EPA	STEPHEN W. TRAVERS, US ECOLOGY	CORRESPONDENCE REGARDING DRAFT RESPONSE TO US ECOLOGY COMMENTS	16 C
08/07/92	CARRIE SIKORSKI, EPA	BARRY BEDE, US ECOLOGY	DRAFT RESPONSE TO COMMENTS SUBMITTED BY US ECOLOGY	16 C
03/27/92	MICHEAL L. GOO, PERKINS COIE	DAVE JANSEN, ECOLOGY	COMMENTS OF US ECOLOGY ON THE PROPOSED RCRA PART B PERMIT FOR THE HANFORD FACILITY	16 C

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03/16/92	ANTHONY J. THOMPSON, PERKINS C	DAVE JANSEN, ECOLOGY	COMMENTS OF US ECOLOGY ON THE PROPOSED RCRA PART B PERMIT FOR THE HANFORD FACILITY	16 C
03/16/92	HANFORD	EPA	HANFORD SITE COMMENTS ON THE DRAFT PERMIT FOR TSDS VOLS. 1 PGS 187-223	16 C
03/13/92	MICHAEL FARROW, CONF. TRIBES	DAN DUNCAN, EPA	SUBMISSION OF COMMENTS ON SITE WIDE DRAFT PERMIT	16 C
03/13/92	ALEXANDRA SMITH, DOE	DAN DUNCAN, EPA	COMMENTS ON THE APPLICABLE PORTIONS OF PART IV OF THE DRAFT PERMIT	16 C
02/24/92	DAVID DABORSKI, PERKINS COIE	DAN DUNCAN, EPA	COMMENTS ON HANFORD DRAFT CLEANUP PERMIT	16 C
02/12/92	DAVID STEWART-SMITH, OR DOE	DAVID JANSEN, ECOLOGY	OREGON COMMENTS ON DRAFT TREATMENT, STORAGE AND DISPOSAL PERMIT HANFORD	16 C
/ /	PUBLIC	EPA	COMMENT ON PROPOSED RCRA PERMIT, SECTION IV, RCRA CORRECTIVE ACTION	16 C
11/01/93	GARY ROBERTSON, DEPT HEALTH	JIM SHAFFNER, U.S. NRC	CLOSURE CORRESPONDENCE DEALING WITH GROUNDWATER MONITORING MEETING WITH EPA/DOE	17 A
10/25/93	GARY ROBERTSON, DEPT HEALTH	GOV. AGENCIES	OCTOBER 22 USE CLOSURE AND GW MONITORING MEETING NOTES	17 A
04/30/93	ROBERT D. BAIRD, ROGERS & ASSO	LEO WAINHOUSE, DOH	US ECOLOGY'S HANFORD LLW DISPOSAL FACILITY DRAFT CLOSURE PLAN	17 A
07/07/88	SARAH HANNAH, ECOLOGY	WAYNE PIERRE, EPA	ASSUMPTIONS IN THE PHASE TWO STUDY ON SITE CLOSURE & PERPETUAL CARE	17 A
06/08/88	MAX POWER, ECOLOGY	MARCIA WILLIAMS, EPA	MEMORANDUM OF AGREEMENT BETWEEN THE STATE OF WA ECOLOGY & A.T. KEARNEY INC.	17 A
05/19/88	BRUCE R. WEDDLE, EPA	MAX POWER, ECOLOGY	COMMENTS ON THE DRAFT PHASE TWO SCOPE OF WORK FOR CLOSURE & PERPETUAL CARE	17 A
11/19/85	TERRY STRONG, DOH	STEPHEN CARPENTER, ECOLOGY	CORRESPONDENCE REGARDING CLOSURE OF THE COMPANY'S RESIN TANKS	17 A
10/30/85	NANCY KIRNER, DOH	SID V. WRIGHT, US ECOLOGY	TANK ANALYSIS DATA	17 A
10/29/85	US ECOLOGY	EPA	RCRA CLOSURE PLAN	17 A

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EPA

Region 10

WMB/RCRA Records Center *(Staffed by LABAT-ANDERSON)*

File Control Sheet

Facility Name	Hanford (AR)
EPA ID Number (3 5 4 format)	

When creating or adding to a Facility/Site File, please check the correct box on this File Control Sheet in front of the individual subsection for the information you are inserting. Each box needs to be checked for ***FIRST*** document(s) inserted only. The Control Sheet then provides a ***GENERAL*** guide to the entire file contents.

Each document added to the file ***MUST*** indicate in ink in the upper RH corner its appropriate file position, e.g.: 2c; 5f; 16e. The EPA ID# should be highlighted, or added below the file position note in standard 2 4 abbreviated format; WA 1234.

Please stamp all "Enforcement Sensitive" material.

- THIS FILE CONTROL SHEET MUST REMAIN AT FRONT OF FILE AT ALL TIMES -

- PLEASE DO NOT REMOVE -

General Information

File Folder 1. (Pink)

- ☐ a) Non-Specific Subject Matter Compiled in Reverse Chronological Order
- ☐ b) Site History
- ■ c) Other Permits (Water, etc.)
- ☐ d) Waste Minimization
- ☐ e) Enforcement Sensitive Docs
- ☐ CBI files?

RCRA Permitting

☐ ***File Folder 2. (Blue)***

- ☐ a) Notification
- ☐ b) Part A Correspondence
- ☐ c) Part A Permit Application
- ☐ d) Draft Permit
- ☐ e) Permit: Final Determination
- ☐ f) Annual Reports
- ☐ Enforcement Sensitive?

RCRA Permitting

■ ***File Folder 3. (Blue)***

- ■ a) Part B Correspondence
- ■ b) Part B Permit Application
- ☐ c) Other (Waiver Req., EIR, etc.)
- ■ d) Technical Support Documents
- ☐ Enforcement Sensitive?

Compliance and Enforcement

■ ***File Folder 4. (Green)***

- ■ a) Insp. Reports/Compl. Monitoring
- ■ b) 3007 Requests & Replies
- ☐ c) Notices of Violation
- ■ d) Lab. Sampling Data (Compl.)
- ■ e) Insp. Docs (Manifests, etc.)
- ☐ f) Import/Export Notifications
- ☐ Enforcement Sensitive?

Compliance and Enforcement

■ ***File Folder 5. (Green)***

- ☐ a) 3008(a)/State Orders and Support Documents
- ☐ b) 3013 Orders and Support Docs
- ☐ c) Penalty Calculations
- ☐ d) Compliance Schedules
- ☐ e) 7003 Orders and Support Docs
- ■ f) Correspondence
- ☐ g) Referrals to Hdqtrs/DOJ
- ☐ Enforcement Sensitive?

GroundWater Monitoring

■ ***File Folder 6. (White)***

- ■ a) GroundWater Monitoring
- ■ b) Lab. Sampling Data (all Media)
- ☐ c) Technical Support Docs.
- ☐ d) O.&M.; CME
- ☐ Enforcement Sensitive?

Corrective Action/ Facility Investigation

■ ***File Folder 7. (Yellow)***

- ■ a) Background Rpts and Studies
- ■ b) RFA Report
- ■ c) RFA Correspondence
- ☐ Enforcement Sensitive?

Corrective Action/ Facility Investigation

☐ ***File Folder 8. (Yellow)***

- ☐ a) RFI Workplans/Background Rpts.
- ☐ b) RFI Program Rpts and Oversight
- ☐ c) RFI Correspondence
- ☐ Enforcement Sensitive?

Corrective Action/ Facility Investigation

☐ ***File Folder 9. (Yellow)***

- ☐ a) RFI Final Report

Corrective Action/ Facility Remediation

☐ ***File Folder 10. (Red)***

- ☐ a) Interim Measures
- ☐ b) CMS Workplan
- ☐ c) CMS Correspondence
- ☐ Enforcement Sensitive?

Corrective Action/ Facility Remediation

☐ ***File Folder 11. (Red)***

- ☐ a) CMS Final Report
- ☐ b) Statement of Basis

Corrective Action/ Facility Remediation

☐ ***File Folder 12. (Red)***

- ☐ a) CMI Workplan
- ☐ b) CMI Program Rpts and Oversight
- ☐ c) CMI Correspondence
- ☐ Enforcement Sensitive?

(Revised 9/13/93)

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WMB/RCRA Records Center *(Staffed by LABAT-ANDERSON)* **File Control Sheet**

Facility Name
EPA ID Number (3 5 4 format)

Please stamp all "Enforcement Sensitive" material.

- THIS FILE CONTROL SHEET MUST REMAIN AT FRONT OF FILE AT ALL TIMES -

- PLEASE DO NOT REMOVE -

Corrective Action/ Facility Remediation

❑ ***File Folder 13. (Red)***

❑ a) CMI Final Report

Corrective Action/ Enforcement

❑ ***File Folder 14. (Purple)***

❑ a) Draft 3008(h) Order and Negotiations
❑ b) Signed 3008(h) Order
❑ c) Technical Support Documents
❑ d) Referral
❑ e) Miscellaneous Correspondence
❑ f) Progress Reports
❑ g) Interim Measures
❑ Enforcement Sensitive?

Imagery/Special Studies

■ ***File Folder 15. (Orange)***

❑ a) Photographs
■ b) Maps/Charts
❑ c) Videos
❑ d) Other (describe briefly)

Public Participation

■ ***File Folder 16. (Grey)***

❑ a) Community Relations Plan
❑ b) Fact Sheets; Press Releases; Public Notices; Public Hearings
■ c) Corr. w/Public; Mtg Notices; Responses to Comments
❑ d) Inter-Agency Correspondence
❑ e) Newspaper/Journal etc. Articles/ Clippings
❑ f) Congressional Requests and Responses; FOIA Requests and Responses
❑ Enforcement Sensitive?

Closure

■ ***File Folder 17. (Brown)***

■ a) Closure Plan
❑ b) Certification
❑ c) Sampling Data
❑ d) Financial Assurance
❑ Enforcement Sensitive?

Site Manager(s)

Name	*Date(s)*

(Comments and/or any additional information should be noted on page 3.)

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- Notes -

Facility Name	*EPA ID Number (3 5 4 format)*

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WA 8967
10-22-93

Department of Energy
Richland Field Office
P.O. Box 550
Richland, Washington 99352

OCT 22 1993

94-RPS-008

Mr. T. R. Strong, Director
Division of Radiation Protection
State of Washington
Department of Health
Airdustrial Center, Building 5
Olympia, Washington 98504-7827

Dear Mr. Strong:

US ECOLOGY COMMERCIAL LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY

During recent discussions with the State of Washington Department of Health (DOH) concerning the closure plan for the US Ecology commercial low-level radioactive waste disposal facility on the Hanford Site, the U.S. Department of Energy (DOE), Richland Operations Office (RL) has been requested to provide information on the RL requirements for the management of radioactive waste; specifically the disposal requirements. This information has been requested to aid DOH during their periodic reviews of the US Ecology facility closure plan.

Attached are the DOE Headquarters and the DOE RL Orders for Radioactive Waste Management (DOE 5820.2A and RL 5820.2A, respectively). Although these Orders are not directly applicable to the US Ecology Facility, they establish the current policies, guidelines, and minimum requirements by which DOE manages its radioactive and mixed waste and contaminated facilities. It should be noted that both orders are in the process of being revised.

We wish to ensure that DOH understand the limitations associated with the use of the attached DOE and RL Orders. The Orders are being provided to DOH for information only, and by providing this information it should not be construed to mean that they are applicable to the Hanford Site land leased to the State of Washington. Furthermore, although the Hanford Site land lease and the perpetual care agreement between the U.S. Atomic Energy Commission and the State of Washington discuss conditions for the return of the land to the U.S. Government, the DOE has the option to sell the land to the State of Washington. In any case, if the land should revert back to the U.S. Government upon termination of the lease, the DOE would be obligated to evaluate the condition of the property against the requirements that exist at that period of time.

We appreciate the fact that DOH is including RL in the discussions concerning the stabilization and closure of the US Ecology facility on the Hanford Site. The on-going communication between all of the interested parties will ensure that all of the concerns and questions are adequately addressed. Consistent with the letter from the U.S. Atomic Energy Commission to the Governor of Washington dated September 10, 1964, RL will continue to make available to the State of Washington and its sublessees all engineering, geological, technical and other data it has relating to the land leased by the State.

If you have any questions concerning this information, please contact me or Mr. R. N. Krekel of my staff at (509) 376-4264.

Sincerely,

James D Bauer

James D. Bauer, Program Manager
Office of Environmental Assurance,
Permits, and Policy

EAP:RNK

Attachments

cc:
R. E. Cordts, Ecology, w/attach.
D. L. Duncan, EPA, w/attach.
M. Dunkelman, DOH, w/attach.
M. M. McCarthy, WHC, w/o attach.
F. A. Ruck, WHC, w/o attach.
H. T. Tilden, PNL, w/o attach.

U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE

ORDER

RL 5820.2A

8-15-90

SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. PURPOSE. To supplement DOE 5820.2A, RADIOACTIVE WASTE MANAGEMENT, of 9-26-88 by establishing Hanford-specific policies, guidelines, and requirements by which the U.S. Department of Energy, Richland Operations (DOE-RL) manages its radioactive waste, mixed waste and contaminated facilities.

2. CANCELLATION. The DOE-RL requirements that appeared as "DOE-RL Controls" in the 1986 and 1987 "Implementation Plans for Hanford Site Compliance to U.S. Department of Energy (DOE) Order 5820.2A, Radioactive Waste Management" are cancelled.

3. SCOPE. The provisions of this supplement apply to all DOE elements at Hanford and, as required by law and/or contract and as implemented by the appropriate contracting officer, all Hanford DOE contractors and subcontractors performing work that involves the management of radioactive waste, mixed waste and/or facilities containing radioactive contamination for DOE under the Atomic Energy Act (AEA) of 1954, as amended (Public Law 83-703).

4. EXCLUSIONS. This supplement does not apply to the management of hazardous waste (HW) or gaseous or liquid effluents. Hazardous waste is managed by DOE-RL to comply with the requirements of DOE 5400.3, HAZARDOUS AND RADIOACTIVE MIXED WASTE PROGRAM, of 2-22-89. Radioactive gaseous and liquid effluents are managed by DOE-RL to comply with the requirements of DOE 5400.5, RADIATION PROTECTION OF THE PUBLIC AND THE ENVIRONMENT, of 2-8-90.

5. POLICY. Radioactive and mixed wastes at Hanford shall be managed in a manner that ensures protection of the health and safety of the public, Hanford employees, and the environment. The generation, treatment, storage, transportation and/or disposal of radioactive wastes at Hanford and the other pollutants or hazardous substances they contain shall be accomplished in a manner that minimizes the generation of such wastes across program functions and complies with all applicable Federal, State of Washington environmental, safety, and health laws and regulations and DOE requirements.

6. REFERENCES. (See Attachment 1)

7. DEFINITIONS. (See Attachment 2)

DISTRIBUTION:
RL Office/Division Directors
and Branch Chiefs
RL Contractors

INITIATED BY:
Waste Management
Division

8. RESPONSIBILITIES.

a. The U.S. Department of Energy, Richland Operations Waste Management Division (DOE-RL/WMD) plans, coordinates and provides general direction and integration of programs for the management, budgeting, storage, treatment, and disposal of Hanford radioactive and mixed wastes including associated process development, technology development and plant maintenance. The DOE-RL/WMD ensures that all plant maintenance and waste operations are conducted in a safe and environmentally sound manner and comply with the letter and intent of applicable regulations and standards for cost effectiveness. In addition, DOE-RL/WMD manages and provides general direction to RL Contractors for the defense nuclear waste management programs, provides direction of programs related to long-term management and disposal of DOE wastes and byproducts recovery, provides direction for nuclear waste technology development programs, provides technical guidance during conceptual design activity for waste treatment projects, and provides management for lead site technology and waste treatment programs. Specific responsibilities include the following:

(1) Provides technical guidance during functional and conceptual design activities related to assigned waste treatment, storage and disposal facilities. Provides DOE-approved functional design criteria to the contractor.

(2) Plans, coordinates and provides general direction of process technology and process development for operational waste management programs associated with the assigned facilities.

(3) Plans and directs actions necessary to accomplish commitments in the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) associated with waste operations and the vitrification of high-level waste (HLW).

(4) Develops and supports budgets necessary to support operation of assigned waste management facilities and programs. Provides Hanford Site input to the Five-Year Plan for waste operations.

(5) Prepares and updates this supplement, RL 5820.2A, to provide Hanford-specific requirements for waste management practices and procedures.

(6) Oversees fiscal responsibility for transporting waste and establishing fees to recover the incremental costs for storage and disposal of DOE waste at the Hanford Site.

(7) Oversees the establishment of Hanford radioactive waste acceptance criteria.

(8) Ensures that the Operating and Engineering Contractor's (OEC's) audits/assessments are conducted on any waste-generating organization that ships waste to Hanford for treatment, storage, or disposal to ensure compliance with Hanford waste acceptance criteria. Ensures that reviews are conducted of the waste minimization plans of other field organization facilities that generate radioactive or mixed waste that will be treated, stored or disposed of at Hanford facilities. Oversees the development of criteria for these audits/assessments and reviews.

(9) Develops and monitors the "Waste Minimization" program at Hanford.

b. The U.S. Department of Energy, Richland Operations Environmental Restoration Division (DOE-RL/ERD) manages and coordinates environmental programs and activities to ensure that Hanford complies with applicable federal, state and local environmental regulations, including the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act (CERCLA/SARA), the National Environmental Policy Act (NEPA), the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, and the Toxic Substances Control Act (TSCA). The DOE-RL/ERD provides near-term and long-term planning and management for environmental restoration of all inactive waste sites at Hanford and provides Decontamination and Decommissioning (D&D) Program management for the DOE. In addition the DOE-RL/ERD has the lead role in all permit applications for active and inactive sites, provides environmental policy, guidance and assistance to RL program offices and contractors, and is the principal interface with the State, U.S. Environmental Protection Agency (EPA) and others on regulatory activities and on operational compliance matters. The DOE-RL/ERD serves as the NEPA compliance office for RL in accordance with SEN-15-90 and draft Order 5440.10. The DOE-RL/ERD is also responsible for management of the integration implementation activities required by the Tri-Party Agreement, ensuring that milestones are tracked and completed on the schedules negotiated with the State of Washington Department of Ecology (Ecology) and the EPA. Specific responsibilities include the following:

(1) Provides for the management of RL's Environmental Restoration Program including near-term and long-term planning, site preliminary assessment, investigation and characterization, feasibility studies, remedial design and remedial action

required for cleanup of inactive waste sites designated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA 3004(u) and the D&D Program. It also includes preparation of RCRA closure plans required for treatment, storage and disposal waste units to be closed in conjunction with cleanup of inactive waste sites.

(2) Provides management control of activities and actions required to achieve compliance with CERCLA, RCRA and NEPA.

(3) Maintains management responsibility for planning, preparation, development, coordination, finalization, submittal, distribution and maintenance of work plans, reports, documents and records pertaining to the management of environmental restoration programs and RCRA/CERCLA waste site cleanup activities covered in the Tri-Party Agreement and in accordance with applicable Federal, State of Washington and local laws and regulations, consistent with DOE policies and guidance.

(4) Directs the Hanford Groundwater Monitoring Program including preparation and implementation of the Hanford Groundwater Monitoring Program Plan.

(5) Manages all decommissioning activities at Hanford whether they are funded by Defense D&D or by other RL funding sources.

(6) Directs maintenance and surveillance of surplus facilities assigned to the D&D Program to maintain facilities in a safe and environmentally acceptable condition until physical decommissioning is initiated.

(7) Monitors D&D Program activities to ensure that programmatic goals and milestones are met.

(8) Issues annual updates of the "Environmental Restoration and Waste Management Site-Specific Plan for the Richland Operations Office."

(9) Manages the Hanford Waste Reduction Program as required by DOE 5820.2A, DOE 5400.1 and DOE Implementation Guidance for DOE Order 5400.1.

c. The Operating and Engineering Contractor (OEC) manages the treatment, storage and disposal of radioactive waste and mixed waste in Hanford facilities under OEC jurisdiction regardless of where the waste is generated. The OEC also performs the surveillance, maintenance and decommissioning activities of the Hanford surplus facilities program. In addition, the OEC is responsible for ensuring that the day-to-day waste management operations and surplus facility activities are conducted in compliance with the requirements of DOE Orders and comply with all applicable Federal and State of Washington statutes. Specific responsibilities include the following:

(1) Prepare and maintain waste acceptance criteria for Hanford in coordination with DOE-RL/WMD.

(2) Establish and implement a system of fees to recover the incremental costs for storage and disposal of DOE waste at the Hanford Site in coordination with DOE-RL/WMD.

(3) Conduct audits/assessments in consultation with DOE-RL/WMD on any waste generator that ships waste to Hanford for treatment, storage, or disposal to ensure compliance with established waste acceptance criteria. During these audits/assessments, review waste minimization plans of other field organizations' facilities and other activities as required by DOE 5820.2A.

(4) Prepare annual updates of the Environmental Restoration and Waste Management Site-Specific Plan (SSP) for the Richland Operations Office according to DOE guidance.

(5) Establish a quality assurance program that implements the requirements of DOE 5700.6B in waste management operations and surplus facility management. Report unusual occurrences pursuant to the requirements of DOE 5000.3.

(6) As directed by DOE-RL/WMD, prepare inputs for the integrated data base program for DOE-RL/WMD approval.

(7) Prepare schedules and implement the tasks outlined in the Tri-Party Agreement. Provide a quarterly progress report.

(8) Establish a Hanford waste reduction program that implements the requirements of DOE 5820.2A, DOE 5400.1 and respective DOE implementation guidance documents.

d. The Research and Development Contractor (RDC) manages radioactive and mixed waste in Hanford facilities under RDC jurisdiction. The RDC ships radioactive waste to the OEC for storage, treatment or disposal. In addition, the RDC is responsible for ensuring that the day-to-day operations dealing with radioactive waste in RDC

facilities at Hanford are conducted in compliance with the requirements of DOE Orders and comply with all applicable Federal and State of Washington statutes.

e. The Engineering and Construction Contractor (ECC) at Hanford may handle radioactive materials in the course of performing construction or maintenance in a radiation zone. The waste resulting from this activity is given to the OEC for storage, treatment or disposal.

f. The Health Services Contractor (HSC) at Hanford may generate radioactive waste in the course of providing medical service to personnel. When radioactive waste is generated, it is given to the OEC for treatment, storage or disposal.

9. EXEMPTIONS. Exemptions from the requirements of this RL Supplement with the exception of those parts derived from federal, state, or local requirements and DOE Orders may be granted by DOE-RL. An exemption may be granted when it can be demonstrated that an alternative approach provides equivalent effectiveness, safety, health protection, environmental protection, and quality assurance.

10. GENERAL REQUIREMENTS. In addition to meeting the requirements of DOE 5820.2A, the following general requirements apply to activities pertaining to radioactive waste, mixed waste and decommissioning of facilities at Hanford.

a. Requirements for New Waste Management (WM) Facilities. The following are examples of DOE requirements that should be considered for the design of new facilities.

(1) Siting approval shall be obtained from the Hanford Site selection team. The siting of new facilities shall comply with the requirements of RL 4320.2C.

(2) New WM facilities shall incorporate DOE 4700.1 and the design requirements of DOE 6430.1A and RL 6430.1C.

(3) New WM facilities shall incorporate quality assurance requirements of DOE 5700.6B and RL 5700.1A.

(4) New WM facilities shall incorporate environmental protection, safety and health protection standards, DOE 5480.4 and RL 5480.4A.

(5) New WM facilities shall incorporate fire protection standards DOE 5480.7 and RL 5480.7A.

(6) New WM facilities shall incorporate environmental standards found in DOE 5400.1, DOE 5400.2A, DOE 5440.1C, RL 5440.1A, DOE 5480.1B and RL 5480.1A.

(7) New WM facilities that will handle transuranic mixed waste (TRU-MW), or low-level mixed waste (LLW-MW) shall incorporate the requirements of Title 40 Code of Federal Regulations (CFR) 260-270, and State of Washington Administrative Code (WAC) 173-303 and WAC 175-480.

(8) Safety analysis and reviews of new WM facilities shall be in accordance with the requirements of DOE 5481.1B and RL 5481.1.

b. Requirements for Existing WM Facilities.

(1) Any WM facility that provides storage for more than 90 days, treatment, or disposal of mixed waste shall obtain a permit as required by WAC 173-303-800.

(2) Low-level waste (LLW) designated dangerous waste as defined in WAC 173-303 shall be stored, treated or disposed of as defined in WAC 173-303 and 40 CFR 264, 265 and 268.

(3) Existing WM Facilities shall be managed according to the requirements of DOE 5400.1.

(4) Safety analysis evaluations and reviews of WM facilities shall be in accordance with the requirements of DOE 5481.1B, RL 5481.1, DOE 5480.5, RL 5480.5, and DOE 6430.1A.

(5) Whenever an existing facility is upgraded for continued use or renovated for a new use, the requirements in Paragraph 10.a should be considered for the upgraded portion as applicable.

c. Requirements for Shipping Radioactive Materials.

(1) Packaging and shipping shall be conducted in accordance with the DOE requirements, DOE 5480.3, "Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes."

(2) Shipping of radioactive or mixed waste on Hanford roads open to public access shall be conducted in accordance with Department of Transportation (DOT) regulations. Other shipments shall be made in accordance with DOT regulations except

where alternative procedures are authorized by an applicable DOE Order. Departure from the DOT regulations should be documented in a Safety Analysis Report for Packaging (SARP).

(3) Packaging and shipping of the hazardous constituents of mixed waste shall comply with the applicable provisions of WAC Chapter 173-303, "Dangerous Waste Regulations."

d. Training. Each contractor at Hanford shall develop training programs that comply with the requirements of DOE 5480.5, RL 5480.5, RL 5480.11A, and DOE 5480.18.

e. Quality Assurance.

(1) Waste management facilities shall incorporate quality assurance requirements of DOE 5700.6B and RL 5700.1A.

(2) Waste management activities shall comply with DOE 5700.6B and RL 5700.1A.

(3) Waste management activities and facilities shall comply with the applicable quality assurance requirements in the Tri-Party Agreement.

f. Waste Reduction.

(1) An annual Hanford Waste Reduction Report shall be issued by the OEC according to the guidance provided by U.S. Department of Energy Headquarters, Washington, D.C. (DOE-HQ).

(2) The auditable program required by DOE 5820.2A for waste minimization shall be described in the Hanford Waste Minimization Program Plan.

(a) A site-wide Hanford Waste Minimization Plan shall be developed. The plan shall address the minimization of HLW, transuranic (TRU) waste and LLW. The plan shall be reviewed annually and revised as necessary, but in any case shall be revised every three years.

(b) Each solid waste generator shall prepare and biennially update a facility plan to minimize the generation of solid waste. This requirement is applicable only for each year that the facility generates solid waste.

(3) Each Hanford contractor or subcontractor that prepares a design for a new process or a process modification shall incorporate principles into the design that will minimize the generation of HLW, TRU waste or LLW as applicable.

11. GLOSSARY. (See Attachment 3)

John D. Wagoner
Manager

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CHAPTER I

MANAGEMENT OF HIGH-LEVEL WASTE

1. PURPOSE. To supplement Chapter I of DOE 5820.2A by establishing Hanford-specific policies, requirements and guidelines for managing HLW and radioactive waste managed as HLW. For the purpose of regulation, HLW shall be considered mixed waste.

2. POLICY. HLW shall be safely stored, treated, and disposed of according to requirements set forth in DOE 5820.2A and this supplement. Other radioactive waste stored in double-shell tanks (DSTs) will be managed with the same degree of safety as HLW. Storage operations shall comply with applicable EPA standards and EPA/Ecology regulations.

3. REQUIREMENTS.

   a. Design.

      (1) Requirements for New Facilities. See Paragraph 10.a., General Requirements for New Waste Management Facilities.

      (2) Design Review for Existing Facilities. See Paragraph 10.b., General Requirements for Existing Waste Management Facilities.

   b. Storage Operations - Doubly Contained Systems.

      (1) Waste Characterization.

         (a) Liquid and solidified HLW shall be characterized consistent with radiation protection requirements and as low as reasonably achievable (ALARA) programs. Hazardous components shall be determined in accordance with EPA/Ecology protocol per 40 CFR 260-270 and WAC 173-303.

      (2) Storage and Transfer Operations.

         (a) Underground tanks used for the storage of newly-generated liquid radioactive waste shall be double contained.

         (b) The cross-country pipelines between 200-East and 200-West may be used on a temporary basis for the transfer of waste with an activity higher than 0.05 Ci/gal only if appropriate design and administrative controls are in place to mitigate adverse effects from a pipeline failure.

Minimum appropriate design and administrative control are as follows:

1 Pressure-check the line before use.

2 Procedures shall be in place to identify if radioactive liquid leaks from the pipe into the concrete encasement enclosing the pipe.

(c) To the extent practical, waste in DSTs shall be segregated by HLW, TRU waste and LLW types.

(d) Prior to significant operational changes such as removal of sludge from DSTs, a criticality safety analysis report shall be prepared that demonstrates the nuclear safety of such an operation.

(3) Monitoring, Surveillance, and Leak Detection.

(a) Surface-level measurements, high volume alarms and leak detection devices shall be installed on DSTs and continuously monitored in a central location.

(b) The frequency of a sludge volume measurement or a waste sample to determine chemistry shall be determined by process changes and needs; i.e., a sludge volume measurement or a waste sample analysis may be valid for years if there are no changes in the waste.

(4) Contingency Actions.

(a) Maintain procedures, training, equipment and sufficient tank space to empty a leaking waste tank containing either aging waste or non-aging waste.

(5) Training. See Paragraph 10.d., General Requirements for Training.

(6) Quality Assurance. See Paragraph 10.e., General Requirements for Quality Assurance.

(7) Waste Treatment and Minimization.

(a) The generation of HLW and other radioactive wastes destined for storage in DSTs shall be minimized to the extent practicable.

(b) A program shall be maintained and documented to optimize the utilization of DST space.

(c) Develop a program to treat DST wastes such as Neutralized Current Acid Waste (NCAW), complexant concentrate (CC), Neutralized Cladding Removal Waste (NCRW) and Plutonium Finishing Plant (PFP) waste to provide appropriate feed for the Hanford Waste Vitrification Plant (HWVP) and the Grout Treatment Facility (GTF).

c. Storage Operations - Singly Contained Tank Systems.

(1) Waste Characterization.

(a) The contents of 149 single-shell tank (SSTs) shall be sampled and characterized in accordance with EPA/Ecology protocol consistent with the Tri-Party Agreement.

(b) Liquid and solidified SST waste shall be characterized consistent with radiation protection requirements and the ALARA program to determine its hazardous components per 40 CFR 261, 40 CFR 264 and WAC 173-303.

(2) Storage and Transfer Operations.

(a) No liquid shall be added to single-shell tanks for the purpose of storage. Nonradioactive liquid additions are limited to operational requirements such as adding small amounts for flushing instrument probes, 105/106-C evaporative cooling, core sampling and other miscellaneous activities.

(b) Pumpable liquid shall be removed from SSTs consistent with the Tri-Party Agreement.

(c) Singly-contained pipelines may be used on a temporary basis for the transfer of saltwell liquor with an activity higher than 0.05 Ci/gal if appropriate design and

administrative controls are in place to mitigate adverse effects from a pipeline failure. Minimum appropriate administrative control are as follows:

1 Pressure check pipeline before use.

2 Procedures shall be in place to verify that detectable radioactive material has not escaped into the environment.

(3) Monitoring, Surveillance, and Leak Detection.

(a) Leak detection systems shall be maintained to provide identification of failed SST containment or unplanned intrusion.

(b) Temperatures of SSTs shall be taken on a periodic basis determined by waste and tank history.

(4) Contingency Actions. A plan of action shall be prepared and maintained to remove pumpable liquids from non-interim stabilized SSTs when they are identified as assumed leakers.

(5) Training. See Paragraph 10.d., General Requirements for Training.

(6) Quality Assurance. See Paragraph 10.e., General Requirements for Quality Assurance.

d. Disposal.

(1) New and Readily Retrievable HLW.

(a) The DST waste disposal shall be implemented as identified in the "Final Environmental Impact Statement: Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes," and the associated "Record of Decision."

(b) Waste will be treated to meet 40 CFR 268 treatment standards for any land disposal restricted components of the waste.

(2) Other Waste. A plan shall be prepared and updated at least biennially to describe the Hanford approach of selecting and evaluating the options for disposal of SST waste. This requirement will cease with the issuance of the supplemental environmental impact statement (EIS) record of decision for SST waste disposal.

e. Reports.

(1) Annual Waste Volume Projections shall be prepared by the OEC. This report shall include current waste volumes stored as well as projected waste generation and storage.

(2) An annual Tank Waste Treatability Report shall be prepared for Ecology. This report shall describe the activities that reduce the volume of waste being sent to the DSTs and that reduce the existing inventory of waste in the DSTs.

(3) A Monthly Surveillance and Waste Status Report for both DSTs and SSTs shall be issued by the OEC. The report shall contain information on supernatant and interstitial liquid volumes by tank; saltcake and sludge volumes by tank; temperature data by tank; tank status (see Paragraph 7.25 for definition); tank anomalies; ongoing investigations and a facilities chart. This report shall be distributed to DOE-RL/WMD, DOE-HQ, Ecology and the DOE-RL public reading room.

(4) The investigation of volume changes and suspect leakers shall be reported at least monthly to DOE-RL.

(5) The declaration that a SST is an assumed leaker shall be reported to DOE-RL and DOE-HQ.

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CHAPTER II

MANAGEMENT OF SOLID TRANSURANIC WASTE

1. PURPOSE. To supplement Chapter II of DOE 5820.2A by establishing Hanford-specific policies, requirements and guidelines for managing DOE solid TRU waste beginning with its generation and continuing through its shipment to the Waste Isolation Pilot Plant (WIPP) and closure of Hanford disposal sites.

2. POLICY. Solid TRU waste shall be managed to protect the public, Hanford worker health and safety, and the Hanford environment. TRU waste at Hanford shall be handled in compliance with applicable radiation protection standards and environmental regulations. Unless otherwise specified, the policies described herein apply to both contact and remote-handled solid waste. Practical and cost-effective methods shall be used to reduce the volume and toxicity of transuranic waste.

   a. Where applicable, newly generated solid TRU waste shall be certified in compliance with the Waste Isolation Pilot Plant-Waste Acceptance Criteria (WIPP-WAC) and shipped to the WIPP. Interim storage at Hanford will be provided as necessary to accommodate the operational schedules of WIPP and Hanford facilities.

   b. Waste that cannot be certified at the generating facility shall be stored, in consultation with DOE-RL, until treatment processes have been developed that allow certification.

   c. As determined by the DOE with EPA administrator concurrence, solid TRU waste that does not need the degree of isolation provided by a geologic repository or TRU waste that cannot be certified or otherwise approved for acceptance at the WIPP, shall be disposed of by alternative methods, which could include disposal sites at Hanford. Alternative disposal methods proposed for the Hanford Site shall be approved by DOE Headquarters (EM-30 and EH-1) and shall comply with the NEPA requirements and applicable EPA/State of Washington regulations.

   d. All activities involving TRU waste shall be controlled with criticality prevention specifications.

   e. Solid TRU-MW is subject to applicable Washington State Administrative Codes, EPA regulations and WIPP-WAC requirements.

3. REQUIREMENTS.

a. Waste Classification.

(1) TRU waste with hazardous components as defined by 40 CFR 260-270 and WAC Chapter 173-303 shall be classified as TRU-MW.

b. Transuranic Waste Generation and Treatment.

(1) Containers of TRU waste not currently amenable to assay shall be stored for future processing.

(2) Hanford generators of TRU waste shall prepare an annual forecast of the TRU waste to be sent to retrievable storage in the 200 Areas. This forecast shall be sent to the OEC's organization responsible for operating the Low-Level Burial Grounds and Hanford Central Waste Complex (HCWC) in the third quarter of each fiscal year.

c. Transuranic Waste Certification.

(1) Each generator of solid TRU waste except those who will be covered by the OEC's Small Stream Generator Plan, shall prepare a certification plan according to WIPP requirements. Each plan shall be submitted for review, comment, and approval by the WIPP-WAC certification committee.

(2) Generators of TRU waste shall maintain auditable records (e.g., certification plans and procedures).

(3) TRU waste generators covered by the Small Stream Generator Plan shall be certified by the OEC's TRU certification review committee.

d. Transuranic Waste Packaging.

(1) As a minimum, containers for solid TRU waste shall be noncombustible and shall meet all the applicable requirements of 49 CFR 173.412 for Type A packaging.

(2) All TRU waste containers shall be equipped with a passive-release device to mitigate the buildup of hydrogen as specified by the WIPP-WAC.

(3) Solid contact-handled (CH) TRU waste destined to be shipped to the WIPP shall be packaged to meet both WIPP-WAC and Transuranic Package Transporter (TRUPACT II) criteria.

(4) Solid remote-handled transuranic (RH-TRU) waste should be packaged to meet the criteria of WIPP and the remote handled (RH) transportation cask when available.

(5) Solid RH-TRU waste packages may be shielded down to CH levels for onsite storage until treatment/packaging facilities are available.

(6) Solid contact-handled transuranic (CH-TRU) or RH-TRU waste destined to be shipped onsite or offsite shall be packaged to meet the requirements of Paragraph 10.c.

e. Temporary Storage at Generating Sites.

(1) Generators of TRU waste may provide temporary storage if such waste is segregated and clearly labeled to avoid commingling with LLW, HW or nonradioactive trash.

(2) The generator shall be responsible for applicable safety analysis during interim storage.

f. Transportation/Shipping to the Waste Isolation Pilot Plant.

(1) All shipments of TRU material within Hanford or to offsite locations shall meet the requirements of Paragraph 10.c.

(2) Shipments of solid CH-TRU waste from Hanford to the WIPP shall comply with TRUPACT II shipping criteria.

g. Interim Storage.

(1) The Generator is responsible for interim storage of uncertified waste. Interim storage for certified solid TRU waste shall be maintained by the OEC.

(2) Interim storage of uncertified waste may be accepted by the OEC on a case-by-case basis. New interim storage sites for solid TRU-MW shall be sited and designed consistent with the applicable requirements of WAC Chapter 173-303 and 40 CFR 260-270.

(3) Interim storage for PCB contaminated with TRU shall be per TSCA, 40 CFR 761.

h. Waste Isolation Pilot Plant. No DOE-RL requirements.

i. Buried Transuranic-Contaminated Waste. Closure of sites containing TRU-MW shall occur in accordance with closure plans approved by the EPA and Ecology. Closure of sites containing TRU waste shall occur in accordance with DOE 5820.2A.

j. Quality Assurance.

(1) See quality assurance requirements in Paragraph 10.e.

(2) Quality assurance plans (QAPs) shall be used by waste generators to define the control, inspection and audit requirements for the packaging and certification activities required for the shipment of TRU waste to the WIPP.

(3) The QAPs shall comply with the WIPP quality assurance requirements for certification of TRU waste for shipment to the WIPP.

CHAPTER III

MANAGEMENT OF SOLID LOW-LEVEL WASTE

1. PURPOSE. To supplement Chapter III, DOE 5820.2A by establishing Hanford-specific policies, requirements and guidelines for managing DOE solid LLW.

2. POLICY. The policy of DOE 5820.2A shall be implemented at Hanford. The management of LLW-MW shall comply with applicable EPA standards and EPA/Ecology regulations.

3. REQUIREMENTS.

   a. Performance Objectives. Disposal systems for LLW disposed of on or after 09-26-88 shall be designed to meet the following objectives in accordance with schedule guidance in DOE 5820.2A, Chapter III, Paragraph 3a.

      (1) General Public Protection. Disposal systems shall be designed to ensure that exposure to any member of the public that results from disposal of solid LLW shall not exceed 25 mrem/yr effective dose equivalent (EDE) through all exposure pathways for at least 1,000 years after disposal. The point of compliance shall be no further from the edge of the waste than the Hanford Site boundary during the period of active institutional control. After the active institutional control period (assumed to be not more than 100 years) the point of compliance shall be not more than 100 meters from the edge of the disposal site.

      (2) Groundwater Protection. Disposal systems shall be designed to ensure that disposal of LLW after 9-26-88 does not result in concentrations of radionuclides (above existing levels) in groundwater exceeding those corresponding to an EDE of 4 mrem/yr to any person who might drink 2 liters per day of water from a well drilled into the aquifer, for at least 1,000 years after disposal. The point of compliance shall be no further than 100 meters from the edge of the waste.

      (3) ALARA (Long-Term Protection). Reasonable effort shall be made to design disposal systems in such a way that potential exposures are ALARA for all times up to the year of maximum exposure. If the predicted population exposure is less than 500 person-rem/yr in the year of maximum exposure, the ALARA requirement is defined to have been complied with.

(4) Intruder Protection. Disposal closure systems shall be designed to ensure that exposure to individuals who inadvertently intrude the closed facility after the active institutional control period shall not exceed 100 mrem/yr for continuous exposure, or 500 mrem for a single acute exposure. For wastes that may remain hazardous to inadvertent intruders beyond 100 years, passive controls (e.g., long-term Government ownership and control, appropriate markers and barrier systems) shall be incorporated to provide reasonable assurance that inadvertent intruders will be warned and deterred from disturbing the site for up to 500 years.

(5) Mixed-Waste Regulations. Disposal systems shall be designed to meet the applicable requirements of 40 CFR 264 and 265, and WAC 173-303 for the disposal of LLW-MW.

b. Performance Assessment.

(1) Site-Specific Radiological Performance Assessments.

(a) Performance assessments shall be reviewed and approved by DOE-RL.

(b) The requirements of Chapter III, DOE 5820.2A to conduct a site-specific radiological performance assessment for solid LLW disposal facilities (e.g., V-trenches, grout vaults) applies to those facilities in use on or to be used after 9-26-88, the date of issuance of DOE 5820.2A. Burial ground facilities include the following: 218-E-10 and 218-E-10 Expansion; 218-E-12B; 218-W-3A; 218-W-3AE; 218-W-4B; 218-W-4C; 218-W-5; 218-W-6; and 218-C-9.

(c) Facilities may be organized into groupings each of which may have its own performance assessment.

(d) The assumptions, conceptual models and computer codes used to prepare performance assessments for Hanford LLW disposal sites shall be consistent to the extent practical. As a minimum, the following elements shall be considered for consistency:

1 Climate changes;

2 Generic intruder scenarios;

3 Vadose zone flow and transport models and codes;

4 Groundwater flow and transport models and codes; and

5 Dose to man models and codes.

(e) All dose calculations shall be approved by the Hanford environmental dose overview panel.

(f) The assumptions used in performance assessments shall be defensible, i.e., the basis for each assumption shall be documented.

(g) An overview committee shall be established to ensure that performance assessments for the Hanford Site are defensible and are consistent to the extent practical.

(h) Hanford performance assessments shall be provided to the DOE performance assessment oversight and peer review panel.

(2) Solid LLW Management Systems Performance Assessment.

(a) The Systems Performance Assessment for LLW shall optimize all elements of a LLW management system to ensure efficient management of the waste.

(b) An overall solid LLW management systems performance assessment shall be prepared that documents the following:

1 Regulatory requirements;

2 Maximum LLW source terms;

3 Components of the disposal system;

4 The base systems cost-performance level; and

5 The preferred LLW system using ALARA and cost benefit analyses.

(c) The systems performance assessment will be used to maximize disposal capacity, minimize dose to ALARA, minimize environmental impacts, and minimize cost.

(3) Measurements to Evaluate Performance Assessments.

(a) Monitoring measurements of Hanford LLW disposal sites shall be performed as required by DOE 5820.2A, Chapter III, Paragraph 3b.(3) to evaluate actual and prospective performance. The following LLW disposal sites shall have

routine monitoring to establish baseline radiation levels: 218-E-10 and 218-E-10 Expansion; 218-E-12B; 218-W-3A; 218-W-3AE; 218-W-4B; 218-W-4C; 218-W-5; 218-W-6; and 218-C-9.

(b) An annual letter report shall be prepared that summarizes the results of the monitoring of solid LLW disposal sites and compares measurements with performance assessment results.

c. Waste Generation.

(1) Waste Generation Forecasts. LLW generators shall submit an annual forecast in the third quarter of each fiscal year of the amount of LLW to be shipped to the Hanford Site 200 Areas facilities. This forecast shall be sent to the OEC's organization responsible for operating the Low-Level Burial Grounds and HCWC.

d. Waste Characterization. The OEC shall maintain documentation that defines the requirements for characterization of LLW before it is stored, treated or disposed of at Hanford.

e. Waste Acceptance Criteria.

(1) The OEC shall establish documentation that defines the waste acceptance criteria for the storage or disposal of LLW at Hanford. The criteria shall include limits on radionuclide concentrations and/or amounts required to meet the objectives in Chapter III, Paragraph 3.a. above

(2) The OEC shall conduct assessments of the generating facility in each calendar year the generator is scheduled to ship solid LLW to Hanford disposal sites. The assessments will determine if the generators' solid LLW program and implementation complies with Hanford Site Radioactive Solid Waste Acceptance Criteria.

(3) Offsite generators shall be provided a waste tracking number as specified by DOE-RL.

f. Waste Treatment.

(1) The documentation required by DOE 5820.2A, Chapter III, Paragraph 3.f.(3)(a), for each waste treatment project shall be incorporated into the project engineering study.

(2) The report for each large-scale waste treatment facility required by DOE 5820.2A, Chapter III, Paragraph 3.f.(3)(b), shall be incorporated into the project conceptual design report.

g. Shipment.

(1) Shipment of solid LLW to the Hanford solid LLW disposal site shall not be made until the OEC provides authorization for shipment.

(2) Waste shipments to the burial ground facilities shall comply with the requirements of the current revision of *Hanford Site Radioactive Solid Waste Acceptance Criteria*, WHC-EP-0063.

h. Long-Term Storage.

(1) Storage of LLW-MW shall be in accordance with applicable provisions of WAC 173-303 and 40 CFR 264, 265, and 268.

(2) Solid LLW to be stored shall comply with the applicable requirements of the current revision of *Hanford Site Radioactive Solid Waste Acceptance Criteria*.

(3) The analysis required by DOE 5820.2A, Chapter III, Paragraph 3.h.(3)(a), to identify the need for a waste storage facility shall be incorporated into the storage facility engineering study.

(4) The construction design report required by DOE 5820.2A, Chapter III, Paragraph 3.h.(3)(b), for each waste storage project shall be incorporated into the project conceptual design report.

i. Disposal.

(1) Solid LLW to be disposed of in burial grounds shall meet the current revision of the *Hanford Site Radioactive Solid Waste Acceptance Criteria*.

(2) Solid LLW shall be disposed of at Hanford by methods appropriate to achieve the Hanford performance objectives stated in Chapter III, Paragraph 3.a. above, consistent with the disposal site radiological performance assessment prepared in compliance with Chapter III, Paragraph 3.b. above.

(3) Wastes designated greater than class C (GTCC) received at Hanford from non-DOE sites shall be stored until disposal systems are developed to meet the requirements of DOE 5820.2A, Chapter III, Paragraph 3.i.(4).

(4) Disposal sites for solid LLW-MW shall be located and designed in compliance with the applicable requirements in WAC 173-303, 40 CFR 264, 265 and 268, and the RCRA Dangerous Waste Permit.

j. Disposal Site Closure/Post Closure.

(1) One closure plan for all active burial grounds shall be included in the RCRA/Dangerous Waste Permit for Burial Grounds. This plan shall comply with Ecology regulations for the closure of dangerous waste facilities.

(a) The active burial grounds assumed to contain dangerous waste are as follows: 218-E-10; 218-E-12B; 218-W-3A; 218-W-3AE; 218-W-4B; 218-W-4C; and 218-W-5.

(b) The regulations listed in WAC 173-303-610 shall be followed for the closure plan.

(2) Closure of inactive burial grounds shall be addressed according to the Tri-Party Agreement.

k. Environmental Monitoring. Monitoring of Hanford solid LLW disposal sites shall be included in the routine surveillance conducted by the OEC.

l. Quality Assurance. See Paragraph 10.e., General Requirements for Quality Assurance.

m. Records and Reports.

(1) A record keeping system shall be developed and maintained at Hanford by the OEC to comply with the requirements of DOE 5820.2A, Chapter III, Paragraph 3.m., Records and Reports.

(2) Reporting and recordkeeping requirements for Ecology and EPA shall be implemented for LLW-MW as documented in the Hanford Low-Level Burial Ground Part B Permit application.

(3) An annual dangerous waste report shall be prepared and transmitted to Ecology on March 1 of each year to comply with WAC 173-303-390. The LLW-MW shall be included in this report.

(4) A solid waste summary report for the solid waste buried in the 200 Area plateau since startup shall be issued annually. This report shall include summary data for solid LLW and mixed waste disposed of during the current year and historical data of LLW disposed of previously.

CHAPTER IV

MANAGEMENT OF SOLID WASTE CONTAINING AEA 11e(2) BYPRODUCT MATERIAL AND NATURALLY OCCURRING AND ACCELERATOR-PRODUCED RADIOACTIVE MATERIAL

1. PURPOSE. To supplement Chapter IV, DOE 5820.2A by establishing Hanford-specific policies and guidelines for managing DOE solid waste containing by-product material, as defined by Section 11e(2) of the AEA of 1954, as amended, and naturally occurring, and accelerator-produced radioactive material.

2. POLICY. Small volumes of the typical waste addressed by this chapter shall be managed as LLW in accordance with the requirements of Chapter III of DOE 5820.2A and Chapter III of this supplement. If the waste is classified as mixed waste, management also must be in compliance with WAC Chapter 173-303 and 40 CFR 260-270.

3. REQUIREMENTS.

   a. Wastes of the type addressed by this chapter shall be disposed of or stored in accordance with the requirements of Chapter III of DOE 5820.2A and Chapter III of this supplement.

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CHAPTER V

DECOMMISSIONING OF RADIOACTIVELY CONTAMINATED FACILITIES

1. PURPOSE. To supplement DOE 5820.2A, Chapter V, by establishing Hanford-specific policies and guidelines for the management of decontamination and decommissioning of radioactively contaminated facilities under DOE-RL ownership or control.

2. POLICY. Radioactively contaminated facilities for which DOE-RL is responsible shall be managed in a safe, cost-effective manner to ensure that release of and exposure to radioactivity and other hazardous materials meet applicable EPA standards and EPA/Ecology regulations. Facilities, equipment, and valuable materials shall be recovered and reused when practical.

3. REQUIREMENTS.

   a. General.

      (1) The OEC shall prepare and maintain a complete list of Hanford contaminated operational and excess facilities under DOE-RL jurisdiction. A continuous record of jurisdictional program responsibility for all contaminated facilities shall be maintained for use in assigning decommissioning responsibility.

      (2) Operational records (e.g., facility design drawings and modifications, characterization data on contamination levels, prior decontamination activities, and incident reports required by DOE Orders) for all contaminated facilities shall be maintained by the OEC for use in preparing decommissioning plans.

   b. Facility Design. See Paragraph 10.a., General Requirements for New Waste Management Facilities.

   c. Post-Operational Activities.

      (1) All excess/surplus facilities shall have a formalized Surveillance and Maintenance Program (SMP) with documented evidence that checks and inspections are being conducted and the required maintenance is being performed to keep facilities in a safe condition pending their final disposition.

(2) A Surplus Facilities Program Plan (SFPP) shall be prepared and updated annually.

(a) The SFPP shall address surplus facilities that have been retired from use, are contaminated with radioactive material, and have been accepted into the Hanford Surplus Facilities Program.

(b) The SFPP shall describe the SMP required to keep the surplus facilities in a safe condition.

(c) The SFPP shall describe the plan for disposal of the surplus facilities.

(3) Organizations with excess/surplus facilities not accepted into the Hanford Surplus Facilities Program shall ensure that these facilities have an auditable SMP per Chapter I, Paragraph 3.c.(1) above.

d. Decommissioning Project Activities.

(1) Characterization. (See DOE 5820.2A requirements)

(2) Environmental Review Process. (See DOE 5820.2A requirements)

(3) Engineering.

(a) The Allowable Residual Contamination Level (ARCL) methodology shall be used, where applicable, to define the amount of radioactive material that may safely remain after decommissioning a surplus contaminated facility on the Hanford Site.

1 The radiological inventory of the facility shall be estimated from sampling data.

2 Using appropriate dose pathways, a dose along with a 90% upper-confidence limit shall be estimated.

3 If the predicted potential dose determined by this method to an individual living on the site is less than 25 mrem/yr, then no further decontamination actions are required for the site.

4 If the predicted potential dose exceeds the limit, then additional remedial action must be taken.

5 If the ARCL analysis indicates that the 25 mrem/yr criterion cannot be achieved cost effectively for a particular site, then the DOE-RL shall approve the specific dose levels for that site, calculated by use of the ARCL method, before initiation of the decommissioning work.

6 The ALARA philosophy is applicable whenever it is cost effective to reduce doses below the 25 mrem/yr level.

(b) For the release of materials for unrestricted offsite use, the less-than-detectable criterion will be used whenever practicable. In all cases material released for offsite use will, as a minimum, meet the limits defined in Regulatory Guide 1.86.

(c) Solid waste generated during decommissioning that is not appropriate for in situ disposal shall be removed, packaged, and transported to the Hanford Site 200 Areas for disposal according the requirements found in the *Hanford Site Radioactive Solid Waste Acceptance Criteria*, WHC-EP-0063, current revision. Packaging and transport of the waste shall be accomplished in accordance with established controls, providing for a degree of safety equal to that required by the DOT for offsite shipments.

(4) Decommissioning Operations. (See DOE 5820.2A requirements)

(5) Post-Decommissioning Activities. (See DOE 5820.2A requirements)

e. Quality Assurance. See Paragraph 10.e., General Requirements for Quality Assurance.

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REFERENCES

1. 40 CFR 260-270, "Protection of Environment," Code of Federal Regulations, U.S. Environmental Protection Agency, Washington, D.C.

2. 49 CFR 173.412, "Additional Design Requirements for Type A packages."

3. DOE, 1988, "Record of Decision for Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes," U.S. Federal Register, Volume 53, U.S. Department of Energy (Government Printing Office), Washington, D.C., p. 12449.

4. DOE 5000.3A, "Occurrence Reporting and Processing of Operations Information," of 5-30-90.

5. DOE 5400.1, "General Environmental Protection Program," of 11-9-88.

6. DOE 5400.2A, "Environmental Compliance Issue Coordination," of 1-31-89.

7. DOE 5400.3, "Hazardous and Radioactive Mixed Waste Program," of 2-22-89.

8. DOE 5440.1C, "National Environmental Policy Act," of 4-9-85.

9. DOE 5480.1B, "Environment, Safety, and Health Program for Department of Energy Operations," of 9-23-86.

10. DOE 5480.3, "Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes," of 7-9-85.

11. DOE 5480.4, "Environmental Protection, Safety, and Health Protection Standards," of 5-15-84.

12. DOE 5480.5, "Safety of Nuclear Facilities," of 9-23-86.

13. DOE 5480.7, "Fire Protection," of 12-18-80.

14. DOE 5480.18, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities," of 11-2-89.

15. DOE 5481.1B, "Safety Analysis and Review System," of 9-23-86.

16. DOE 5700.6B, "Quality Assurance," of 9-23-86.

17. DOE 5820.2A, "Radioactive Waste Management," of 9-26-88.

18. DOE 6430.1A, "General Design Criteria," of 4-6-89.

19. DOE-EIS-0113, Final Environmental Impact Statement: Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, U.S. Department of Energy.

20. DOE/LLW-75T, "Methodology for Compliance with DOE Order 5820.2A, Chapter III -- Management of Low-Level Radioactive Waste," of 2-24-89.

21. Ecology, EPA, and DOE, 1989, Hanford Federal Facility Agreement and Consent Order, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy.

22. EPA-600/4-83-004, "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," Quality Assurance Management Staff (QAMS)-005/80, U.S. Environmental Protection Agency.

23. RL 4320.2B, "Site Selection," of 4-1-86.

24. RL 5440.1A, "Implementation of the National Environmental Policy Act at the Richland Operations Office," of 2-3-87.

25. RL 5480.1A, "Environment, Safety, and Health Program for Department of Energy Operations for Richland Operations," of 9-7-88.

26. RL 5480.5, "Safety of Nuclear Facilities," of 10-15-84.

27. RL 5480.7a, "Fire Protection," of 9-23-88.

28. RL 5480.11A, "Requirements for Radiation Protection," of 9-17-86.

29. RL 5481.1, "Safety Analysis and Review System," of 10-5-83.

30. RL 5700.1A, "Quality Assurance," of 7-14-83.

31. RL 6430.1C, "Hanford Plant Standards," of 3-5-90.

32. WAC 173-303, "Dangerous Waste Regulations."

33. WAC 173-303-390, "Facility Reporting."

34. WAC 173-303-610, "Closure and Post Closure."

35. WAC 173-303-800, "Permit Requirements for Dangerous Waste Management Facilities."

36. WHC-EP-0063, *Hanford Site Radioactive Solid Waste Acceptance Criteria*, Westinghouse Hanford Company, Richland, Washington.

37. WIPP/DOE-120, "Quality Assurance Requirements for Certification of TRU Waste for Shipment to the WIPP."

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DEFINITIONS

1. Aging waste. The high-level, first-cycle solvent extraction waste from the Plutonium-Uranium Extraction (PUREX) Facility at Hanford.

2. Assumed leaker. The integrity classification of a waste storage tank for which surveillance data indicates a loss of liquid attributed to a breach of integrity.

3. Complexed waste. Dilute waste material containing relatively high concentrations of chelating agents, such as ethylenediaminetetraacetic acid (EDTA), hydroxyethylethylenediaminetriacetic acid (HEDTA), from B Plant waste fractionization operation.

4. Complexant concentrate (CC). Organic complexing agents (e.g., EDTA) that were introduced to the waste during strontium recovery processing at B Plant and that have been subsequently concentrated.

5. Concentrated Hanford facility waste. The product of concentrating Hanford facility waste.

6. Double-shell slurry (DSS). The product of concentrating double-shell slurry feed (DSSF) past the sodium aluminate boundary to a solid-liquid matrix containing interstitial liquid. The interstitial liquid may not be drainable. For reporting purposes DSS is considered a solid.

7. Double-shell slurry feed. Noncomplexed waste that has been concentrated until the solution is near the sodium aluminate saturation boundary.

8. Drainable liquid. The interstitial liquid that is not held in place by capillary forces and will, therefore, migrate or move by gravity.

9. Hanford facility waste. Waste that is newly generated from Hanford facilities or that has maintained a facility identification when stored in DSTs. This is contrasted with DST waste that has been mixed and lost its facility identification.

10. High-level waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation. At Hanford the Neutralized Current Acid Waste (NCAW), also called aging waste, and the capsules containing cesium and strontium are considered high-level waste.

11. In-service tank. The waste classification of a tank being used, or planned for use, for the storage of liquid (in excess of a minimum supernatant liquid heel) in conjunction with production and/or waste processing.

12. Interim isolated. The administrative designation reflecting completion of the physical effort required to minimize the addition of liquids to an inactive storage tank, SST, process vault, sump, catch tank, or diversion box.

13. Interim stabilized. An SST that contains less than 50,000 gal of interstitial liquid and less than 5,000 gal of supernatant liquid.

14. Interstitial liquid. Liquid in a waste matrix accommodated in the pore spaces; some is capable of gravity drainage while the rest is held by capillary forces.

15. Intrusion. A term used to describe the infiltration of liquid into a waste tank.

16. Low-level waste. Radioactive waste that is not high-level waste or transuranic waste.

17. Low-level mixed waste. Low-level waste with hazardous components as defined by 40 CFR 260-270 and WAC 173-303.

18. Mixed waste. Radioactive waste with hazardous components as defined by 40 CFR 260-270 and WAC 173-303.

19. Noncomplexed waste. A general term applied to all Hanford liquors not identified as complexed.

20. Onsite. Within the boundaries of the Hanford reservation.

21. Out-of-service tank. A tank that does not meet the definition of an in-service tank. Before September 1988, these tanks were defined as inactive. (NOTE: All single-shell tanks are out of service.)

22. Partial interim isolation. The administrative designation reflecting the completion of the physical effort required for interim isolation except for isolation of risers and piping that is required for jet pumping or for other methods of stabilization.

23. Pumpable liquid. The interstitial liquid that is not held in place by capillary forces and can, therefore, be moved by pumping forces such as a saltwell pump.

24. Sound tank. The integrity classification of a waste storage tank for which surveillance data indicates no loss of liquid attributed to a breach of integrity.

25. Supernatant. The liquid that is above the solids in waste storage tanks.

26. Tank status. The description that includes waste material in the tank, the integrity of the tank, the use of the tank and whether the tank has been interim stabilized or interim isolated.

27. Transuranic mixed waste. TRU waste with hazardous components as defined by 40 CFR 260-270 and WAC 173-303.

28. Transuranic waste. Without regard to source or form, waste that is contaminated with alpha-emitting transuranic radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay.

29. Waste Reduction Program. The sum of two separate programs, the waste minimization program and the waste treatment program as defined in the DOE-HQ guidance to DOE 5400.1C.

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GLOSSARY

ACRONYMS

AEA	Atomic Energy Act of 1954
ALARA	as low as reasonably achievable
ARCL	allowable residual contamination level
CC	complexant concentrate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLA/SARA	CERCLA/Superfund Amendments and Reauthorization Act
CFR	Code of Federal Regulations
CH	contact handled
CH-TRU	contact-handled transuranic
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy, Washington, D.C.
DOE-RL	U.S. Department of Energy, Richland Operations
DOE-HQ	U.S. Department of Energy, Headquarters, Washington, D.C.
DOE-RL/ERD	U.S. Department of Energy, Richland Operations, Environmental Restoration Division
DOE-RL/WMD	U.S. Department of Energy, Richland Operations, Waste Management Division
DOT	Department of Transportation
DSS	double-shell slurry
DSSF	double-shell slurry feed
DST	double-shell tank
ECC	engineering and construction contractor

Ecology	State of Washington Department of Ecology
EDE	effective dose equivalent
EDTA	ethylenediaminetetraacetic acid
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERD	Environmental Restoration Division
GTCC	greater than class C
HEDTA	hydroxyethylethylenediaminetriacetic acid
HLW	high-level waste
HSC	health services contractor
HW	hazardous waste
HWVP	Hanford Waste Vitrification Plant
LLW	low-level waste
LLW-MW	low-level mixed waste
NCAW	Neutralized Current Acid Waste
NCRW	Neutralized Cladding Removal Waste
NEPA	National Environmental Policy Act
OEC	Operating and Engineering Contractor
ORNL	Oak Ridge National Laboratory
PFP	Plutonium Finishing Plant
PUREX	Plutonium-Uranium Extraction facility
QAMS	quality assurance management staff
QAP	quality assurance plan

RCRA	Resource Conservation and Recovery Act
RDC	Research and Development Contractor
RH	remote handled
RH-TRU	remote-handled transuranic
RL	Shortened form of DOE-RL
SARP	Safety Analysis Report for Packaging
SFPP	Surplus Facilities Program Plan
SMP	Surveillance and Maintenance Program
SSP	Environmental Restoration and Waste Management Site-Specific Plan for the Richland Operations Office
SST	single-shell tank
TRU	transuranic
TRU-MW	transuranic mixed waste
TRUPACT II	Transuranic Package Transporter
TSCA	Toxic Substance Control Act
WAC	State of Washington Administrative Code
WIPP	Waste Isolation Pilot Plant
WIPP-WAC	Waste Isolation Pilot Plant-Waste Acceptance Criteria
WM	waste management

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U.S. Department of Energy

Washington, D.C.

ORDER

DOE 5820.2A

9-26-88

SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. PURPOSE. To establish policies, guidelines, and minimum requirements by which the Department of Energy (DOE) manages its radioactive and mixed waste and contaminated facilities.

2. CANCELLATION. DOE 5820.2, RADIOACTIVE WASTE MANAGEMENT OF 2-6-84.

3. SCOPE. The provisions of this Order apply to all DOE elements and, as required by law and/or contract and as implemented by the appropriate contracting officer, all DOE contractors and subcontractors performing work that involves management of waste containing radioactivity and/or radioactively contaminated facilities for DOE under the Atomic Energy Act of 1954, as amended (Public Law 83-703).

4. EXCLUSION. This Order does not apply to the management by the Department of commercially generated spent nuclear fuel or high-level radioactive waste, nor to the geologic disposal of high-level waste produced by the Department's activities and operations. Such materials are managed by the Office of Civilian Radioactive Waste Management under the requirements of the Nuclear Waste Policy Act of 1982, as amended (Public Law 97-425).

5. POLICY. Radioactive and mixed wastes shall be managed in a manner that assures protection of the health and safety of the public, DOE, and contractor employees, and the environment. The generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements.

6. REFERENCES. (See Attachment 1.)

7. DEFINITIONS. (See Attachment 2.)

8. RESPONSIBILITIES.

   a. Assistant Secretary for Defense Programs (DP-1) has authority for establishing policy for the management of DOE waste and assuring that DOE waste generated by operations and activities under DP-1 cognizance, or any other waste within the purview of DP-1, is managed according to the requirements of this Order. DP-1 also has general responsibility for assuring that

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DP-1 programmatic decisions include waste management considerations when appropriate. Specific responsibilities include:

(1) Assuring the safe storage and disposal of all DOE waste other than that managed by NE-1 and RW-1;

(2) Implementing new and alternative technologies and processes to improve management of DP waste;

(3) Developing and operating the Waste Isolation Pilot Plant, a facility near Carlsbad, New Mexico, for conducting research and development to demonstrate the safe disposal of radioactive waste from defense activities and programs of the United States exempted from regulation by the Nuclear Regulatory Commission;

(4) Conducting research and development for DOE waste transportation systems and providing for safe, efficient, and economic transport of materials, pursuant to DOE 1540.1;

(5) Managing DP contaminated facilities, including those that are surplus to program needs;

(6) Assuring that the environmental, safety, health, transportation, quality assurance, unusual occurrence, construction project management, real estate management, and facility design requirements set forth in DOE Orders are implemented for DP-1 waste management programs; and

(7) Supporting the information needs of the Integrated Data Base program on defense program activities and jointly managing and funding the program in cooperation with NE-1 and RW-1 (see Attachment 1, page 3, paragraph 23).

b. Director of Defense Waste and Transportation Management (DP-12) is charged with carrying out DP-1 waste management responsibilities for oversight of the waste management complex, for interpreting waste management policy, and for implementing the requirements of this Order for waste management facilities and operations funded by DP-12. Specific responsibilities include:

(1) Management of storage, treatment, and disposal operations for defense waste;

(2) Managing defense contaminated facilities that are excess to programmatic needs;

(3) Reviewing and approving new or alternative waste management practices;

(4) Conducting research and development for DOE waste transportation systems and providing for safe, efficient, and economic transport of materials, pursuant to DOE 1540.1;

(5) Conducting independent health, safety, and quality assurance audits of field waste management organizations, in cooperation with EH-1, to assess compliance with the requirements of this Order;

(6) Issuing, in consultation with EH-1, approval of exemptions from the requirements of this Order (paragraph 9) that are proposed by other Headquarters or field organizations;

(7) Issuing in consultation with EH-1 and Headquarters program organizations updated waste management guidance; and

(8) Approving documents, reports, and plans, as required by this Order, for DP programs and activities.

c. Director of Civilian Radioactive Waste Management (RW-1) is responsible for selected research and development, siting, construction, operation, and management activities assigned to the Secretary of Energy by the Nuclear Waste Policy Act of 1982 (Public Law 97-425) for the interim storage and disposal of high-level waste and spent nuclear fuel. Specific responsibilities include the following:

(1) The long-term care, in cooperation with NE-1, of closed commercial low-level waste sites transferred to DOE;

(2) Lead responsibility, in cooperation with NE-1 and DP-1, for the Integrated Data Base program (see Attachment 1, page 3, paragraph 23);

(3) Assurance that the requirements of DOE Orders are met for all waste management activities under RW-1 purview; and

(4) Independent health, safety, and quality assurance audits of field waste management organizations in cooperation with EH-1, to assess compliance with the requirements of this Order.

d. Assistant Secretary for Nuclear Energy (NE-1) is responsible for assuring that waste generated by operations funded by NE-1 is managed according to the requirements of this Order and that NE-1 program decisions include waste management considerations, as appropriate. Specific responsibilities include:

(1) Managing DOE wastes from NE-1 operations and activities, including the breeder reactor, space nuclear, naval reactor, and remedial action programs, as well as the Three Mile Island and West Valley projects;

(2) Managing waste generated by DOE enrichment operations and disposed at sites located at the Oak Ridge, Portsmouth, and Paducah gaseous diffusion plants;

(3) Managing any greater than Class C low-level waste, as defined in Section 3(b)(1)(D) of Public Law 99-240, which may be accepted by the Department for disposal in cooperation with DP-1;

(4) Developing and implementing alternative technologies and processes to support storage and disposal of waste or spent fuel generated by NE-1 operations;

(5) Managing NE-1 contaminated facilities, including those that are surplus to program needs, and waste storage/disposal sites;

(6) Developing and implementing commercial applications for waste byproducts;

(7) Assuring that environmental, safety, health, transportation, quality assurance, unusual occurrence, construction project management, real estate management, and facility design requirements set forth in DOE Orders, are implemented for NE-1 waste management programs;

(8) Conducting independent health, safety, and quality assurance audits of field waste management operations in cooperation with EH-1 to assess compliance with the requirements of this Order; and

(9) Supporting the information needs of the Integrated Data Base program on civilian nuclear program activities in cooperation with DP-1 and RW-1 (see Attachment 1, page 3, paragraph 23).

e. Assistant Secretary for Environment, Safety and Health (EH-1) is responsible for providing an independent overview of DOE radioactive waste management and decommissioning programs to determine compliance with DOE environment, safety, and health requirements and applicable Environmental Protection Agency (EPA) and state regulations. Specific responsibilities include:

(1) Advising the Secretary of the status of Departmental compliance with the requirements of this Order and applicable provisions of DOE 5480.1B, and EH Orders.

(2) Conducting independent appraisals and audits of DOE waste management and decommissioning programs consistent with the requirements of DOE 5482.1B.

(3) Reviewing site Waste Management Plans and Decommissioning Project Plans with regard to compliance with DOE environment, safety, and health requirements.

f. Director, Naval Nuclear Propulsion Program: Executive Order 12344, statutorily prescribed by PL 98-525 (42 USC 7158 note), establishes the responsibilities and authority of the Director, Naval Nuclear Propulsion Program (who is also the Deputy Assistant Secretary for Naval Reactors within the Department) over all facilities and activities which comprise the Program, a joint Navy-DOE organization. The policy principle promoted by these executive and legislative actions is cited in the Executive Order as "...preserving the basic structure, policies and practices developed for this Program in the past...". Accordingly, The Naval Propulsion Program is exempt from the provisions of this Order. The Director shall maintain an environmental protection program to assure compliance with applicable environmental statutes and regulations. The Director and EH-1 shall exchange information and cooperate as appropriate to facilitate exercise of their respective responsibility.

g. Directors of other Headquarters Program Organizations are responsible for implementing the requirements of this Order for all DOE waste generated by their programs until it is transferred to a DOE or licensed storage/disposal site. For all contaminated facilities under their jurisdiction, they are responsible for assuring that their programmatic decisions include waste management considerations, as appropriate, and for implementing the requirements of other applicable DOE Orders for their waste management programs.

h. Office of General Counsel (GC-1) provides legal advice to program organizations regarding DOE waste management and decommissioning activities involving DOE-owned and privately owned sites; renders legal opinion on DOE authority to undertake remedial action and other waste management activities; and renders legal opinions on, and concurs in, program actions to comply with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act, and other legal authorities in conjunction with proposed waste management and decommissioning activities.

i. Assistant Secretary, Management and Administration (MA-1) is responsible for providing contractual and business advice to program organizations regarding DOE waste management activities, including use of DOE management and operating contractors in such activities.

j. Heads of Field Organizations are responsible for all activities that affect the treatment, storage, or disposal of waste in facilities under their jurisdiction regardless of where the waste is generated. Heads of field organizations with treatment, storage or disposal facilities responsibility have the authority for establishing waste management requirements at that facility (e.g., setting waste acceptance criteria, waste certification, verification of contents of waste shipped or to be shipped, concurring in waste reduction plans). In addition, they are responsible for assuring that the day-to-day waste management and surplus facility

operations at their sites are conducted in compliance with the requirements of this Order and comply with all applicable Federal, State, and local statutes. Specific responsibilities include the following:

(1) Preparing annual updates of the Waste Management Plans for all operations under their purview according to the format in the Waste Management Plan Outline, Chapter VI. These Plans shall be submitted in December of each year and be distributed to DP-12, EH-1, and other appropriate Headquarters organizations for review and comment.

(2) Preparing supplements to this Order that identify specific detailed requirements for waste management practices and procedures conducted at their sites.

(3) Overseeing fiscal responsibility for transporting waste and establishing of fees to recover the incremental costs for storage and disposal of DOE waste at their sites.

(4) Establishing waste acceptance criteria and reviewing waste minimization plans of other field organization's facilities that generate radioactive, hazardous, or mixed waste that will be treated, stored or disposed of at facilities under their purview.

(5) Auditing any waste generating organization that ships waste to their sites for treatment, storage, or disposal to assure compliance with established waste acceptance criteria.

(6) Maintaining environmental, safety, and health programs for all DOE waste management operations under their purview.

(7) Managing contaminated facilities under their purview according to the requirements of this Order and guidance provided by Headquarters program offices, providing program secretarial officers with the necessary characterizational and engineering data for contaminated facilities, and developing site-specific priorities, schedules, and costs for remedial actions.

(8) Assuring that the requirements of the Order, applicable to contractors and subcontractors whose contracts fall within the scope of the Order, are properly reflected in the contract document.

(9) Defining and assuring that required quality assurance activities are established and implemented for all waste management activities under their purview, pursuant to the requirements of DOE 5700.6B and reporting unusual occurrences pursuant to the requirements of DOE 5000.3.

(10) Providing information, as requested, to the Integrated Data Base Program, Oak Ridge National Laboratory, for all types of waste under

their purview, including: high-level waste; transuranic waste; low-level waste; naturally occurring and accelerator produced radioactive material; mixed waste; and wastes from decommissioning activities (see Attachment 1, page 3, paragraph 23).

k. Manager of Albuquerque Operations Office is responsible, in addition to the responsibilities identified in paragraph 8j, for use of certified packaging, standard containers, transportation, waste acceptance criteria, and all other aspects related to transuranic waste emplacement at the Waste Isolation Pilot Plant. Within the Albuquerque Operations Office, a standing committee, the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee, is responsible for review, audit, and approval of generator transuranic waste certification programs and activities. The Manager of the Albuquerque Operations Office, as Head of the Waste Isolation Pilot Plant project office, also has responsibility for the design, construction, technology development, and operational activities leading to permanent isolation of transuranic waste from the biosphere.

9. EXEMPTIONS. Exemptions from the requirements of this Order may be granted only with the approval of DP-12 in consultation with EH-1. New or alternate waste management practices that are based on appropriate documented safety, health protection, and economic analyses may be proposed by field organizations and adopted with the approval of DP-12 and EH-1.

10. IMPLEMENTING PROCEDURES AND REQUIREMENTS. Within 6 months of the date of issuance of this Order, Heads of Field Elements shall prepare and submit to appropriate Headquarters program organizations an implementation plan describing schedules, costs, and quality assurance activities for compliance with the requirements of this Order with copies to EH-1 for review and comment. Specific guidance for the plan will be issued by DP-12 under separate cover. Thereafter, the status of compliance with the requirements of this Order shall be reported to the appropriate Headquarters program organization in the annual update of the Waste Management Plans.

11. CLEARANCE UNDER THE PAPERWORK REDUCTION ACT OF 1980. This directive has been determined to contain information collections under the provisions of 5 CFR 1320, "Controlling Paperwork Burdens on the Public." The Office of Management and Budget (OMB) has issued a clearance to the Department (OMB No. 1910-0900) for these information collections.

BY ORDER OF THE SECRETARY OF ENERGY:

LAWRENCE F. DAVENPORT
Assistant Secretary
Management and Administration

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REFERENCES

1. DOE 1332.1A, UNIFORM REPORTING SYSTEM, of 10-15-85, establishes the content and format of plans and reports to be obtained from the Department's contractors and stipulated as a contract requirement.

2. DOE 1430.1A, MANAGEMENT OF THE DEPARTMENT'S SCIENTIFIC AND TECHNICAL INFORMATION, of 9-10-86, which establishes the policy that scientific and technical information developed during work supported by DOE shall be promptly and fully reported to the Technical Information Center (MA-28), located in Oak Ridge, Tennessee, for inclusion in the Department's information data base.

3. DOE 1540.1, MATERIALS TRANSPORTATION AND TRAFFIC MANAGEMENT of 5-3-82, establishes the Department's policies for management of materials transportation activities.

4. DOE 1540.2, HAZARDOUS MATERIAL PACKAGING FOR TRANSPORTATION ADMINISTRATIVE PROCEDURES of 9-30-86, establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by the Department of Energy.

5. DOE 2110.1, PRICING OF DEPARTMENTAL MATERIALS AND SERVICES of 2-16-84, which establishes the Department's policy for establishing prices and charges for materials and services provided to outside persons and organizations.

6. DOE 4300.1B, REAL PROPERTY AND SITE DEVELOPMENT PLANNING of 7-1-87, establishes Department policies and procedures for planning the development and utilization of sites and their facilities and for the acquisition, use, inventory, and disposal of real property or interests therein.

7. DOE 4700.1, PROJECT MANAGEMENT SYSTEM, of 3-6-87, establishes the DOE Project Management System (PMS), provides implementing instructions, formats and procedures and sets forth requirements which govern the development, approval and execution of DOE's outlay program acquisition as embodied in the PMS.

8. DOE 5000.3, UNUSUAL OCCURRENCE REPORTING SYSTEM of 11-7-84, establishes the Department's policy and provides instructions for reporting, analyzing, and disseminating information on programmatically significant events.

9. DOE 5400.2, ENVIRONMENTAL COMPLIANCE ISSUE COORDINATION, of 8-13-87, establishes DOE requirements for coordination of significant environmental compliance issues.

10. DOE 5440.1C, NATIONAL ENVIRONMENTAL POLICY ACT of 4-9-85, establishes the Department's policy for implementation of the National Environmental Policy Act of 1969 (Public Law 91-190).

11. DOE 5480.1B, ENVIRONMENTAL SAFETY, AND HEALTH PROGRAM FOR DEPARTMENT OF ENERGY OPERATIONS of 9-23-86, establishes an overall framework of program requirements for safety, environmental, and health protection, including criteria for radiation exposure and radioactive effluent releases for operating facilities and sites.

12. DOE 5480.3, SAFETY REQUIREMENTS FOR THE PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES AND HAZARDOUS WASTES, of 7-9-85, establishes requirements for the packaging and transportation of hazardous materials, hazardous substances, and hazardous wastes.

13. DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEM of 9-23-86, establishes uniform requirements for the preparation and review of safety analyses of DOE operations.

14. DOE 5482.1B, ENVIRONMENT, SAFETY AND HEALTH APPRAISAL PROGRAM of 9-23-86, establishes an environment safety and health appraisal program for DOE.

15. DOE 5484.1, ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS of 2-24-81, establishes requirements and practices for reporting environmental, health, and safety information for DOE operations.

16. DOE 5700.6B, QUALITY ASSURANCE of 9-23-86, sets forth principles and assigns responsibilities for establishing, implementing, and maintaining programs of plans and actions to assure quality achievement in the Department's programs.

17. DOE 6430.1, GENERAL DESIGN CRITERIA of 12-12-83, establishes general design criteria for use in acquisition of the Department's facilities and to establish responsibilities and authorities for the development and maintenance of those criteria.

18. WIPP-DOE-069, rev. 2, of 9-85, "Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant" of 9-81, as updated, specifies basic requirements for disposal of contact-handled and remote-handled transuranic waste at the Waste Isolation Pilot Plant. Copies of this and other DOE Waste Isolation Pilot Plant reports may be obtained from the Albuquerque Operations Office.

19. WIPP-DOE-120, rev. 1, of 1-83, "Quality Assurance" establishes the Quality Assurance requirements to ensure that each site's transuranic waste certification program will perform satisfactorily.

20. WIPP-DOE-157 rev. 1, of 9-85, "Data Package Format for Certified Transuaranic Waste for the Waste Isolation Pilot Plant" specifies the arrangement of data which are required to be reported to the Waste Isolation Pilot Plant for transuranic waste to be received.

21. DOE/LLW-63T of 9-87, "Guidance for Conduct of Waste Management Systems Performance Assessment" provides information on meeting the systems performance requirement of Chapter III 3b(2) of DOE 5820.2A.

22. DOE-JIO-025 of 9-87, "Comprehensive Implementation Plan for the DOE Defense Buried Transuranic-Contaminated Waste Program," describes long term management alternatives for all DOE sites with buried transuranic waste.

23. DOE/RW-0006, rev. 3, "Integrated Data Base for 1987: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics" of 9-87, with annual updates, summarizes data in the Integrated Data Base program on all domestic spent fuel and radioactive waste. Copies may be obtained from the Office of Nuclear Energy, Germantown, or the Technical Information Center, Oak Ridge.

24. DOE/DP/0020/1 "An Evaluation of Commercial Respository Capacity for the Disposal of Defense High Level Waste," of 6-85, evaluates the use of civilian repository capacity for the disposal of high level waste resulting from Defense activities, and provided to the President as one analytical input for his evaluation as required under the Nuclear Waste Policy Act.

25. Nuclear Waste Policy Act of 1982, as amended, (Public Law 97-425) provides for the development of repositories for the disposal of high-level waste and spent nuclear fuel.

26. Uranium Mill Tailings Radiation Control Act of 1978 (Pubic Law 95-604) establishes national policy for control of uranium mill tailings.

27. Energy Reorganization Act of 1974 (Public Law 93-438), in Section 202, assigns licensing and related regulatory authority to the Nuclear Regulatory Commission for facilities authorized for the express purpose of long-term storage of defense high-level waste.

28. Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-164), Section 213(a) authorizes the Waste Isolation Pilot Plant.

29. Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240) makes the Federal Government responsible for disposal of commercially generated greater than class C waste as defined in Section 3(b)(1)(D) of the Act.

30. Resource Conservation and Recovery Act of 1976, as amended, (Public Law 94-580) establishes safe and environmentally acceptable management practices for solid wastes.

31. Comprehensive Environment Response, Compensation, and Liability Act of 1980, as amended, (Public Law 96-510) to provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment, and the cleanup of inactive hazardous waste disposal sites.

32. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-270) provides for a fund (Superfund) which may be utilized by the Environmental Protection Agency, State, and local governments to clean up hazardous waste sites listed on the National Priorities List.

33. National Environmental Policy Act of 1969 (Public Law 91-190) requires the preparation of a statement which considers environmental impacts, alternatives, and resource commitments for any major Federal action that significantly affects the quality of the human environment.

34. Title 5 CFR 1320, Controlling Paperwork Burdens on the Public serves as the implementing regulation for Public Law 96-511, Paperwork Reduction Act of 1980 and directs the identification and clearance of information collections levied on the public, including contractors, State and local government units, and persons who perform services for the Department on an individual basis.

35. Title 10 CFR Part 60, of 2-25-81, Disposal of High-Level Wastes in Geologic Repositories, prescribes rules governing the licensing of the Department of Energy to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area.

36. Title 10 CFR Part 61, of 12-27-82, Licensing Requirements for Land Disposal of Radioactive Waste, establishes technical requirements for the land disposal of commercial low-level waste including site selection, site design, and facility operation and closure.

37. Title 10 CFR Part 71, of 8-5-83, Packaging and Transportation of Radioactive Material, establishes (1) requirements for packaging, preparation for shipment, and transportation of licensed material and (2) procedures and standards for NRC approval of packaging and shipping procedures for fissile material and for a quantity of other licensed material in excess of a Type A quantity.

38. Title 10 CFR Part 962, of 5-1-87, Radioactive Waste; Byproduct Material establishes the policy that all DOE radioactive waste which is hazardous under the Resource Conservation and Recovery Act will be subject to regulation under both the Resource Conservation and Recovery Act and Atomic Energy Act.

39. Title 40 CFR Part 61, of 7-1-87 National Emission Standards for Hazardous Air Pollutants, establishes standards for atmospheric emissions of hazardous air pollutants and radionuclides.

40. Title 40 CFR Part 191, of 9-19-85, Environmental Radioactive Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and transuranic Radioactive Waste, establishes radiation protection standards governing the management and storage of spent nuclear fuel or high-level or transuranic wastes at any disposal facility operated by DOE.

41. Title 40 CFR Part 192, of 1-5-83, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, concerns the control of residual radioactive material at designated processing or disposal sites.

42. Title 40 CFR Part 261, of 5-19-80, Identification and Listing of Hazardous Waste identifies those solid wastes that are subject to regulation as hazardous waste.

43. Title 40 CFR 262, of 5-19-80, Standards Applicable to Generators of Hazardous Waste, establishes manufacturing, packaging, labeling, record keeping, and reporting requirements for generators of hazardous waste.

44. Title 40 CFR Part 263, of 5-19-80, Standards Applicable to Transporters of Hazardous Waste, establishes manufacturing, record keeping, spill reporting and cleanup requirements for transporters of hazardous waste.

45. Title 40 CFR Part 264, of 5-19-80, Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities, establishes minimum national standards defining the acceptable management of hazardous waste.

46. Title 40 CFR Part 265, of 5-19-80, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, establishes minimum national standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure.

47. Title 49 CFR Parts 100-178, of 10-1-86, Other Regulations Relating to Transportation: Chapter I-Research and Special Programs Administration, Department of Transportation, prescribes the requirements of the DOT governing the transportation of hazardous material and the manufacture and testing of packaging and containers.

48. ANSI/ASME NQA-1 "American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1," sets forth requirements for the establishment and execution of quality assurance programs for the design, construction, operation, and decommissioning of nuclear facilities.

49. Atomic Energy Act of 1954, as amended 42 U.S.C. § § 2011-2292 (1982) which authorizes and directs the Atomic Energy Commission to produce special nuclear material in its own facilities to produce atomic weapons or atomic weapons parts and to research and develop military applications of atomic energy.

50. Nuclear Waste Policy Amendments Act of 1987 (part of the Budget Reconciliation Act for FY 1988 Public Law 100-203), of December 22, 1987, streamlines and focuses the high level waste management program established by the Nuclear Waste Policy Act.

DEFINITIONS

1. Below Regulatory Concern. A definable amount of low-level waste that can be deregulated with minimal risk to the public.

2. Buffer Zone. The smallest region beyond the disposal unit that is required as controlled space for monitoring and for taking mitigative measures, as may be required.

3. Byproduct Material. (Attachment 1, pages 4 and 5, paragraphs 38 and 49.)

   a. Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident or to the process of producing or utilizing special nuclear material. For purposes of determining the applicability of the Resource Conservation and Recovery Act to any radioactive waste, the term "any radioactive material" refers only to the actual radionuclides dispersed or suspended in the waste substance. The nonradioactive hazardous waste component of the waste substance will be subject to regulation under the Resource Conservation and Recovery Act.

   b. The tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute "byproduct material."

4. Certified Waste. Waste that has been confirmed to comply with disposal site waste acceptance criteria (e.g., the Waste Isolation Pilot Plant-Waste Acceptance Criteria for transuranic waste) under an approved certification program.

5. Closure.

   a. Operational Closure. Those actions that are taken upon completion of operations to prepare the disposal site or disposal unit for custodial care, (e.g., addition of cover, grading, drainage, erosion control).

   b. Final Site Closure: Those actions that are taken as part of a formal decommissioning or remedial action plan, the purpose of which is to achieve long-term stability of the disposal site and to eliminate to the extent practical the need for active maintenance so that only surveillance, monitoring, and minor custodial care are required.

6. Contact-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate does not exceed 200 mrem per hour.

7. Decommissioning. Actions taken to reduce the potential health and safety impacts of DOE contaminated facilities, including activities to stabilize, reduce, or remove radioactive materials or to demolish the facilities.

8. Decontamination. The removal of radioactive contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques.

9. Department of Energy Waste. Radioactive waste generated by activities of the Department (or its predecessors), waste for which the Department is responsible under law or contract, or other waste for which the Department is responsible. Such waste may be referred to as DOE waste.

10. Disposal. Emplacement of waste in a manner that assures isolation from the biosphere for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste.

11. Disposal Facility. The land, structures, and equipment used for the disposal of waste.

12. Disposal Site. That portion of a disposal facility which is used to dispose of waste. For low-level waste, it consists of disposal units and a buffer zone.

13. Disposal Unit. A discrete portion (e.g., a pit, trench, tumulus, vault, or bunker) of the disposal site into which waste is placed for disposal.

14. DOE Reservation. A location consisting of a DOE-controlled land area including DOE-owned facilities (e.g., the Oak Ridge Reservation) in some cases referred to as a Site, such as the Nevada Test Site, the Hanford Site; or as a Laboratory, such as the Idaho National Engineering Laboratory; or as a Plant, such as Rocky Flats Plant; or as a Center, such as the Feed Materials Production Center.

15. Free Liquids. Liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.

16. Engineered Barrier. A man-made structure or device that is intended to improve the performance of a disposal facility.

17. Hazardous Wastes. Those wastes that are designated hazardous by EPA regulations (40 CFR 261).

18. High-Level Waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

19. Institutional Control. A period of time, assumed to be about 100 years, during which human institutions continue to control waste management facilities.

20. Low-Level Waste. Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) byproduct material as defined by this Order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nCi/g.

21. Monitoring. The making of observations and measurements to provide data to evaluate the performance of a waste management operation.

22. Mixed Waste. Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.

23. Natural Barrier. The physical, chemical, and hydrological characteristics of the geological environment at the disposal site that, individually and collectively, act to retard or preclude waste migration.

24. Naturally Occurring and Accelerator Produced Radioactive Material. Any radioactive material that can be considered naturally occurring and is not source, special nuclear, or byproduct material or that is produced in a charged particle accelerator.

25. Near Surface Disposal. Disposal in the upper 30 meters of the earth's surface, (e.g. shallow land burial).

26. Performance Assessment. A systematic analysis of the potential risks posed by waste management systems to the public and environment, and a comparison of those risks to established performance objectives.

27. Pyrophoric Material. A material which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling or disposal hazard.

28. Quality Assurance. All those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily and safely in service. Quality assurance includes quality control, which comprises all those actions necessary to control and verify the features and characteristics of a material, process, product, or service to specified requirements.

29. Radioactive Waste. Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended and of negligible economic value considering costs of recovery.

30. Remedial Action. Activities conducted at DOE facilities to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination.

31. Remote-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate exceeds 200 mrem per hour. Test specimens of fissionable material irradiated for research and development purposes only and not for the production of power or plutonium may be classified as remote-handled transuranic waste.

32. Repository. A facility for the permanent deep geologic disposal of High Level or Transuranic Waste.

33. Spent Nuclear Fuel. Fuel that has been withdrawn from a nuclear reactor following irradiation, but that has not been reprocessed to remove its constituent elements.

34. Storage. Retrievable retention of waste pending disposal.

35. Storage Facility. Land area, structures, and equipment used for the storage of waste.

36. Storage Unit. A discrete part of the storage facility in which waste is stored.

37. Surplus Facility. Any facility or site (including equipment) that has no identified or planned programmatic use and is contaminated with radioactivity to levels that require controlled access.

38. Transuranium Radionuclide. Any radionuclide having an atomic number greater than 92.

39. Transuranic Waste. Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay. Heads of Field Elements can determine that other alpha contaminated wastes, peculiar to a specific site, must be managed as transuranic waste.

40. Treatment. Any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous, safer to transport, store or dispose of, or reduced in volume.

41. Treatment Facility. The specific area of land, structures, and equipment dedicated to waste treatment and related activities.

42. Waste Container. A receptacle for waste, including any liner or shielding material that is intended to accompany the waste in disposal.

43. Waste Management. The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities.

44. Waste Package. The waste, waste container, and any absorbent that are intended for disposal as a unit. In the case of surface contaminated, damaged, leaking, or breached waste packages, any overpack shall be considered the waste container, and the original container shall be considered part of the waste.

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CHAPTER I

HIGH-LEVEL WASTE

1. PURPOSE. To establish policies and guidelines for managing the Department of Energy's (DOE) high-level waste and any other materials which, because of their highly radioactive nature (level of health risk, longevity of health risk and thermal activity), require similar handling. (Unless demonstrated to the contrary, all high-level waste shall be considered to be radioactive mixed waste and subject to the requirements of the Atomic Energy Act, as amended, and the Resource Conservation and Recovery Act.)

2. POLICY. All high-level waste generated by DOE operations shall be safely stored, treated, and disposed of according to requirements set forth in this Order. Storage operations shall comply with applicable EPA standards and EPA/State regulations. Geologic disposal shall comply with both Nuclear Regulatory Commission regulations and EPA standards.

3. REQUIREMENTS.

   a. Design.

      (1) Requirements for New Facilities.

         (a) Design objectives for new facilities will assure protection of the public and operating personnel from hazards associated with normal high-level waste operations, accident conditions, and the effects of natural phenomena. Other objectives are compliance with DOE policies regarding nuclear safety, quality assurance, fire protection, pollution control, and safeguards and security protection for high-level waste and protection of essential operations from the effects of potential accidents.

         (b) Designs for new storage and treatment facilities shall meet the requirements of DOE 6430.1, applicable EH Orders and 40 CFR 264.

         (c) Designs for new storage facilities shall incorporate features to facilitate retrieval capability.

      (2) Design Review for Existing Facilities. Uniform requirements for the preparation of safety analysis reports for high-level waste operations, detailed in DOE 5481.1B, include the review of existing operational facilities based on current technical criteria. When hazards are identified that should be eliminated, controlled, or mitigated, appropriate upgrading, actions in accordance with paragraph 3a(1) above, shall be identified and implemented according to the requirements of DOE 5481.1B.

b. Storage Operations - Doubly Contained Systems.

(1) Waste Characterization.

(a) Liquid and solidified high-level waste shall be characterized consistent with radiation protection requirements to determine its hazardous components, per 40 CFR 261 and 40 CFR 264. Characterization shall satisfy requirements of paragraph 3b(1)(b) and may reflect knowledge of waste generating processes, laboratory testing results, and/or the results of periodic sampling and analysis. Examples of required information are chemical composition, physical properties, radionuclide concentrations, and pH.

(b) Waste characteristics and compatibility information shall be documented in a safety analysis report (see DOE 5481.1B) and be used as a basis for designing new facilities.

(2) Storage and Transfer Operations.

(a) All new high-level waste handling, transfer, and storage facilities (e.g., tanks, bins, pipelines, and capsules) shall be doubly contained.

(b) Singly contained pipelines may be used routinely for liquid waste that has a total radioactivity concentration of less than 0.05Ci/gal (4.9×10^{11}Bq/m^3). They may be used on a temporary basis for higher activity waste, if appropriate design and administrative controls are in place to mitigate adverse effects from a pipeline failure.

(c) Leaking waste storage systems shall not be used to receive waste unless secondary containment is maintained (e.g., liquid level maintained below leak point) and it can be shown with the support of formal documentation (e.g., Safety Analysis Reports, Operational Safety Requirements, Operating Standards) that temporary operation can be performed without releasing radioactive liquid to the environment.

(d) Secondary containment systems shall be capable of containing liquids that leak into them from the primary system and shall be equipped with transfer capability to retrieve the leaked liquid. Secondary containment systems for solidified high-level waste shall provide for physical isolation of the waste from the environment.

(e) To the extent practical, waste shall be segregated by type (sludge, salt, high activity, and low activity) to make accessibility for future processing easier.

(f) Where required, ventilation and filtration systems shall be provided to maintain radionuclide releases within the guidelines specified in DOE 5481.1B and applicable EH Orders. Ventilation systems shall be provided where the possibility exists for generating flammable and explosive mixtures of gases (e.g., hydrogen/air or organics/air).

(g) Facilities using cathodic corrosion protection systems shall include engineered features that protect against abnormal conditions such as stray currents or system failure. The cathodic protection systems shall be calibrated annually, and all sources of impressed current shall be inspected and/or tested at least every other month.

(h) Engineering controls shall be incorporated to provide liquid volume inventory data and to prevent spills, leaks, and overflows from tanks or containment systems. Examples are level-sensing devices, liquid level alarms, and maintenance of sufficient freeboard. The high-level waste shall be stored at pressures lower than those of ancillary systems (e.g., cooling water).

(i) Nuclear criticality safety considerations and controls shall be evaluated for normal operations and, before any significant operational changes are made, to protect against an uncontrolled nuclear criticality incident (e.g., dissolution of sludges for removal from tank).

(j) Each facility shall utilize remote maintenance features and other appropriate techniques to minimize personnel radiation exposure in accordance with DOE 5481.1B.

(k) Upon loss and subsequent recovery of normal electrical power, high-level waste transfer equipment shall not have the capability to restart without active operator action.

(3) Monitoring, Surveillance, and Leak Detection.

(a) Monitoring and leak detection capability shall be incorporated in the engineering systems (e.g., liquid level sensing devices and alarms for high-level waste liquid systems) to provide rapid identification of failed containment, and measurement of abnormal temperatures. The following, at a minimum, shall be monitored: temperature; pressure; radioactivity in ventilation exhaust; and liquid effluent streams associated with high-level waste facilities. Where the possibility exists for the generation of flammable and explosive mixtures of gases, monitoring shall be conducted. For facilities storing liquid high-level waste, the following should also be monitored: liquid levels; sludge volume; tank chemistry; condensate and cooling water.

(b) Leak detection systems (e.g., conductivity probes) shall be designed and operated so that they will detect the failure of the primary containment boundary, the occurrence of waste release, or accumulated liquid in the secondary containment system.

(c) A method for periodically assessing waste storage system integrity (e.g., coupons for corrosion testing, photographic and periscopic inspections, leak detectors, liquid level devices) shall be established, documented, and reported as required in the Waste Management Plan.

(d) Electrical monitoring and leak detection devices essential to safe operations shall be provided with backup power, as appropriate, to ensure operability under emergency conditions.

(e) Surface water systems associated with the high-level waste storage area shall be monitored according to applicable National Pollution Discharge Elimination System permits and EH Order requirements.

(f) A system of ground water or vadose zone monitoring wells meeting the Resource Conservation and Recovery Act requirements per 40 CFR 264 shall be installed, as a minimum, around clusters of liquid waste storage tanks.

(4) Contingency Actions.

(a) A tank or secondary containment system from which there has been a leak or a spill to the surrounding soil, or which is otherwise unfit for use, shall be removed from service until conditions can be evaluated fully.

(b) Upon detection of released radioactive materials, steps shall be taken to prevent further migration of the release to soil or surface water. Major contamination in the soil shall be removed or stabilized unless compliance with this requirement would cause greater harm to human health or the environment.

(c) If a release results from a spill and the integrity of the system is not damaged, the system may be returned to service as soon as action to correct the condition is completed.

(d) For emergency situations involving liquid high-level waste, spare capacity with adequate heat dissipation capability shall be maintained to receive the largest volume of liquid contained in any one tank. Adequate transfer pipelines also shall be maintained in operational condition. Interconnected tank farms with adequate transfer capabilities and spare capacity may be considered as a single tank farm for purposes of this requirement.

(e) A schedule and procedure shall be developed for monitoring, surveillance, and calibration checks. The frequency of these activities shall be based on the potential rate of equipment deterioration and the possibility of an environmental or human health incident, assuming that a malfunction from equipment failure or human error is not detected between checks. Schedules, procedures, and performance requirements shall be documented in the operating and maintenance documentation.

(f) Each high-level waste facility shall have response procedures for credible emergencies, as identified in the Safety Analysis Reports.

(5) Training.

(a) Operator training and qualification standards shall be developed and an up-to-date record of training status shall be maintained.

(b) Worker safety training must comply with the requirements of DOE 5480.1B and applicable EH Orders.

(6) Quality Assurance. Consistent with DOE Order 5700.6B, high-level waste operations shall be conducted in accordance with applicable requirements of the American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 and other appropriate national consensus standards. (See Attachment 1, page 5, paragraph 48).

(7) Waste Treatment and Minimization.

(a) For the purpose of economy and enhancing the safety of high-level waste storage, processing programs shall be developed and implemented at the generating site to reduce the quantity of waste being sent to storage, and techniques (e.g., evaporation) shall be implemented to reduce further the waste volume in storage.

(b) Programs should be developed and implemented to treat high-level waste in storage to prepare it for eventual conversion to suitable disposal forms, as such forms are developed. This may include separation of high-level waste into other waste categories, such as transuranic waste or low-level waste.

(c) The chemistry of liquid high-level waste shall be adjusted to control corrosion within design limits for the storage system.

(d) Treatment reagents shall not be placed in a tank system without proven effective mitigative action if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, or otherwise fail.

(e) Waste generation and waste management systems that significantly change the chemical and physical forms of the waste shall be technically assessed to assure compatibility and retrievability.

c. Storage Operations - Singly Contained Tank Systems.

(1) Waste Characterization. The contents of singly contained tank systems shall be characterized consistent with radiation protection requirements and the needs associated with safe storage to determine its hazardous components consistent with 40 CFR 261, 40 CFR 264, and State requirements. Characterization may reflect knowledge of waste generating processes, laboratory testing results, and/or the results of periodic sampling and analysis.

(2) Storage and Transfer Operations.

(a) Singly contained tank systems shall not be used to store fresh high-level waste from fuel reprocessing operations except under emergency conditions as determined by the Operations Office Manager.

(b) Storage and transfer operations shall be conducted within the limits defined in the Safety Analysis Reports according to DOE 5481.1B.

(c) Engineered systems shall be incorporated to provide waste volume inventory data, consistent with the nature of the specific waste stored in singly contained tanks. Examples are surface level sensing devices and interstitial liquid level sensing devices.

(d) Singly contained pipelines: (see paragraph 3b(2)(b)).

(e) Where active ventilation is required, systems shall be provided to maintain radionuclide releases at the point of discharge within the guidelines specified in applicable EH Orders for offsite concentrations and DOE 5480.1B for onsite dose commitment considerations.

(f) Nuclear criticality safety (see paragraph 3b(2)(i)).

(g) Each facility shall use remote maintenance features and other appropriate techniques to maintain personnel radiation exposure as low as reasonably achievable.

(h) Electrical power loss (see paragraph 3b(2)(k)).

(3) Monitoring, Surveillance, and Leak Detection.

(a) Monitoring and surveillance capability shall exist to provide liquid volume, waste inventory data, and identification of failed containment.

(b) A method for periodically assessing waste storage tank integrity (e.g., coupons, photographic inspections, leak detectors, liquid level devices) shall be established and documented.

(c) Emergency power (see paragraph 3b(3)(d)).

(d) Monitoring wells (see paragraph 3b(3)(f)).

(4) Contingency Action.

(a) A contingency action plan shall be maintained to respond to spills or leaks and other credible emergencies as identified in the Safety Analysis Reports.

(b) Leak mitigation (see paragraph 3b(4)(b)).

(c) For emergency situations involving pumpable liquid in singly contained tanks, appropriate equipment (e.g., pumps) shall be maintained to provide removal of liquid.

(5) Training. (see paragraphs 3b(5)(a) and (b)).

(6) Quality Assurance. (see paragraphs 3b(6)(a)).

d. Disposal. New and readily retrievable waste shall be processed and the high-level waste fraction disposed of in a geologic repository according to the requirements of the Nuclear Waste Policy Act of 1982 (Public Law 97-425) as amended. Options for permanent disposal of other waste, such as single shell tank waste, shall be evaluated and include such methods as in-place stabilization as well as retrieval and processing, as required for new and readily retrievable waste. Analytic predictions of disposal system performance shall be prepared and incorporated in the National Environmental Policy Act process.

(1) New and Readily Retrievable. New and readily retrievable existing high-level waste shall be processed to a final immobilized form in facilities such as the Defense Waste Processing Facility and the Hanford Waste Vitrification Plant preparatory to permanent disposal in a deep geologic repository.

(a) Waste acceptance specifications and criteria based upon the requirements outlined in 10 CFR 60.113, 10 CFR 60.131(b)(7), 10 CFR 60.135, 10 CFR 71.87, and 40 CFR 191 shall be developed for

high-level waste forms prior to startup of facilities that generate the disposal waste form. Specifications and criteria shall be approved by RW-20 and DP-12 for Defense Programs high-level waste forms and by RW-20 and NE-20 for West Valley Demonstration Project product. As examples, specifications and criteria for the Defense Waste Processing Facility vitrified high-level waste form are documented in DOE/RW-0125; those for the West Valley Demonstration Project high-level waste form are documented in DOE/RW-0136.

(b) Interim storage for solidified high-level waste awaiting transport to the designated geologic repository shall comply with applicable requirements in paragraph 3b.

(2) Other Waste. High-level waste that is not readily retrievable shall be monitored periodically in situ. Field offices shall reevaluate the safety of such waste to determine the need for corrective measures as necessary. Options for permanent disposal of singly contained tank waste shall be evaluated and include such methods as in-place stabilization as well as retrieval and processing, as required for new and readily retrievable waste in paragraph 3d(1).

CHAPTER II

MANAGEMENT OF TRANSURANIC WASTE

1. PURPOSE. To establish policies and guidelines for managing DOE transuranic waste starting with its generation, continuing through closure of the Waste Isolation Pilot Plant, and finally the management of buried transuranic waste as defined in Attachment 1, page 3, paragraph 22. Transuranic wastes that are also mixed wastes are subject to the requirements of the Atomic Energy Act and the Resource Conservation and Recovery Act. Additionally, buried transuranic wastes are subject to the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act.

2. POLICY. Transuranic waste shall be managed to protect the public and worker health and safety, as well as the environment, and performed in compliance with applicable radiation protection standards and environmental regulations. Practical and cost effective methods shall be used to reduce the volume and toxicity of transuranic waste.

   a. Transuranic waste shall be certified in compliance with the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage (if required), and sent to the Waste Isolation Pilot Plant.

   b. Transuranic waste that the Department of Energy has determined, with the concurrence of the EPA Administrator, does not need the degree of isolation provided by a geologic repository or, transuranic waste that cannot be certified or otherwise approved for acceptance at the Waste Isolation Pilot Plant, shall be disposed of by alternative methods. Alternative disposal methods shall be approved by DOE Headquarters (DP-12 and EH-1) and shall comply with the National Environmental Policy Act requirements and EPA/State regulations.

3. REQUIREMENTS.

   a. Waste Classification.

      (1) Any material that is known to be, or suspected of being contaminated with transuranium radionuclides shall be evaluated as soon as possible in the generating process, and determined to be either recoverable material, transuranic waste, low-level waste, mixed waste, or non-radioactive trash in order to avoid commingling the various material streams.

      (2) The lower concentration limit for transuranic waste (>100 nCi/g of waste) shall apply to the contents of any single waste package at the time of assay. The mass of the waste container including shielding shall not be used in calculating the specific activity of the waste.

(3) Radioactive wastes with quantities of transuranic radionuclides in concentrations of 100 nCi/g of waste or less shall be considered to be low-level waste, and shall be managed according to the requirements of Chapter III of this Order.

(4) Mixed transuranic waste:

(a) Mixed transuranic waste meeting the requirements of the Waste Isolation Pilot Plant-Waste Acceptance Criteria shall be sent to the Waste Isolation Pilot Plant.

(b) The Data Package prepared by the generators for the Waste Isolation Pilot Plant shall include information on the kinds and quantities of hazardous components contained in a waste package in accordance with applicable Resource Conservation and Recovery Act regulations.

(c) The determination whether the transuranic waste exhibits any hazardous characteristics or contains listed hazardous components may be based on knowledge of the waste generating process when the performance of a chemical analysis would significantly increase the radiation hazard to personnel.

b. Transuranic Waste Generation and Treatment.

(1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Transuranic waste reduction efforts shall be based on the implementation of techniques such as process modification, process optimization, materials substitution, decontamination, assay of suspect waste, and new technology development. Volume reduction techniques, such as incineration, compaction, extraction, and shredding, shall be implemented wherever cost effective and practical. Treatment facilities shall be permitted by the appropriate regulatory authority.

(2) Transuranic waste shall be assayed or otherwise evaluated to determine the kinds and quantities of transuranic radionuclides present prior to storage. Additionally, hazardous waste components shall be estimated or analyzed, whichever is appropriate.

(3) Mixed transuranic waste shall be treated, where feasible and practical, to destroy the hazardous waste component.

(4) Transuranic waste that is classified for security reasons shall be treated to remove or destroy the classified characteristic(s) prior to certification. Declassification should be performed by the generator.

c. Transuranic Waste Certification.

(1) Transuranic waste shall be certified, pursuant to the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage, and sent to the Waste Isolation Pilot Plant when it becomes operational.

(2) Uncertified transuranic waste shall not be sent to the Waste Isolation Pilot Plant except by special permission granted in response to a formal, documented request to the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee and the Waste Isolation Pilot Plant Waste Operations.

(3) All transuranic waste certification sites shall prepare a certification plan which describes how the waste meets each waste acceptance criterion described in the WIPP-DOE-069 (see Attachment 1, page 3, paragraph 18).

(4) Each certification plan shall define controls and other measures to ensure that each element of the certification plan is performed adequately as described. Requirements for these quality assurance activities are described in the WIPP-DOE-120 (see Attachment 1, page 2, paragraph 19).

(5) Certification plans, including associated quality assurance plans, shall be submitted for review, comment, and approval by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee.

(6) The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall submit certification and associated quality assurance plans to the state of New Mexico's Environmental Evaluation Group for review and comment prior to granting formal approval of such plans.

(7) The Environmental Evaluation Groups's comments on certification and associated quality assurance plans shall be resolved between the affected site and the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee prior to granting formal approval of the plans.

(8) Approved certification and associated quality assurance plans shall be implemented by the generating sites using specific, written operational procedures.

(9) Certification activities conducted under approved plans and procedures shall be audited periodically, in accordance with a written audit program plan on a continuing basis by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee. An Environmental Evaluation Group representative may accompany the Waste Isolation

Pilot Plant-Waste Acceptance Criteria Certification Committee audit team as an observer during site audits. The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee may grant certifying authority to the site following successful completion of an audit.

(10) The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall issue a formal audit report to the responsible field organization following the completion of an audit. The audit report shall describe the activities of the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee audit team and include a record of any findings, observations, and recommendations. Corrective actions taken as a result of a finding shall be verified on subsequent audits. The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall institute a tracking system to ensure timely resolution of findings, observations, recommendations, and the resultant corrective actions.

(11) Failure to resolve and close out previous audit findings and recommendations or sending noncomplying waste to the Waste Isolation Pilot Plant when judged by the Waste Acceptance Criteria Certification Committee to be a serious violation, shall result in suspension of certifying authority, pending satisfactory resolution.

d. Transuranic Waste Packaging.

(1) Newly generated transuranic waste shall be placed in noncombustible packaging that meets DOT requirements.

(2) All Type A transuranic waste containers shall be equipped with a method to prevent pressure buildup. Acceptable pressure-relief devices include permeable gaskets, vent clips, and filtered vents.

(3) The waste packages shall be marked, labeled, and sealed in accordance with the Waste Isolation Pilot Plant-Waste Acceptance Criteria, EPA, and DOT requirements, as defined in the WIPP-DOE-069, 40 CFR 262, Subpart C, and 49 CFR 172, Subparts D, E, and 49 CFR 173, Subpart I, where applicable, prior to shipping.

e. Temporary Storage at Generating Sites. The following activities shall be performed to assure the safe storage of transuranic wastes consistent with the requirements of applicable Resource Conservation and Recovery Act regulations:

(1) Transuranic waste shall be segregated or otherwise clearly identified to avoid the commingling of transuranic waste streams with high-level waste or low-level waste.

(2) Certified transuranic waste shall not be commingled with noncertified transuranic waste and shall be stored in a manner unlikely to alter its certification status.

(3) Transuranic waste in storage areas shall be protected from unauthorized access.

(4) Transuranic wastes in storage shall be monitored periodically to ensure that the wastes are not releasing their radioactive and/or hazardous constituents.

(5) Transuranic waste storage facilities shall be designed, constructed, maintained, and operated to minimize the possibility of fire, explosion, or accidental release of radioactive and/or hazardous components of the waste to the environment.

(6) Facilities which store transuranic waste shall have a contingency plan designed to minimize the adverse impacts of fire, explosion, or accidental release of hazardous components of the waste to the environment.

(7) Transuranic waste shall be stored in such a way so as to maintain radiation exposures as low as reasonably achievable.

f. Transportation/Shipping to the Waste Isolation Pilot Plant.

(1) Transuranic waste shipments shall comply with the provisions of DOE and DOT regulations, pursuant to DOE 1540.1.

(2) Transuranic waste shipments by truck shall be by a DOE-controlled carrier system. All transuranic waste shall be transported in certified Type B packaging.

(3) Shipping papers shall provide the information required by DOT (49 CFR 172, Subpart C), the Waste Isolation Pilot Plant Data Package (WIPP-DOE-157), and, as necessary, the manifest required by EPA (40 CFR 261, and 262).

(4) Distribution of the shipping papers shall be as follows:

(a) Shipper - one copy (or more);

(b) Carrier - one copy; and

(c) Waste Isolation Pilot Plant - two copies.

A copy of the papers will be returned by the Waste Isolation Pilot Plant to the shipper after emplacement of the waste at the Waste Isolation Pilot Plant.

(5) Appropriate EPA and State authorizations/permits shall be obtained for the transport system, as applicable.

(6) Placarding of shipments shall be carried out, as required by the regulations of DOT (contained in 49 CFR 172, Subpart F).

(7) All shipments of transuranic waste shall be in or on "exclusive use" vehicles, as defined in 49 CFR 173. Shipments shall be made as expeditiously as possible and shall be tracked from origin to destination using a real-time tracking communications system. Deviations from "preferred routes," delays and other irregularities detected by the system shall be investigated by the responsible traffic manager and a report sent to the Waste Isolation Pilot Plant within 90 days.

(8) The Albuquerque Operations Office shall develop a transuranic waste transportation management and operations plan which addresses, but is not limited to, the following considerations:

(a) Communication between transport vehicle and traffic management;

(b) Shipment tracking in transit;

(c) Security;

(d) Emergency notification/response;

(e) Shipment routing;

(f) Shipment notification as appropriate;

(g) Driver training and qualifications;

(h) Vehicle maintenance and inspection;

(i) State surveillance and inspection; and

(j) Inspection and recertification of transport packagings.

g. Interim Storage.

(1) Interim storage sites have been designated for storage of:

(a) Waste certified by off site generators;

(b) Waste certified by on site generators;

(c) Waste certified by interim storage personnel; and

(d) Uncertified waste received from on site and/or off site generators that is awaiting processing and certification.

(2) New interim storage facilities shall be sited, designed, constructed, and operated consistent with the requirements of applicable Resource Conservation and Recovery Act regulations and in a manner which satisfactorily addresses the following considerations at a minimum:

(a) Proximity to ground water and areas of seismic activity or flood plains shall be identified, and potential impacts shall be evaluated.

(b) The facility shall be designed and operated to minimize the run on and run off of precipitation. The run off control system shall provide for collecting and sampling run off, which may come in contact with the waste packages, prior to releasing the water for discharge.

(c) An environmental monitoring system shall be provided to detect any release and migration of major radioactive and hazardous components. Background levels of primary radioactive and hazardous waste components shall be determined.

(d) The storage facility design shall minimize the possibility for the unauthorized entry of persons.

(e) Incompatible wastes types shall be placed in separate packages and stored in segregated areas to prevent accidental ignition or chemical reaction.

(f) Waste storage facilities shall be designed and operated to minimize the exposure of personnel to radiation and chemicals.

(g) The storage facility operator shall inspect or verify routinely the condition of waste packages at the storage site for deterioration that may threaten human health or cause release of hazardous or radioactive components to the environment.

(h) The storage facility operator shall prepare plans that identify and describe how the site will be closed at the end of its active life. These plans shall address sampling, testing, and monitoring for major radioactive and hazardous waste components in soil and groundwater.

(i) Sites that use underground storage tanks for the storage of transuranic waste shall comply with the requirements of the Resource Conservation and Recovery Act, as applicable.

(j) Permits shall be acquired, as necessary, from appropriate regulatory entities for all the interim storage facility activities listed above.

(3) Existing interim storage sites shall be reviewed for consistency with the items in paragraph 3g(2). Any necessary corrective actions shall be performed based on a compliance schedule approved by appropriate regulatory authorities.

(4) Certified waste shall be stored in a manner unlikely to alter the certification of the waste package.

(5) Operators of interim storage facilities shall receive data package information (see Attachment 1, page 2, paragraphs 18 and 20) for each waste package from the generator. The operator shall store the waste generator's data and shall use the data to prepare a new Data Package at the time of shipment to the Waste Isolation Pilot Plant.

(6) Certified waste from off site generators does not require additional waste analysis or interim inspection, either upon receipt at the storage site or at the time of shipment to the Waste Isolation Pilot Plant. The generator of the certified waste is responsible for describing the waste form and waste package content.

(7) Waste that has been certified by a generator and shipped to an interim storage site shall be reshipped to the Waste Isolation Pilot Plant by the interim storage site in the following manner:

(a) The generator/certifier shall be identified as the generator/certifier and shipping originator.

(b) The interim storage site shall be identified as the reshipper.

(c) The shipping originator is responsible for certifiability of the waste form, waste package content, waste container procurement documentation, related Data Package information, and proper marking, labeling and placarding of the shipment. The shipping originator is responsible for any problems or discrepancies relating to the above-mentioned items that may occur during shipment to or emplacement at the Waste Isolation Pilot Plant.

(d) The reshipper is responsible for complete data package assembly, transmittal, proper marking, labeling, placarding, verifying the adequacy of the exterior condition of the container (e.g., no significant deterioration, bulging) and for proper shipment loading. The reshipper shall perform radiation dose rate and contamination surveys on each package. The reshipper is responsible for any problems or discrepancies involving the items mentioned above.

(8) The interim storage site is the shipping originator for stored waste certified at that site. Agreements may need to be developed between offsite waste generators and interim storage site operators/certifiers to define clearly their respective responsibilities.

h. Waste Isolation Pilot Plant.

(1) The Waste Isolation Pilot Plant is a defense activity of the DOE for the express purpose of providing a research and development facility to demonstrate the safe disposal of radioactive wastes resulting from defense activities.

(2) After the successful demonstration of the safe disposal of defense transuranic wastes, the Waste Isolation Pilot Plant will be the planned destination for all certified contact-handled and remote-handled transuranic waste, including mixed transuranic waste.

(3) Prior to shipment of waste, the Waste Isolation Pilot Plant shall validate the data package for that waste shipment.

(4) Upon receipt of waste, Waste Isolation Pilot Plant activities shall include, but not be limited to, the following:

(a) Verification of the package or assembly identification numbers against the Data Package;

(b) Measurement of the external radiation dose rate of the package and shipping container;

(c) Verification that contamination levels on the package and shipping container surfaces are within acceptable limits; and

(d) Review and proper processing of all shipping papers and manifests.

(5) During a period of up to 5 years from the first emplacement of waste in the Waste Isolation Pilot Plant, the waste shall be stored retrievably. This phase is called the Operations Demonstration Period.

(6) The decision for or against permanent disposal will be made at the end of the Operations Demonstration Period. If the decision is against using the Waste Isolation Pilot Plant as the repository, the stored waste shall be retrieved, repackaged, if necessary, and handled as directed by DOE. At that time, the Waste Isolation Pilot Plant shall be decontaminated, decommissioned, and closed, per agreement with the State of New Mexico.

(7) If the Waste Isolation Pilot Plant is designated a repository, the underground portion of the Waste Isolation Pilot Plant shall be sealed upon completion of all planned transuranic waste disposal activities. Surface facilities shall be decontaminated and decommissioned, and the Waste Isolation Pilot Plant will be closed, per agreement with the state of New Mexico.

(8) Following closure, the salt tailings will be disposed of in an environmentally acceptable manner and the site shall be returned to its natural state. Waste burial record shall be stored securely, and permanent markers shall be installed to minimize the possibility of future human intrusion.

i. Buried Transuranic-Contaminated Waste.

(1) Alternatives for the long term management of buried transuranic-contaminated waste at inactive DOE waste sites are addressed in Attachment 1, page 3, paragraph 22. The inactive waste sites are located at Idaho National Engineering Laboratory, Los Alamos National Laboratory, Oak Ridge National Laboratory, Savannah River Plant, and the Hanford Site. The program will lead to the closure of each waste site, in compliance with the National Environmental Policy Act requirements, the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act, and other applicable DOE, EPA, and State requirements.

(2) Each waste site shall be characterized to include information on types and quantities of radioactive and hazardous chemicals. This information shall be verified by appropriate sampling/analysis/monitoring techniques. The characterization and verification activities will also include determination of waste migration from the burial sites and potential environmental and health impacts.

(3) Each DOE site will develop a closure strategy for the waste site(s), utilizing the waste characterization data. Basic site-closure strategies which could be a combination of (a), (b), and (c) depending on site-specific and regulatory requirements, are as follows:

(a) Leave waste in place with enhanced monitoring.

(b) Leave waste in place, use enhanced confinement or in-situ immobilization techniques, and provide enhanced monitoring.

(c) Retrieve, process, and dispose of the transuranic waste at the Waste Isolation Pilot Plant.

(4) Each DOE site will develop a site closure plan, which will include, as a minimum, the following:

(a) National Environmental Policy Act requirements;

(b) Applicable Federal, State and local regulations (e.g., DOE, EPA, State);

(c) Permits required;

(d) Selected closure strategy and justification;

(e) A waste retrieval strategy:

1 Methodology for segregating transuranic and low-level waste,

2 Identification of mixed waste components,

3 Certification of transuranic waste for disposal at the Waste Isolation Pilot Plant,

4 Management of low-level waste and mixed waste, and

5 Plans for maintaining exposures as low as reasonably achievable;

(f) Budget requirements by fiscal year;

(g) Schedule for closure strategy completion; and

(h) Post-closure monitoring and controls.

j. Quality Assurance. Consistent with DOE Order 5700.6B, transuranic waste operations shall be conducted in accordance with applicable requirements of the American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (see Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

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CHAPTER III

MANAGEMENT OF LOW-LEVEL WASTE

1. PURPOSE. To establish policies, requirements and guidelines, for managing the Department's solid low-level waste.

2. POLICY.

   a. DOE-low-level waste operations shall be managed to protect the health and safety of the public, preserve the environment of the waste management facilities, and ensure that no legacy requiring remedial action remains after operations have been terminated.

   b. DOE-low-level waste shall be managed on a systematic basis using the most appropriate combination of waste generation reduction, segregation, treatment, and disposal practices so that the radioactive components are contained and the overall system cost effectiveness is maximized.

   c. DOE-low-level waste shall be disposed of on the site at which it is generated, if practical, or if on-site disposal capability is not available, at another DOE disposal facility.

   d. DOE-low-level waste that contains non-radioactive hazardous waste components (mixed waste) shall conform to the requirements of this order, applicable EH Orders, and shall also be regulated by the appropriate regional authorities under the Resource Conservation and Recovery Act.

3. REQUIREMENTS.

   a. Performance Objectives. DOE-low-level waste that has not been disposed of prior to issuance of this Order shall be managed on the schedule developed in the Implementation Plan (See page 7, paragraph 10) to accomplish the following:

      (1) Protect public health and safety in accordance with standards specified in applicable EH Orders and other DOE Orders.

      (2) Assure that external exposure to the waste and concentrations of radioactive material which may be released into surface water, ground water, soil, plants and animals results in an effective dose equivalent that does not exceed 25 mrem/yr to any member of the public. Releases to the atmosphere shall meet the requirements of 40 CFR 61. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.

(3) Assure that the committed effective dose equivalents received by individuals who inadvertently may intrude into the facility after the loss of active institutional control (100 years) will not exceed 100 mrem/yr for continuous exposure or 500 mrem for a single acute exposure.

(4) Protect ground water resources, consistent with Federal, State and local requirements.

b. Performance Assessment.

(1) Field organizations with disposal sites shall prepare and maintain a site specific radiological performance assessment for the disposal of waste for the purpose of demonstrating compliance with the performance objectives stated in paragraph 3a.

(2) Each field organization shall, for each DOE reservation within its cognizance, prepare and maintain an overall waste management systems performance assessment supporting the combination of waste management practices used in generation reduction, segregation, treatment, packaging, storage, and disposal. Background and guidance on waste management systems performance assessment is provided in Attachment 1, page 3, paragraph 21.

(3) Where practical, monitoring measurements to evaluate actual and prospective performance should be made at locations as required, within and outside each facility and disposal site. Monitoring should also be used to validate or modify the models used in performance assessments.

c. Waste Generation.

(1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Waste reduction efforts shall include consideration of process modification, process optimization, materials substitution and decontamination.

(2) Waste Generation Reduction. All DOE-low-level waste generators shall establish auditable programs (goals, incentives, procedures, and reports) to assure that the amount of low-level waste generated and/or shipped for disposal is minimized.

(3) Waste Segregation. Each DOE-low-level waste generator shall separate uncontaminated waste from low-level waste to facilitate cost effective treatment and disposal.

(4) Waste Minimization. Each DOE-low-level waste generator preparing a design for a new process or process change shall incorporate principles into the design that will minimize the generation of low-level waste.

d. Waste Characterization.

(1) Low-level waste shall be characterized with sufficient accuracy to permit proper segregation, treatment, storage, and disposal. This characterization shall ensure that, upon generation and after processing, the actual physical and chemical characteristics and major radionuclide content are recorded and known during all stages of the waste management process.

(2) Waste characterization data shall be recorded on a waste manifest, as required by paragraph 3m, and shall include:

(a) The physical and chemical characteristics of the waste.

(b) Volume of the waste (total of waste and any solidification or absorbent media).

(c) Weight of the waste (total of waste and any solidification or absorbent media).

(d) Major radionuclides and their concentrations.

(e) Packaging date, package weight, and external volume.

(3) The concentration of a radionuclide may be determined by direct methods or by indirect methods such as use of scaling factors which relate the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurements.

e. Waste Acceptance Criteria.

(1) Waste shipped from one field organization to another for treatment, storage or disposal shall be done in accordance with the requirements established by the operations office having responsibility for operations of the receiving facility.

(2) Waste acceptance criteria shall be established for each low-level waste treatment, storage, and disposal facility, and submitted to the cognizant field organization.

(3) Generators of waste shall implement a low-level waste certification program to provide assurance that the waste acceptance criteria for

any low-level waste treatment, storage, or disposal facility used by the generator are met. Generators and facilities receiving the waste are jointly responsible for assuring compliance with waste acceptance criteria. Generators are financially responsible for actions required due to nonconformance.

(4) Generator low-level waste certification programs shall be subject to a periodic audit by operators of facilities to which the waste is sent by the generator.

(5) The waste acceptance criteria for storage, treatment, or disposal facilities shall address the following issues:

(a) Allowable quantities/concentrations of specific radioisotopes to be handled, processed, stored or disposed of;

(b) Criticality safety requirements (waste forms and geometries);

(c) Restrictions regarding low-level waste classified for security reasons;

(d) External radiation and internal heat generation;

(e) Restrictions on the generation of harmful gases, vapors, or liquids in waste;

(f) Chemical and structural stability of waste packages, radiation effects, microbial activity, chemical reactions, and moisture;

(g) Restrictions for chelating and complexing agents having the potential for mobilizing radionuclides; and

(h) Quantity of free liquids.

f. Waste Treatment.

(1) Waste shall be treated by appropriate methods so that the disposal site can meet the performance objectives stated in paragraph 3a.

(2) Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. Use of waste treatment techniques to increase the life of the disposal facility and improve long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective.

(3) The development of large scale waste treatment facilities shall be supported by appropriate the National Environmental Policy Act documentation in addition to the following:

(a) A document shall be prepared that analyzes waste streams needing treatment, treatment options considered and a rationale for selection of proposed treatment processes;

(b) A construction design report including projected waste throughputs and treatment methods, construction and operating cost estimates; and

(c) A Safety Analysis Report.

(4) Operation of waste treatment facilities shall be supported by adequate documentation including the following:

(a) Operation and maintenance procedures;

(b) Personnel training and qualification procedures;

(c) Monitoring and emergency response plans; and

(d) Records shall be maintained for each package of low-level waste that enters and leaves the treatment facility.

g. Shipment.

(1) The volume of waste and number of shipments of low-level waste shall be minimized and the shipments will be conducted based on plans developed by field organizations. Off site shipment of low-level waste shall be in compliance with DOE 1540.1.

(2) Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the off-site disposal facility to which the waste is to be shipped.

(3) Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. The certification program shall be auditable and able to withstand independent review.

(4) Each package of waste must comply with the labeling requirements of DOE 1540.1.

h. Long-Term Storage.

(1) Low-level waste shall be stored by appropriate methods, to achieve the performance objectives stated in paragraph 3a.

(2) Records shall be maintained for all low-level waste that enters and leaves the storage facility, (see paragraph 3m).

(3) The development and operation of a waste storage facility shall be supported by the following documentation (two or more of these may be combined for convenience):

(a) An analysis which identifies the need for the storage facility;

(b) A Construction Design Report, including projected waste planned for storage; construction and operating cost estimates;

(c) A Safety Analysis Report and appropriate National Environmental Policy Act documentation; and

(d) Operational procedures and plans.

(4) Storage of waste to allow for nuclides to decay or storage of wastes until they can be disposed of by approved methods are acceptable.

i. Disposal.

(1) Low-level waste shall be disposed of by methods appropriate to achieve the performance objectives stated in paragraph 3a, consistent with the disposal site radiological performance assessment in paragraph 3b.

(2) Engineered modifications (stabilization, packaging, burial depth, barriers) for specific waste types and for specific waste compositions (fission products, induced radioactivity, uranium, thorium, radium) for each disposal site shall be developed through the performance assessment model (see paragraph 3b(1)). In the course of this process, site specific waste classification limits may be developed if operationally useful in determining how specific wastes should be stabilized and packaged for disposal.

(3) An Oversight and Peer Review Panel of DOE, contractor, and other specialists in performance assessments will be selected by DP-12, with participation by EH-1 and operations office representatives. Through consultation and review, this panel shall ensure consistency and technical quality around the DOE complex in the development and application of performance assessment models that include site specific geohydrology and waste composition.

(4) Disposition of waste designated as greater-than-class C, as defined in 10 CFR 61.55, must be handled as special cases. Disposal systems for such waste must be justified by a specific performance assessment through the National Environmental Policy Act process and with the concurrence of DP-12 for all DP-1 disposal facilities and of NE-20 for those disposal facilities under the cognizance of NE-1.

(5) The following are additional disposal requirements intended either to improve stability of the disposal site or to facilitate handling and provide protection of the health and safety of personnel at the disposal site:

(a) Waste must not be packaged for disposal in cardboard or fiberboard boxes, unless such boxes meet DOT requirements and contain stabilized waste with a minimum of void space. For all types of containers, void spaces within the waste and between the waste and its packaging shall be reduced as much as practical.

(b) Liquid wastes, or wastes containing free liquid, must be converted into a form that contains as little freestanding and noncorrosive liquid as is reasonably achievable, but, in no case, shall the liquid exceed 1 percent of the volume of the waste when the waste is in a disposal container, or 0.5 percent of the volume of the waste processed to a stable form.

(c) Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

(d) Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged as identified in paragraph 3i(5)(e).

(e) Waste in a gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C.

(f) Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.

(6) Waste containing amounts of radionuclides below regulatory concern, as defined by Federal regulations, may be disposed without regard to radioactivity content.

(7) Disposal Site Selection.

(a) Disposal site selection criteria (based on planned waste confinement technology) shall be developed for establishing new low-level waste disposal sites.

(b) Disposal site selection shall be based on an evaluation of the prospective site in conjunction with planned waste confinement technology, and in accordance with the the National Environmental Policy Act process.

(c) The disposal site shall have hydrogeologic characteristics which, in conjunction with the planned waste confinement technology, will protect the groundwater resource.

(d) The potential for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes shall be considered in site selection.

(e) Site selection criteria shall address the impact on current and projected populations, land use resource development plans and nearby public facilities, accessibility to transportation routes and utilities, and the location of waste generation.

(8) Disposal Facility and Disposal Site Design.

(a) Design criteria shall be established prior to selection of new disposal facilities, new disposal sites, or both. These design criteria shall be based on analyses of physiographic, environmental, and hydrogeological data to assure that the policy and requirements of this Order can be met. The criteria shall be also based on assessments of projected waste volumes, waste characteristics, and facility and disposal site performance.

(b) Disposal units shall be designed consistent with disposal site hydrology, geology, and waste characteristics and in accordance with the National Environmental Policy Act process.

(9) Disposal Facility Operations.

(a) Field organizations shall develop and implement operating procedures for low-level waste disposal facilities that protect the environment, health and safety of the public, and facility personnel; ensure the security of the facility; minimize the need for long-term control; and meet the requirements of the closure/post-closure plan.

(b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.

(c) Operating procedures shall include training for disposal facility operating personnel, emergency response plans, and a system of reporting unusual occurrences according to DOE 5000.3.

(d) Waste placement into disposal units should minimize voids between containers.

(e) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on filled disposal units.

j. Disposal Site Closure/Post Closure.

(1) Field organizations shall develop site-specific comprehensive closure plans for new and existing operating low level waste disposal sites. The plan shall address closure of disposal sites within a 5-year period after each is filled and shall conform to the requirements of the National Environmental Policy Act process. Performance objectives for existing disposal sites shall be developed on a case-by-case basis as part of the National Environmental Policy Act process.

(2) During closure and post closure, residual radioactivity levels for surface soils shall comply with existing DOE decommissioning guidelines.

(3) Corrective measures shall be applied to new disposal sites or individual disposal units if conditions occur or are forecasted that could jeopardize attainment of the performance objectives of this Order.

(4) Inactive disposal facilities, disposal sites, and disposal units shall be managed in conformance with the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act, or, if mixed waste is involved, may be included in permit applications for operation of contiguous disposal facilities.

(5) Closure plans for new and existing operating low-level waste disposal facilities shall be reviewed and approved by the appropriate field organization.

(6) Termination of monitoring and maintenance activity at closed facilities or sites shall be based on an analysis of site performance at the end of the institutional control period.

k. Environmental Monitoring.

(1) Each operational or non-operational low-level waste treatment, storage, and disposal facility shall be monitored by an environmental monitoring program that conforms with DOE 5484.1 and, at a minimum, meet the requirements of paragraph 3K(2) through 3K(4).

(2) The environmental monitoring program shall be designed to measure: (a) operational effluent releases; (b) migration of radionuclides; (c) disposal unit subsidence; and (d) changes in disposal facility and disposal site parameters which may affect long-term site performance.

(3) Based on the characteristics of the facility being monitored, the environmental monitoring program may include, but not necessarily be limited to, monitoring surface soil, air, surface water, and, in the subsurface, soil and water, both in the saturated and the unsaturated zones.

(4) The monitoring program shall be capable of detecting changing trends in performance sufficiently in advance to allow application of any necessary corrective action prior to exceeding performance objectives. The monitoring program shall be able to ascertain whether or not effluents from each treatment, storage, or disposal facility or disposal site meet the requirements of applicable EH Orders.

l. Quality Assurance. Consistent with DOE 5700.6B, the low-level waste operational and disposal practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (See Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

m. Records and Reports.

(1) Each field organization shall develop and maintain a record keeping system that records the following: a historical record of waste generated, treated, stored, shipped, disposed of, or both, at the facilities under its cognizance. The data maintained shall include all data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of. The data maintained in the system shall be based on the data recorded on waste manifests.

(2) Waste Manifest. Records shall be kept and accompany each waste package from generator through final disposal. The manifest shall contain data necessary to document the proper classification, and assist in determining proper treatment, storage, and disposal of the waste. Waste manifests will be kept as permanent records. At a minimum, the following data will be included:

(a) Waste physical and chemical characteristics,

(b) Quantity of each major radionuclide present,

(c) Weight of the waste (total of waste and any solidification or absorbent media),

(d) Volume of the waste (total of waste and any solidification or absorbent media), and

(e) Other data necessary to demonstrate compliance with waste acceptance criteria.

CHAPTER IV

MANAGEMENT OF WASTE CONTAINING AEA 11e(2) BYPRODUCT MATERIAL AND NATURALLY OCCURRING AND ACCELERATOR PRODUCED RADIOACTIVE MATERIAL

1. PURPOSE. To establish policies and guidelines for managing DOE waste containing byproduct material, as defined by section 11e(2) of the Atomic Energy Act of 1954, as amended, and Naturally Occurring and Accelerator Produced Radioactive Material.

2. POLICY. DOE waste containing naturally occurring and accelerator produced radioactive material or byproduct material as defined by section 11e(2) of the Atomic Energy Act, as amended, or similarly contaminated residues derived from DOE remedial actions, shall be stored, stabilized in-place, and/or disposed of consistent with the requirements of the residual radioactive material guidelines contained in 40 CFR 192. Small volumes of DOE waste containing 11e(2) byproduct material or naturally occurring and accelerator produced radioactive material may be managed as low-level waste in accordance with the requirements of Chapter III of this Order. If the waste is classified as mixed waste, management also must be in compliance with the requirements of the Resource Conservation and Recovery Act.

3. REQUIREMENTS.

a. Waste Management.

(1) Waste covered under this chapter in quantities too large for acceptance at DOE low-level waste disposal sites shall be managed according to the requirements of 40 CFR 192, and disposed of at specially designated DOE sites or tailing disposal sites established under the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604). These disposal sites should be identified and developed as needed in support of DOE remedial actions, and will normally be located in the State in which the wastes are generated.

(2) With the approval of the appropriate field organization, small volumes of 11(e) byproduct material and naturally occurring and accelerator produced radioactive material waste may be disposed of at DOE low-level waste sites in accordance with the requirements of Chapter III of this Order.

(3) All DOE waste containing:

(a) Naturally occurring and accelerator produced radioactive material mixed with the Resource Conservation and Recovery Act hazardous chemicals shall be managed as hazardous waste under the Resource Conservation and Recovery Act.

(b) Byproduct 11e(2) (or a combination of 11e(2) byproduct and naturally occurring and accelerator produced radioactive material) mixed with the Resource Conservation and Recovery Act hazardous chemicals, shall be managed consistent with both the Resource Conservation and Recovery Act and 40 CFR Part 192.

b. Quality Assurance. Consistent with DOE 5700.6B, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (reference 48) and other appropriate national consensus standards.

CHAPTER V

DECOMMISSIONING OF RADIOACTIVELY CONTAMINATED FACILITIES

1. PURPOSE. To establish policies and guidelines for the management, decontamination, and decommissioning of radioactively contaminated facilities under DOE ownership or control.

2. POLICY. Radioactively contaminated facilities for which DOE is responsible shall be managed in a safe, cost-effective manner to assure that release of, and exposure to, radioactivity and other hazardous materials comply with Federal and State standards. Facilities, equipment, and valuable materials shall be recovered and reused when practical.

3. REQUIREMENTS. DOE organizations shall develop and document their programs to provide for the surveillance, maintenance, and decommissioning of contaminated facilities. The decommissioning programs shall be implemented as follows:

   a. General.

      (1) Each field organization shall prepare and maintain a complete list of contaminated facilities both operational and excess under its jurisdiction. A continuous record of jurisdictional program responsibility for all contaminated facilities shall be maintained by the cognizant field organization for use in assigning decommissioning responsibility.

      (2) Operational records (e.g., facility design drawings and modifications, characterization data on contamination levels, prior decontamination activities, and incident reports required by DOE Orders) for all contaminated facilities shall be maintained by the cognizant field organization for use in preparing decommissioning plans.

      (3) Planning for facility decommissioning shall be initiated during the design phase for new facilities and prior to termination of operations for existing operational facilities. Such plans shall consider the 2-year budget cycle to assure adequate funding availability.

      (4) Program offices shall be responsible for placing the facility in a safe storage condition, providing surveillance and maintenance, and decommissioning the facilities under their jurisdiction when they become excess to programmatic needs, or for finding another programmatic sponsor for them. For multiple user facilities, the program office shall determine decommissioning liability for user program offices based on each program's overall contribution to the contamination or some other mutually acceptable basis. This cost sharing formula may be applied when the facility is placed in safe storage or during surveillance and maintenance, when appropriate.

(5) Responsibility for contaminated facilities may be transferred from one program organization to another by mutual agreement of the programs involved. The program organization to which a facility is transferred shall accept full responsibility for surveillance, maintenance, and decommissioning of the facility according to the requirements of this Order. Agreements to transfer facilities for functional purposes shall be in writing and shall identify explicitly the concurrent transfer of responsibility for surveillance, maintenance, and decommissioning.

(6) The DP and NE decommissioning programs exist for the primary purpose of managing and decommissioning the contaminated facilities currently assigned to them. Other contaminated facilities that have no programmatic sponsor, or that are excess to program needs and have a current sponsor, shall be assigned to the DP and NE programs for management and decommissioning with the approval of the program secretarial officers involved or their designees.

(7) Decommissioning expertise gained by DOE and its contractors is available at most major DOE facilities, and should be utilized by DOE programs. A computerized Decommissioning Technology data base is maintained at the Richland Operations Office. Published reports on nuclear facility decommissioning may be obtained from the Remedial Action Program Information Center at Oak Ridge National Laboratory.

b. Facility Design. Facilities in which radioactive or other hazardous materials are utilized shall be designed to simplify decontamination and decommissioning and/or increase the potential for reuse. Features and procedures that simplify and facilitate decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method or conversion to other use. Examples of features to be incorporated are identified in DOE 6430.1.

c. Post-Operational Activities.

(1) DOE Program organizations shall identify contaminated facilities under their jurisdiction, document the potential for reuse and recovery of materials and equipment, and develop schedules for decommissioning them. Projects consisting of one or more facilities shall be identified as appropriate, and priorities shall be developed based on:

(a) Maintaining employee and public health and safety,

(b) Protection of the environment,

(c) Compliance with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act,

the Superfund Amendments and Reauthorization Act, and other contractual or legal requirements,

(d) Cost effective program management (e.g., maintaining manpower pools, selecting economical decommissioning alternatives), and

(e) Future site plans.

(2) Program organizations shall assure that, prior to initiation of decommissioning activities, adequate surveillance and maintenance is performed for their surplus facilities to meet applicable radiation protection (DOE 5480.1B), hazardous chemical and safety standards, to maintain physical safety and security, and to reduce potential public and environmental hazards. All high-level waste and stored hazardous materials should be removed by the operator as part of the last operational activities prior to entering into the decommissioning phase.

d. Decommissioning Project Activities.

(1) Characterization. Baseline data for each project shall be collected to support a thorough physical, chemical, and radiological characterization to fulfill the requirements of the National Environmental Policy Act reviews, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act preliminary assessment/site investigations, and detailed engineering. The baseline data shall include:

(a) Drawings, photographs, and other records reflecting the as-built and as-modified condition of the facility and grounds;

(b) The condition of all structures, existing protective barriers, and systems installed to ensure public, occupational, and environmental safety;

(c) The type, form, quantity, and location of hazardous chemical and radioactive material from past operations at the site; and

(d) Information on factors that could influence the selection of decommissioning alternatives (safe storage, entombment, dismantlement) such as potential future use, long-range site plans required by DOE 4300.1B, facility condition, and potential health, safety, and environmental hazards.

(2) Environmental Review Process. The Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act and/or the Resource Conservation and Recovery

Act status of each project shall be identified and a remedial investigation/feasibility study performed if required. Based on the results of the remedial investigation/feasibility study and any additional data deemed necessary by the responsible field organization, an appropriate environmental review shall be performed according to the requirements of the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act. Candidate decommissioning alternatives shall be identified, assessed, and evaluated, and a preferred decommissioning alternative selected based on the results of the environmental review.

(3) Engineering. Technical engineering planning for each project shall be conducted during the environmental review process to assure that alternative actions and associated environmental issues are identified and assessed, and to support preparation of environmental documentation. Detailed engineering will be initiated after a preferred alternative is selected. A Decommissioning Project Plan shall be prepared for approval by the appropriate program office in compliance with DOE 4700.1. The Plan shall include the following:

(a) Physical, chemical, and radiological characterizational data or references to such data;

(b) A summary evaluation of decommissioning alternatives for the facility including the preferred alternative;

(c) Plans for meeting requirements from the environmental review process (National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act) and all necessary permits;

(d) Radiological criteria to be used (modifications, if any, to guidance presented in applicable EH Orders must be approved by the Headquarters program organization and EH-1);

(e) Projections of occupational exposure;

(f) Estimated quantities of radioactive waste to be generated; and

(g) Detailed administrative, cost, schedule, and management information.

(4) Decommissioning Operations.

(a) The decommissioning project shall be conducted in accordance with guidance from Headquarters program offices and the Decommissioning Project Plan. Significant deviations shall be approved by the responsible field organization in consultation with the appropriate program office.

(b) Approval of MA-22 (Office of Project and Facilities Management) shall be obtained before initiating activities to demolish a DOE-owned facility, per the requirements of DOE 4300.1B.

(c) Status reports on project activities shall be prepared in accordance with the requirements of DOE 1332.1A or 4700.1, as appropriate.

(d) Information on waste generation shall be provided to the Integrated Data Base Program, as required.

(e) Decommissioning operations shall be considered a waste generator and shall meet generator requirements contained in the previous chapters of this Order.

(5) Post Decommissioning Activities.

(a) After decommissioning operations have been completed, a final radiological and chemical survey report (or an independent verification survey report, at remote sites) and a project fi report shall be prepared. The final report shall include a description of the project, the final status of the property, and the lessons learned from the project.

(b) The responsible field organization shall compile a Project Data Package consisting of, as a minimum: the Record of Completion; the final radiological and chemical survey report; the Project Final Report; and for remote sites, an independent verification survey report, Certification Docket, and appropriate public notices. The Project Data Package shall be retained permanently in the field organization archives.

(c) The responsible program organization shall assure that any necessary long-term maintenance and surveillance or other safety controls are provided for the decommissioned property.

(d) The decommissioned property may be released from DOE ownership according to the requirements of DOE 4300.1B, if the responsible program organization, in consultation with the Office of the Assistant Secretary EH-1, certifies that the property meets

applicable release criteria for residual radioactivity and hazardous chemicals, and the property is identified properly by notation in the legal land records of the local government entity.

(e) The decommissioned property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals. If appropriate release criteria are not met, the property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals provided that adequate safety controls are maintained.

e. Quality Assurance. Consistent with DOE 5700.6B, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

CHAPTER VI

WASTE MANAGEMENT PLAN OUTLINE

1. PURPOSE. To provide guidance on the development and maintenance of a waste management plan for each site that generates, treats, stores, or disposes of DOE waste.

2. DISCUSSION. The Order for radioactive waste management emphasizes accountable operational requirements set forth in a prescriptive style. Each site that generates, treats, stores, or disposes of DOE radioactive waste, or decommissions contaminated facilities, is responsible for complying with these requirements in terms of how operations are conducted and how these activities are documented. The documentation serves as the written word that the actual operations are being conducted within the framework of the Order.

   The primary purpose of the Waste Management Plan is to compile and consolidate an annual report on how waste management operations are conducted, what facilities are being used to manage wastes, what forces are acting to change current waste management systems, and what plans are in store for the coming fiscal year. The scope of the plan includes the management of both radioactive and hazardous constituents in the Department's waste, whether these are separated or mixed. The body of the Waste Management Plan should not include descriptions of Environmental Restoration activities, as this information is provided under a separate program. However, several documents prepared with Environmental Restoration funding may be cited in Attachment VI-1 to the Waste Management Plan; this preserves consistency in accounting for documentation. Also, the Waste Management Plan includes the management of the DOE's liquid low-level waste which is not governed specifically by this Order.

   The waste management plan provides a vehicle to report current waste management practices and plans for the coming year. It serves as the core document in the site's waste management operations and should reference supporting documentation as appropriate. The attachment to the Waste Management plan allows sites to account for major documentation as required by the Order.

3. FORMAT FOR WASTE MANAGEMENT PLANS.

   a. Executive Summary. An Executive Summary is mandatory for each Waste Management Plan.

      (1) As a rule of thumb, limit the length of the executive summary to 10 percent or less of the length of the Waste Management Plan. Summarize the past year in waste management including the principal regulatory/environmental issues and the degree to which planned activities were accomplished.

(2) Provide a forecast of the coming year and discuss project startups, facility modifications, regulatory issues, and the waste management budget.

b. General Site Information.

(1) Organization and Administration. Indicate the DOE field organization(s) and contractor(s) responsible for managing waste treatment, storage and disposal operations; discuss approval authorities, and clarify DOE/contractor interfaces. Include relationships between contractor's operations if multiple contractors are involved.

(a) Use charts to enhance text descriptions of organizational structure. Describe lead responsibilities of functional groups including the organization responsible for preparing this plan.

(b) Show the relationships, in a separate section, between documents that guide and support the waste management program at the site. Identify the organization responsible for maintaining up-to-date copies of all reference documents at the field organization level.

(2) Site Description. Include a brief description of site location, demography size, geographic features, climate, geologic and hydrogeologic conditions, and primary mission where waste management operations are conducted.

c. Radioactive and Mixed Waste Management. This section of the plan describes radioactive and mixed waste management operations at the site and includes descriptions of the waste management systems and facilities, the characteristics of wastes managed, and discussion of the problems, recommendations, and the future direction of the site operations. The top-level divisions of this section should be by waste type; i.e., high-level, transuranic, and low-level. These categories should be subdivided further by waste phase, liquid, solid, or gaseous (where appropriate).

(1) System and Facility Descriptions.

(a) Overview. For each of the categories of waste provide an overview of the systems that treat, store, and dispose of these wastes. Use flowcharts to indicate waste sources, intermediate processing steps, and ultimate disposition of waste streams. Identify which waste streams are classified as mixed waste.

(b) Facility Descriptions. Identify the facilities that comprise the waste management systems according to waste type and waste phase and describe the facilities in the following order: Treatment Facilities; Storage Facilities; and Disposal Facilities. Detailed descriptions of facility operations are not required, but enough explanation should be given to support the discussion of planned

activities. Examples of appropriate information include location maps, radiological and chemical characteristics of waste treated/stored/disposed, facility operating parameters, unique or special equipment used, and status of permitting activities. Include facility layout drawings and flow sheets where appropriate.

(2) Current and Future Plans. This section is used to document the planning efforts at the site and indicate the direction of radioactive and mixed waste management activities. It should be organized to reflect site-specific situations. In general, it should: define problems with, and/or new requirements for, waste management systems; cite specific recommendations and strategy for making improvements; identify actions to achieve compliance with regulations; and discuss plans to modify current waste management systems such as construction of new facilities, plant upgrades, facility decommissioning/closure. Remedial actions should indicate how the findings of system performance assessments were factored into recommendations and plans. They should clearly indicate the driving forces behind their stated plans, such as: to achieve disposal of waste currently in storage; to enhance systems performance; to meet regulatory requirements; and to increase worker protection/safety.

(3) Implementation Requirements. This section is used to document the implementation status by updating the "Implementation Summary Table" from the Implementation Plan. It should present these data in similar tabular format. It should also report progress realized during the past year, remaining actions to complete, remaining costs, and estimated completion dates. In addition it should indicate any variances from original cost and schedule projections in the Implementation Plan, and discuss reasons for variances.

d. Hazardous Waste Management (DP Facilities).

(1) System and Facility Descriptions.

(a) Overview. Provide an overview of the system used to treat, store, and dispose of hazardous wastes at the site. Use flow sheets and location maps where appropriate.

(b) Facility Description. Organize according to treatment facilities, storage facilities, and disposal. Describe the combination of facilities used to manage hazardous wastes at the site and include a discussion of current methods of disposal. Indicate the kinds of hazardous wastes generated and their sources. (Facility drawings and location maps should be included as appropriate.) Indicate status of permitting activities and other actions to achieve compliance with the Resource Conservation and Recovery Act

and the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act.

(2) Current and Future Plans. Indicate recent and planned changes in waste management practice as well as actions to minimize hazardous waste generation; e.g., materials substitution and treatment to render waste nonhazardous. Identify plans for new facility construction, modifications, upgrades, or closures.

e. Schedule and Cost Summary. Show current FY costs and operational schedule for the waste management program. In a separate set of tables, show a 5-year (FY + 4) cost and schedule projection and indicate major milestones to be accomplished during that period.

f. Environmental Monitoring Programs. Describe the status of environmental monitoring that supports waste management operations, with discussion of monitoring installations, media sampled, and constituents analyzed. (This section of the plan should focus on the environmental monitoring systems installed to meet regulatory compliance at the individual waste management facilities. It is not necessary to describe the site-wide monitoring program that reports directly to EH.) Provide descriptions of planned system upgrades and modifications and key these to applicable discussions in paragraphs 3c and d. Include facility maps where appropriate.

g. Related Subjects. Use this section to report on related topics of significant interest to waste management planning efforts at the site. Examples include preparation/review of major National Environmental Policy Act documentation; personnel training; quality assurance; technology demonstrations; and decommissioning projects.

WASTE MANAGEMENT DOCUMENTATION REQUIREMENTS

DISCUSSION. To identify principal documentation requirements as identified, sites are required to list and describe (where appropriate) the waste management documentation indicated below. Each of the following paragraphs refer to specific sections of this Order that require the preparation of waste management documentation. Reporting is limited to documents issued in the previous FY, unless the most recent revision of an existing document was issued earlier. Where possible, this Attachment should retain a standard bibliographical format.

(1) Chapter I - High-Level Waste.

(a) Paragraph 3a. List titles and dates of issue of Safety Analysis Reports. Forecast schedule for preparation and issue date of planned Safety Analysis Reports.

(b) Paragraph 3b(3)(c). List titles and dates of documents supporting the periodic assessment of waste storage tank integrity.

(c) Paragraph 3b(4). Cite documentation of contingency actions of the past year. List schedule for completion of corrective actions.

(2) Chapter II - Transuranic Waste.

(a) Paragraph 3c(3). Cite the Transuranic Waste Certification Plan and date of issue. If not issued, give schedule for preparation.

(b) Paragraph 3g(2)(h). Cite the closure plan for interim storage facilities. If not issued, give schedule for preparation.

(c) Paragraph 3(i). Index major documentation developed under the Buried Transuranic - Contaminated Waste Program. Show schedule for preparation of documents in the current fiscal year.

(3) Chapter III - Low-Level Waste.

(a) Paragraph 3b(1). Cite documentation on radiological performance assessment of disposal facilities. If not issued, provide schedule for preparation in paragraph 3 of the Waste Management Plan.

(b) Paragraph 3e(1). Cite Waste Acceptance Criteria for each low-level waste treatment storage and disposal facility. List anticipated additions to this list for the current fiscal year.

(c) Paragraph 3e(3). Report the status of audits of certification activities by operators of disposal facilities. Report status of follow-up reports.

(d) Paragraph 3q(2). List document(s) forecasting waste to be shipped by generators to off-site disposal facilities.

(e) Paragraph 3i(4)(d). List reports justifying on-site disposal of waste exceeding Class C limits. Such disposal cases anticipated for the next year should be forecast.

(f) Paragraph 3i(8). Cite major National Environmental Policy Act documentation (e.g., Environmental Impact Statement, Environmental Assessment) supporting selection of any new disposal sites. Give schedule of preparation for appropriate documentation for the next year.

(g) Paragraph 3j(1). Cite closure plans for low-level waste disposal sites and dates of issue. Give schedule of preparation for anticipated reports.

(4) Decommissioning of Radioactively Contaminated Facilities.

(a) Paragraphs 3a(1). Cite field organization documentation where the complete listing and the jurisdictional program responsibility for all contaminated facilities is recorded.

(b) Paragraph 3c(1). Cite the post-operational documentation that records the potential for reuse and recovery of materials and equipment and the schedule for decommissioning contaminated facilities.

(c) Paragraph 3d(3). List Decommissioning Project Plans and dates of issue. Show a schedule for preparation of Plans in the current fiscal year.

(d) Paragraph 3d(5). List final radiological and chemical survey reports and project final reports, and show dates of issue. Show anticipated additions to this list for the coming year.

40.7.4

ACTION

EAP DISTRIBUTION/ACTION SHEET
NOTE: If this action is improperly assigned, please notify DOE-RL/EAP CCC. - **SUZANNE MARTIN 6-4002**

LETTER # 194-RPS-038

ALT LET # 9357741D

ACTION # 933928

ACTION DUE 11-19-93

KEYWORD Solid Waste

FILE CODE 40.7.4

REMARKS

	I	A	W
OFFICE OF ENVIRONMENTAL ASSURANCE PERMITS AND POLICY (EAP)			
JD BAUER-PROGRAM MGR	X		
DL SCHAFER-SEC			
TRI-PARTY AGREEMENT PROJECTS BRANCH (TPA)			
SH WISNESS-CHIEF			
KV CLARKE			
KM THOMPSON			
JK YERXA			
JL JOSEPHSON-SEC			
OTHER			

	I	A	W
REGULATORY POLICY, PLANNING AND ANALYSIS BRANCH (RPA)			
RG HOLT-CHIEF			
EB DAGAN			
PFX DUNIGAN, JR.			
PJ KRUPIN			
AE TEIMOURI			
RPA SECRETARY			
REGULATORY PERMIT STAFF (RPS)			
JE RASMUSSEN-CHIEF			
CE CLARK			
RN KREKEL			
AL RODRIGUEZ			
SD STITES		X	
DN BENHAM-SEC			

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US Ecology, Inc.
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207
502/426-7160

6-29-90

Reg File
TRH

WA0 8967
IC

USEcology

an *American Ecology* company

June 29, 1990

Mr. Gary Robertson, Head
Waste Management Section
Department of Health
Mail Stop LE-13
Olympia, Washington 98504

Dear Mr. Robertson:

Enclosed are US Ecology's comments regarding the report generated for Condition 58 of the Washington Radioactive Materials License WN-I019-2. The 18 boxes containing the database report are being forwarded to you via UPS.

If we may be of further assistance, please contact this office.

Sincerely,

S. A. Carpenter
Vice President

SAC:njc

Encl.

US Ecology, Inc.
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207
502/426-7160

USEcology

an *American Ecology* company

June 29, 1990

Mr. Richard L. Bangart, Director
Division of Low-Level Waste Management
and Decommissioning, NMSS
U.S. Nuclear Regulatory Commission
Mail Stop 5-E-4, OWFN
Washington, D.C. 20555

Dear Mr. Bangart:

Attached to Mr. Paul Lohaus' copy of this letter are US Ecology's comments regarding the report generated for Condition 33 of the Special Nuclear Materials License 16-19204-01. The 18 boxes containing the database report are being forwarded to him via UPS.

If we may be of further assistance, please contact this office.

Sincerely,

S. A. Carpenter
Vice President

SAC:njc

cc: Mr. Robert D. MacDougall
Mr. Paul H. Lohaus w/Encl.
Ms. Maxine Dunkelman

SCOPE AND PURPOSE

On January 21, 1987, the Washington Department of Social and Health Services (DSHS), now the Washington Department of Health (WDOH), issued Amendment 17 to renew in its entirety US Ecology's Byproduct Materials License Number WN-I019-2. This action was followed by the U.S. Nuclear Regulatory Commission which on December 29, 1988, issued Amendment 8 to renew in its entirety US Ecology's Special Nuclear Materials License 16-19204-01.

In addition to the prescriptive elements that had been contained in previous licenses, these particular renewals contained conditions (Condition 58 in the state issued license and Condition 33 in the NRC revised license) that focused on the generation of descriptive plans and reports. Their purpose was to require reports in an attempt to gain a fuller understanding of historical facility operations in terms of modern reporting protocol.

These conditions require US Ecology to report the location and description of all waste disposed, with the total trench content of each radionuclide (including special nuclear material) listed. This report, therefore, encompasses the entire operational period of the Richland facility up to December 31, 1989. The first six months of 1990 are not included as the salient information is provided monthly by the Facility Receipt and Burial Activities Report and reported annually as a historical report of operations.

The preparation of this report involved the duplication, validation and encoding of over 10,000 discrete shipping documents of various formats describing nearly 1,000,000 disposal containers in order to create a computer database for waste shipments received from 1965 to February of 1982. March of 1982 was the beginning of the period during which all shipment manifests were encoded and entered into a database system.

In conjunction with this report, a supplement is included (Appendix A) to a report US Ecology submitted on March 24, 1988 from Mr. Steven R. Adams to Mr. Mikel J. Elsen of DSHS to fulfill the requirements of Condition 58(c). The initial submittal did not provide information on major shipments received prior to March of 1982 as required because that information had not yet been entered into the computer. Whereas now that all of these shipments have been placed in the database, the information is now available for presentation.

HISTORY OF REGULATORY REPORTING REQUIREMENTS

Current regulations require that radioactive waste shipments sent for disposal be thoroughly classified and described. Information on modern shipping documents is required to be exhaustive in order that the disposal facility operator can both qualitatively and quantitatively ensure that waste is acceptable for disposal, that it can be safely handled and that the facility can effectively isolate the waste material as designed.

The evolution of these shipping documents progressed from simple one page manifests of various formats prepared to meet Department of Transportation or ICC Regulations, to standard radioactive shipment records (RSRs) developed by US Ecology (then California Nuclear, Inc. and later Nuclear Engineering Company) to facilitate reporting of disposal activities as required by license, and finally to manifests containing federally mandated information in a format approved by the State of Washington DSHS.

In view of the dynamic evolution of the currently used manifests, it becomes clear that formerly used shipping documents must be evaluated in terms of how they fulfilled regulations during that time period for which they were current rather than against the more demanding requirements of today. For example, in 1965 a shipment of 60 drums of various isotopes (with Co-60 being the most prevalent) could legitimately appear in a shipping document as "60 drums of Radioactive Material, N.O.S., Co-60, 5 millicuries, solid." Whereas the information was complete for the requirements of that time period, it would not be adequate for a disposal facility operator today in making the proper evaluations of waste shipment acceptability as required by current regulations.

RESULTS OF REPORT AND ASSUMPTIONS

Shipment Records

Although current procedures provide for manifest corrections via a correction form or resubmittal of information in a corrected form, these mechanisms have not always existed. Consequently, many of the shipping records on file contain numerous discrepancies or are incomplete even by the standards of the day in which they were produced. However, the information listed on the shipping documents was taken at face value unless it was obviously and irrefutably in error.

To ensure a standardized review and to minimize the reporting of anomalous information (e.g. Ni-68 instead of Ni-63), each shipping document was encoded onto a standardized form which was designed for data entry of pertinent information. Encoding each document provided a step during which validity of the information could be determined and, if necessary, corrected.

Validating and correcting the data required the use of certain assumptions which are listed later in this discussion. In no case were original documents altered, rather all corrections took place on the duplicated forms used for encoding.

The listing of basic assumptions used in correcting shipping documents is as follows:

1. Typographical errors and illegible entries were corrected using the following assumptions:

   A. In isotopic nomenclature, the atomic weight is more likely to be correct than the chemical symbol; therefore, if there is an

incorrectly named isotope, search for that particular isotope would be performed using the atomic weight first and the chemical symbol secondly.

B. Unreadable isotopes were assumed to be the most restrictive isotopes, in terms of radiotoxicity and half-life, that would be found elsewhere on the shipment record based upon other packages' contents. For example, carbon-14 or tritium were the isotopes typically assigned for unreadable isotope entries on documentation from medical facilities unless other more restrictive isotopes such as Ra-226 could be expected. Other indicators used to determine the specific isotope were radiation levels and similar shipment records of the same material from the same generator.

2. Some generators always send the same isotopes on their shipments (e.g. Teledyne Wah Chang). When a typographical error appeared on a shipment from one of these facilities, other records of similar shipments were used to confirm the correction.

3. Obvious and indisputable errors such as those indicated in the following listing were corrected.

A. Drum weights entered in the source (kg) or special nuclear material (gms) column when there were no source or special nuclear material isotopes.

B. When a 55-gallon drum was used to package carboys or other liquid containers for disposal, shippers frequently listed only the gallons of liquid contained instead of the volume of the drum.

C. Mathematical errors made by shippers when adding shipment totals were discovered and corrected.

4. Although it may have been allowable for generators to use the abbreviation "MFP" for mixed fission products, it was necessary to assign isotopes to this abbreviation in order to fulfill the requirements of Condition 58. In like manner, the following abbreviations had to be addressed:

MBP - mixed byproduct material
MAP - mixed activation products
FP - fission products
AP - activation products
BP - byproducts
FF - fission fragment (fuel flea was rejected because it is a more modern usage)

Because these abbreviations were used primarily by utilities, where in a general sense similar isotopic breakdowns could be expected, they were grouped together under the category of MFP.

To obtain isotopic mixes for each of these abbreviations, an isotopic breakdown was obtained from the utilities' waste classification by using 3-1/2 years of data on shipping manifests. The ten most prevalent isotopes in this breakdown were then assigned to the above listed abbreviations. Their factors of abundance were calculated by

the total isotopic content of that element and then divided by the total radioactivity from the utilities. Each was rounded according to its weighted contribution in order to obtain unity (See Table 1). These factors were then multiplied against the original MFP, MAP, MBP, FP, AP, BP or FF abbreviations and the software executed a global data change. This caused the isotopes and their calculated values to appear in the database in place of the abbreviations.

5. A situation similar to that of MFP isotopes surfaced for wastes from medical, university and clinical generators. However, these generators more frequently used the abbreviations "3-87" or "3/88" to indicate the range of atomic numbers that could be on the shipment. As was the case for the MFP situation, 3-1/2 years worth of shipping records from the medical, university and clinical categories were compiled and sorted for the ten most common radioisotopes (See Table 2). Abundance factors were then assigned, rounding as previously described, and a global data change was executed as was done for MFP listings.

TABLE 1

MFP/MAP/MBP/FP/AP/BP/FF	
Co-60	44%
Fe-55	29%
Cs-137	8%
Sr-90	5%
Ni-63	4%
Mn-54	2%
Zn-65	2%
Co-58	2%
Cr-51	2%
Cs-134	2%

TABLE 2

3-87/3-88/3-89 3/87/3/88/3/89	
H-3	55%
Co-60	21%
Fe-55	12%
Cs-137	4%
P-32	3%
Sr-90	2%
S-35	2%
C-14	.89%
Ra-228	.1%
Ra-226	.01%

6. Other isotopic assignments were made for listings such as "DU" (depleted uranium) which was assigned as U-238 or "Pu" (plutonium) which was assigned as Pu-239 based upon modern day shipment records from generators who had shipped similar material in the past.

Trench Records

From the outset of this project to prepare the report intended to meet the license conditions, it was recognized that a benchmark had to be established to ensure accuracy.

Since records were not required of the specific trenches into which individual shipments were placed, a simple computer search to establish individual trench totals could not be performed. Therefore, it was decided in the absence of any records to the contrary, that the information provided on trench monuments be used as the key guide as to total quantities of waste in any particular trench. Further refinements in the process of assigning shipments to specific trenches included consideration of the date of receipt with respect to a trench's open and closed dates and, as available, waste package types, weights and radiation levels.

These considerations are summarized as follows:

1. During overlap periods when one trench was nearing closure and the next trench had just been opened or was preparing to open, shipments were segregated according to operational convenience and prudent handling/disposal practices. For example, shipments of liners (right circular cylinder containers), boxes or heavy containers received during the overlapping period were either placed on the floor of the new trench or set into storage for later placement into the new trench when finished. This is because liners, boxes and heavy containers cannot be safely set upon randomly placed drums because of their weight, configuration and the increased potential to create unfillable void spaces.

2. Similarly, drum and small package shipments were placed into the trench nearing closure because their smaller size allowed for more accurate placement with regard to requisite disposal depths.

3. Disposal depth requirements were attached to a package's external radiation levels; therefore, the higher the radiation level, the more likely the waste was disposed of at a lower depth in order to take advantage of shielding provided by other waste packages on top of it and backfill (i.e., only available in the new trench). If, for example, a liner had a radiation reading of 50 R/hr and weighed 6,000 pounds, it would have been placed into the new trench where it could be quickly covered to reduce exposures to facility workers.

4. Because the liquid storage and processing area was decommissioned in 1985 with those wastes going into Trench 11A, special care had to be exercised to minimize duplicate reporting of volume and activity. Due to the large volume of waste generated as a result of decommissioning activities and subsequent disposal in Trench 11A, the original volume of the liquid wastes stated in gallons was not reported due to it being much smaller by comparison. Furthermore, when the result of the volume reduction activities are considered (solar and electric evaporators when the area was functional) the original volume of the liquid wastes are considered unuseable. However, its activity was reported so that there would not be any reduction due to radioactive decay. This results in a

slight duplication in the conservative direction. Additionally, because of radioanalysis conducted during decommissioning activities, wastes disposed of in Trench 11A show additional isotopes not originally reported.

For trench records entered on the computer database from March of 1982 to present, differences between trench markers and the computer or differences between reported values and current computer values can be attributed to both rounding errors and data entry errors.

Using these rules as guidance, the individual trench results were obtained as described in Table 3.

TABLE 3

TRENCH	Volume (cu.ft.)	Activity (mCi)	SNM (gms)	Source (Kg)
1 Marker	64,571.30	1,106,360.00	916.03	242.07
Computer	64,546.69	811,308.943	751.85	207.42
Dif.	- 24.61	- 295,051.057	- 164.18	- 34.65
2 Marker	148,075.60	168,855,060.00	861.81	741.77
Computer	147,116.95	133,335,958.061	791.61	800.74
Dif.	- 958.65	-35,519,101.939	- 70.20	+ 58.97
3 Marker	129,549.10	101,690,100.00	14,790.72	5,423.13
Computer	129,408.29	85,792,075.862	11,572.16	4,523.39
Dif.	- 140.81	-15,898,024.138	-3,218.56	- 899.74
4 Marker	300,646.10	247,660,000.00	93,017.74	11,233.34
Computer	293,924.43	273,128,822.172	92,286.54	11,964.29
Dif.	- 6,721.67	+25,468,822.172	- 731.20	+ 730.95
4A Marker	12,143.72	4,360.00	0	3,916.70
Computer	12,143.72	4,357.470	0	3,916.51
Dif.	0	- 2.530	0	- .19
4B Marker	411.00	251,797,260.00	0	0
Computer	411.00	251,797,244.655	0	0
Dif.	0	- 15.345	0	0
5 Marker	485,940.85	251,665,920.00	10,575.10	53,496.69
Computer	486,224.46	226,182,377.066	22,670.14	9,987.62
Dif.	+ 283.61	-25,483,542.934	+12,095.04	- 43,509.07
6 Marker	439,769.53	77,129,060.00	1,198.94	24,149.25
Computer	444,815.94	74,402,178.852	2,110.81	38,189.37
Dif.	+ 5,046.41	- 2,726,881.148	+ 911.87	+ 14,040.12
7 Marker	1,087,967.44	42,679.520.00	2,463.39	1,120,292.81
Computer	1,087,967.44	43,007,951.600	2,463.39	1,120,292.81
Dif.	0	+ 328,431.600	0	0
7A Marker	7,226.00	59,890.00	6.84	.08
Computer	7,226.00	63,609.213	6.84	.08
Dif.	0	+ 3,719.213	0	0

TABLE 3 (Cont.)

TRENCH	Volume (cu.ft.)	Activity (mCi)	SNM (gms)	Source (Kg)
8 Marker	1,119,190.48	43,710,090.00	0	829,954.14
Computer	1,118,446.61	15,316,750.243	36.25	773,945.55
Dif.	- 743.87	-28,393,339.757	+ 36.25	- 56,008.59
9 Marker	1,541,586.06	127,115,040.00	11,717.495	625,266.52
9A Computer	1,529,989.14	83,765,778.480	11,702.56	625,262.75
9B Computer	11,596.92	43,623,643.035	20.99	3.77
Dif.	0	+ 274,381.515	+ 6.055	0
10 Marker	2,183,935.41	95,191,350.00	0	1,729,852.97
Computer	2,179,557.97	81,810,639.782	.06	1,742,950.68
Dif.	- 4,377.44	-13,380,710.218	+ .06	+ 13,097.71
11A Marker	1,159,578.14	8,642,610.00	7,602.61	384,934.53
Computer	1,159,578.14	8,781,788.324	7,601.86	384,934.53
Dif.	0	+ 139,178.324	- .75	0
11B 12/89	54,024.88	295,559,510.00	237.93	117.00
Computer	52,911.34	295,778,739.590	233.02	116.82
Dif.	- 1,113.54	+ 219,229.590	- 4.91	- .18
13 12/89	1,226,592.95	179,271,710.00	13,430.77	547,838.95
Computer	1,227,577.04	179,453,535.927	13,430.74	547,838.95
Dif.	+ 984.09	+ 181,825.927	- .03	0
14 12/89	1,260,942.02	14,064,240.00	21,911.16	468,571.22
Computer	1,261,033.97	14,150,550.378	21,916.07	468,574.77
Dif.	+ 91.95	+ 86,310.378	+ 4.91	+ 3.55
Reactor Head	605.9	49,400.00	0	0
Computer	605.9	49,400.00	0	0
Dif.	0	0	0	0
TOTALS				
Marker	11,222,756.48	1,906,251,480.00	178,730.535	5,806,031.17
Computer	11,215,081.95	1,811,256,709.62	187,596.89	5,733,510.05
Difference	- 7,674.53	-94,994,770.38	+8,864.355	- 72,521.12

Chemical Trench Inventory

An area in the north-center portion of the 100-acre sublease is identified as a chemical trench. It is an irregularly shaped quadrangle with the following description and approximate dimensions. At a point immediately to the north and about 125 feet from the north boundary of Trench 1, proceed 60 feet due north, then 298 feet west, then 34 feet south, and finally 308 feet east back to the east boundary. This area is reported to have been utilized for the disposal of nonradioactive material during the years 1968 through 1972. Detailed searches of all files at the facility did not produce any records with information regarding the nature or quantities of the material disposed of in this area.

A search of records in storage at the corporate office in Louisville, Kentucky yielded a series of files which are essentially hand compiled invoice worksheets which were apparently transferred from the California Nuclear office in Cowell, California. It is surmised that invoicing for the Richland facility was accomplished through the Cowell office.

From these invoicing records, we were able to establish that at least four generators may have shipped nonradioactive wastes to the Richland facility. An attempt was made to contact these four generators and solicit information regarding such disposal. In addition, two former California Nuclear/Nuclear Engineering Company employees whose names appeared on various purchasing documents were contacted. Unfortunately, their institutional memory proved to be quite limited and they were able to do little except confirm the name of a single generator (Attachments 1, 2 and 3).

The four generators and their responses to US Ecology's inquiries are summarized as follows:

1. An August 25, 1971 letter from G. Whitsett (Boeing, P. O. Box 3707, Seattle, Washington, to Frank DeMent, NECO, referenced nine each 55-gallon barrels of nonradioactive waste (Attachment 4). In a February 14, 1990 response to inquiry, Mr. W. Morgan of Boeing characterized the waste as solid beryllium/copper metal shavings from a manufacturing process (Attachment 5).

2. The University of Washington, Seattle, Washington, responded on April 11, 1990 that no nonradioactive wastes were shipped to the Richland facility other than the then nonregulated scintillation fluids.

3. A single driver's trip assignment sheet (Attachment 7) showed a dispatch for pick-up of 56 drums of chemicals at Phizer, 3333 NW Industrial Road, Portland, Oregon. Written requests were returned "address unknown." No telephone listing exists for Phizer in Portland.

4. Crown Zellerbach, Chemical Products Division, Camas, Washington, was identified through a purchase request (Attachment 8) and a file of invoice worksheets (an example of which is attached as Attachment 9). These documents reveal that from sometime in 1968 through sometime in 1972, an average of one shipment of sixty 55-gallon drums

per month may have been shipped to the Richland facility. This material was described as phenolic waste from the thio-phenols plant. Assuming that this material is present in the described quantities, it represents approximately 27,000 cubic feet of waste material. Crown Zellerbach no longer operates the facility. The Camas, Washington facility currently operates as James River Paper Company. Representatives were contacted by telephone (206-834-8199) several times but declined knowledge of previous activities or waste streams. Written responses were promised but never received.

CONCLUSION

Whereas this report has been generated in order to comply with Conditions 58 and 33 of US Ecology's byproduct and special nuclear materials licenses, respectively, the reviewer is reminded that although a records search has been completed and information placed into a computer database, it is considered to not be any more valid than the information previously submitted by the Richland facility beginning in 1965. Indeed, after all of the manipulation of the information for the pre-electronic filing period (pre March 1982), the manually compiled totals were generally more conservative (higher), probably due to conservative rounding and differences in reporting as compared to today's requirements and techniques.

However, this effort has been useful in view of the fact that it has improved US Ecology's and WDOH's knowledge of the earlier years of facility operation and how those operations compare with those being conducted today.

APPENDIX A

MAJOR SHIPMENTS (ACTIVITY)

965 to February 1982 shipments to Richland with activities greater than 1,000 Ci.

ontrol Number	Trench	Millicuries	Generator	Isotopes
00382	2	4,100,000.000	Donald W. Douglas Laboratories	PM-147
00477	2	1,000,000.000	" " " "	PM-147
00502	2	1,000,000.000	" " " "	PM-147
00504	2	1,000,000.000	" " " "	PM-147
00534	2	1,000,000.000	" " " "	PM-147
00608	2	1,000,000.000	" " " "	PM-147, PU-239
00611	2	50,600,000.000	" " " "	PM-147
00643	2	17,758,100.000	" " " "	PM-147
00694	2	1,055,400.000	" " " "	PM-147
00697	2	1,060,800.000	U.S. Navy	Co-60
00710	2	20,008,100.000	Donald W. Douglas Laboratories	PM-147
00732	2	3,013,500.000	" " " "	PM-147
00863	2	4,892,500.000	" " " "	PM-147, H-3
00875	2	2,000,500.000	" " " "	PM-147, PU-238
00877	2	4,000,500.000	" " " "	PM-147
00898	2	4,912,000.000	" " " "	PM-147
00934	3	4,505,000.000	" " " "	PM-147
01025	3	4,000,000.000	Nuclear Engineering Co.	EU-154,EU-152,CO-60
01040	3	4,520,000.000	Donald W. Douglas Laboratories	PM-147
01086	3	4,507,500.000	" " " "	PM-147
01185	3	24,505,010.000	" " " "	PM-147
01266	3	24,502,500.000	" " " "	PM-147
01300	3	4,910,000.000	" " " "	PM-147
01535	3	1,588,880.000	Nuclear Materials & Equip. Corp.	PU-239
01562	3	1,572,836.300	Chem Nuclear System	CO-60
01626	4	2,273,000.000	Exxon Nuclear Company	PU-240
01797	4	1,224,000.000	" " "	PU-240
01798	4	1,017,350.000	" " "	PU-240
01852	4	53,566,627.306	Donald W. Douglas Laboratories	PM-147
01863	4	97,200,000.000	Battelle, Columbus Laboratories	U-235, PU-239
01910	4	1,300,000.000	General Atomic Co.	Sr-90,Cr-51,CO-60 FE-55,Cs-137,MN-54 NI-63,ZN-65,CO-58 Cs-134
02051	4	1,165,009.900	General Electric Nuclear Center	Sr-90,Cr-51,CO-60 FE-55,Cs-137,MN-54 NI-63,ZN-65,CO-58 Cs-134
02072	4	17,878,000.000	Naval Nuclear Power Unit	Sr-90
02285	4	4,159,718.389	The Boeing Company	H-3, U-238
02614	4	2,464,010.145	General Electric Nuclear Center	Sr-90,Cr-51,CO-60 FE-55,Cs-137,MN-54 NI-63,ZN-65,CO-58 Cs-134,PU-239,U-235
02713	4	2,241,036.794	3M Company	Cs-137,PM-147,Sr-90 Po-210,CO-60

APPENDIX A (Cont.)

ontrol Number	Trench	Millicuries	Generator	Isotopes
02886	4	6,000,000.000	Northern States Pwr.(Monticello)	Cs-137, CO-60
02915	4	5,333,000.000	" " " "	Cs-137, CO-60
03036	4	1,476,000.000	" " " "	Cs-137, CO-60
03037	4	7,500,000.000	" " " "	CO-60
03063	4	7,000,000.000	" " " "	CO-60, MN-54
03115	4	3,100,160.000	" " " "	CO-60,MN-54,ZN-65
03126	4	4,300,160.000	" " " "	CO-60,MN-54,ZN-65
03228	4	5,000,130.000	" " " "	CO-60,MN-54,ZN-65
03257	4	3,500,160.000	" " " "	CO-60,MN-54,ZN-65
03305	4	5,312,000.000	Battelle Memorial	U-235,PU-239,PU-241
03453	5	1,100,000.000	General Atomic Co.	CO-60,FE-55,Cs-137 MN-54,NI-63,ZN-65 CO-58,Cr-51,Cs-134 Sr-90
03486	5	1,224,700.001	Hittman Nuclear Corporation	AM-241, CO-60
03496	5	1,539,078.433	The Boeing Company	TH-232,AM-241,U-238 H-3,RA-226,KR-85
03532	5	4,110,000.000	Battelle Columbus Laboratory	U-235, PU-239
03543	5	9,931,500.000	Westinghouse Research Center	CO-58,CO-60,MN-54
03897	5	4,339,000.000	Babcock & Wilcox	U-235, PU-239
03904	5	43,398,800.000	Nuclear Engineering Company	U-235,PU-239,PU-240
04000	5	1,417,400.000	General Electric	PU-239, U-235
04145	5	11,550,000.100	" "	U-235,CO-60,Cs-137
04240	5	8,840,000.000	Babcock & Wilcox	Sr-90,U-235,CO-60 FE-55,Cs-137,MN-54 NI-63,ZN-65,CO-58 Cr-51,Cs-134
05040	5	12,330,010.000	New England Nuclear	H-3, C-14
05041	5	12,703,945.000	" " "	H-3, C-14
05133	5	3,160,184.300	General Electric	PU-239, U-235
05241	5	12,500,195.535	Northern States Pwr.(Monticello)	Cs-137,CO-60,PU-238 PU-239,PU-240,PU-241 PU-242,U-235,U-238 Cr-51,MN-54,NP-237 AM-241,AM-243,CM-242 CM-244,Sr-90,U-236 ZN-65
05266	5	4,180,942.423	Lawrence Berkeley Lab.	H-3,I-125,C-14, Sr-90,CO-60,MN-54
05288	5	8,622,604.000	New England Nuclear	H-3, C-14
05289	5	9,824,049.000	" " "	H-3, C-14
05557	6	10,115,280.000	" " "	H-3, C-14
05558	6	1,349,606.000	" " "	ZN-65,H-3,C-14 Cs-137,I-125,TL-201 Cr-51
05650	6	39,309,700.000	Lawrence Livermore Laboratory	H-3
05762	6	1,432,600.000	Westinghouse Electric Corp.	PU-238,PU-239,PU-240 PU-241,PU-242,U-235
05764	6	1,380,000.000	Monsanto Research Corporation	H-3
05934	6	11,620,449.000	New England Nuclear	H-3, C-14
07339	8	2,444,666.867	Eli Lilly and Company	H-3,C-14,I-125 Cr-51

APPENDIX A (Cont.)

ontrol Number	Trench	Millicuries	Generator	Isotopes
07855	8	1,695,750.006	AWC Incorporated	Sr-90
08188	8	1,341,537.500	Metropolian Edison Co.(TMI Unit 2)	RU-106,Sr-90,Y-90 MN-54,CO-58,CO-60 Cr-51,Rh-103m,PR-144 CE-144,Cs-137,Ba-137m Sb-125,Te-125m,Cs-134 In-113m,Zr-95,Nb-95 Ru-103,Rh-106,Ag-110m Sn-113
08402	10	2,431,697.680	Metropolian Edison Co.(TMI Unit 2)	PU-106,Sr-90,Y-90 MN-54,CO-58,CO-60 Cr-51,Rh-103m,PR-144 CE-144,Cs-137,Ba-137m Sb-125,Te-125m,Cs-134 In-113m,Zr-95,Nb-95 Ru-103,Rh-106,Ag-110m Sn-113
08461	10	3,126,075.000	Safety Light Corporation	H-3
08609	10	6,860,042.331	Nuclear Radiation Development	H-3,Am-241,NI-63 Po-210
08630	10	3,103,177.648	Nuclear Diagnostic Laboratories	H-3,I-125,C-14 Cr-51,Tc-99m,I-131
09622	10	1,256,200.000	Westclox U.S.	H-3, PM-147
09941	10	4,785,227.018	ICM Pharmaceutical	H-3,P-32,C-14
10011	10	2,138,806.100	3M Corporation	Cs-137,Po-210,Ag-110m Fe-59
10042	10	3,985,032.827	Southwest Nuclear Company	CO-57,S-35,H-3 Na-22,C-14,P-32 I-125,Cl-36,Rb-86 Zn-65
10106	10	1,034,112.731	3M Corporation	Cs-137,Po-210,H-3 PM-147,Ni-63,RA-226

MAJOR SHIPMENTS (VOLUME)

1965 to February 1982 data with volumes greater than 5,000 cubic feet

Control Number	Trench	Volume	Generator
00133	1	32,040.000	Argonne National Laboratory
00133	2	34,680.000	Argonne National Laboratory
01208	3	9,055.000	Exxon Nuclear Company
03372	5	8,870.000	Exxon Nuclear Company

Memorandum ATTACHMENT 1

USEcology

an American Ecology company

TO: SA Carpenter

DATE: March 1, 1990

FROM: TR Hayes

REF:

SUBJECT: R. Jennings & F. DeMent

CC:

Attached are copies of the letters sent to R. Jennings and F. Dement along with copies of the corresponding postal receipts.

Each contacted me by phone after receiving their letters and professed no recollection of any specific information regarding chemical wastes received at the site. They both remembered that some chemical wastes were received but could not remember the names of the generators, the type of wastes or what records may have been kept. (The only exception was that Roy Jennings remembered Crown Zellerback was one of the generators). I asked each to write me a letter as a follow-up to our phone conversation and they both readily agreed. However, since approximately one month has passed since the phone calls without hearing from them, we should probably assume no letters will be forthcoming.

Let me know if there's any more I can do.

llw

USEcology, Inc.
P.O. Box 638
Richland, Washington 99352
509/377-2411

delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to:
FRANK DeMENT
200 S. UNION, # 50-D
KENNEWICK, WA 99336

4. Article Number

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X Frank DeMent

6. Signature — Agent
X

7. Date of Delivery
1/19/90

8. Addressee's Address (ONLY if requested and fee paid)
Same

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIPT

USEcology Nuclear

USEcology, Inc.
an *American Ecology* company

January 18, 1990

9413286.0472

Frank DeMent
200 S. Union #50
Kennewick, Wa 99336

Dear Mr. DeMent:

US Ecology, Inc. is in the licensed operation of the commercial low level radioactive waste disposal facility on the Hanford reservation near Richland, WA. Current licensing requirements include characterization of facility activities over the lifetime of the facility in order to adequately plan for closure.

Our archives indicate that some chemical waste disposal activities were conducted during the late 1960's and early 1970's under the auspices of one of our predecessor companies; either California Nuclear Company or Nuclear Engineering Company.

We are requesting your assistance in identifying chemical waste generators who may have used the facility during this period. Any additional information such as volumes, waste streams, approximate shipping dates, physical/chemical forms, etc., would also be appreciated.

In order to comply with the requirements of our operating licenses, the information I have requested must be provided no later than March 1, 1990. Please feel free to contact me at the above address or by phone at 377-2411 if you can be of any assistance to us in this project. Thank you.

Sincerely,

Thomas R. Hayes

Thomas R. Hayes
Facility Manager

TRH/dg

US Ecology, Inc.
P.O. Box 638
Richland, Washington 99352
509/377-2411

card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☒ Show to whom delivered, date, and addressee's address. 2. ☐ Restricted Delivery.

3. Article Addressed to:
ROY JENNINGS
200 WEST BERNARDINO, LOT 102
ROA:PT. CA 92376
BG

4. Article Number

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X Glenda Jennings

6. Signature — Agent
X

7. Date of Delivery
1-22-90

8. Addressee's Address (ONLY if requested and fee paid)

PS Form 3811, Feb. 1986 DOMESTIC RETURN RECEIP

USEcology Nuclear

US Ecology, Inc.
an *American Ecology* company

January 19, 1990

9113286.0473

Roy Jennings
200 West San Bernardino, Lot 102
Rialto, CA 92376

Dear Mr. Jennings:

U S Ecology, Inc. is the licensed operator of the commercial low level radioactive waste disposal facility on the Hanford reservation near Richland, WA. Current licensing requirements include characterization of facility activities over the lifetime of the facility in order to adequately plan for closure.

Our archives indicate that some chemical waste disposal activities were conducted during the late 1960's and early 1970's under the auspices of one of our predecessor companies; either California Nuclear Company or Nuclear Engineering Company.

We are requesting your assistance in identifying chemical waste generators who may have used the facility during this period. Any additional information such as volumes, waste streams, approximate shipping dates, physical/chemical forms, etc., would also be appreciated.

In order to comply with the requirements of our operating licenses, the information I have requested must be provided no later than March 1, 1990. Please feel free to contact me at the above address or by phone at 509/377-2411 if you can be of any assistance to us in this project. Thank you.

Sincerely,

Thomas R. Hayes

Thomas R. Hayes
Facility Manager

TRH/dg

ATTACHMENT 4

THE BOEING COMPANY

HEADQUARTERS OFFICES · P.O. BOX 3707 · SEATTLE, WASHINGTON 98124

August 25, 1971

IN REPLY REFER TO

1-1881-70R-206

Nuclear Engineering Company, Inc.
P. O. Box 638
Richland, Washington 99352

Attention: Frank Dement

Subject: Packaged Hazardous Waste Material for Disposal

References:
a) Telecon - August 25, 1971; G.A. Whitsett and Wayne Clarke
b) Radioactive Shipment Record (attached)
c) Copies of Secondary Container Packaged Radioactive Waste for Land Disposal Labels (attached)
d) Purchase Order Y-477946-0773N

9413286.0474

Gentlemen:

Please find attached documents describing contents which comprise the following quantities of hazardous material waste:

1. 7 each - 55 gallon drums containing radioactive material (7.4 ft^3/drum).
2. 5 each - Cartons containing low level radioactive material contaminated exhaust hood filters (4.8 ft^3/carton).
3. 9 each - 55 gallon drums containing non-radioactive Be-Cu waste (7.4 ft^3/drum).

This waste is presently stored at The Boeing Company's 2-97 Building, Plant II, 7725 East Marginal Way South, Seattle, Washington. We suggest that Nuclear Engineering Company personnel go to Plant II sign-in area and call us to meet them there (Phone: 656-5077). We will then escort your vehicle to the 2-97 Building and transfer the waste.

Also enclosed are related maps of the immediate area to assist you in finding Plant II.

Sincerely,

George A. Whitsett

George A. Whitsett
Radiation Protection Engineer

Enclosures.

Shipment #2

RADIOACTIVE SHIPMENT RECORD

7143

P.O. BOX 1158
FFIELD, ILLINOIS

P.O. BOX 638
RICHLAND, WASHINGTON

ATTACHMENT 4 (Cont)

PPER The Boeing Company

DRESS Plant II - South Property
Seattle, Washington 98124

DATE July 21 19 71

PAGE 1 OF PAGES

INSTRUCTIONS

1. Prepare complete shipping papers and package in accordance with applicable regulations.
2. Mail duplicate copy to ESO, Gilda Lovin, [illegible]
3. Give triplicate copy to driver.
4. Retain original copy for your files.

(1) Roll by a chestnut [illegible] solution [illegible] Plate [illegible]

(2) High pressure water [illegible] solutions should be [illegible] packaging [illegible] Parts 70, 190 and 191 of Chapter 10

QTY. PACKAGES	PHYSICAL STATE SOLID - LIQUID - GASEOUS		RADIATION MR/HR AT SURFACE	RADIATION MR/HR AT 1 M	PRINCIPAL ISOTOPE(S)	BY-PRODUCT CURIES	FISSILE GRAMS	SOURCE LBS	CUBIC FEET	TRANSPORT GROUP(S)	FISSILE CLASS	LABEL USED
1	X		1.0	0.1	3-83 NOS	0.010000			7.4	III		DOT II
2	X		1.0	0.1	H^3, Pm 147	127.604165			7.4	III, IV,		DOT II
					Cs^{57}, Cl^{137}					& VII		
1	X	(1)	5.0	1.0	H^3, Ag^{110}	41.960306			7.4	I, III,		DOT II
					Sn^{119}, Ra^{226}					IV & VII		
1	X		1.0	0.1	3-83 NOS	0.010000			7.4	III		DOT II
1	X		4.0	1.0	3-83 NOS	0.010000			7.4	III		DOT II
1	X		40.0	4.0	Th^{232}, U^{238}	0.006800			7.4	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.010000			7.4	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.001000			4.8	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.001000			4.8	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.001000			4.8	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.001000			4.8	III		DOT II
1	X		1.0	0.1	3-83 NOS	0.001000			4.8	III		DOT II
1	X	(1)	4.990	Ci	HTO	Liquid Waste - All other material would be classified as "Solid".						
9	each - 55 gallon drums containing non-radioactive											
	Beryllium-Copper waste								7.2/drum			

Approved: [signature]

Aug 31 1971

TRIPLICATE RETAINED FOR CUSTOMER'S FILES

ATTACHMENT 4 (Cont)

NUCLEAR ENGINEERING COMPANY, INC.
P. O. BOX 594
WALNUT CREEK, CALIF.

1990

NAME The Boeing Company

ADDRESS Seattle, Washington

PICKED UP

QUAN.	CONTAINER	SOLID	LIQUID	REMARKS
	4.5 CU. FT. BOX(ES)			
16	55 GAL DRUMS	X		
5	boxes	X		24 cuft.

DELIVERED

	4.5 CU. FT. BOX(ES)		~~1~~ 2	
	55 GAL DRUMS			
1				

Other Data

Date 1-86 Received By

CUSTOMER'S COPY

9413286-0479

Boeing Support Services
P.O. Box 3707
Seattle, WA 98124-2207

ATTACHMENT 5

February 14, 1990
4-1210-90R-0116

U. S. Ecology, Inc.
Attention: Steve Carpenter
P.O. Box 7246
Louisville, Kentucky 40207

Subject: Non-Radioactive Chemical Waste Shipment to Richland, Washington burial site by The Boeing Company

Reference: Letter dated January 16, 1990 from U. S. Ecology to The Boeing Company, signed by S. A. Carpenter

BOEING

9413286.0477

Dear Sir:

The only possible "non-radioactive chemical waste" that was ever shipped to the Richland repository is described as follows:

> 9 each - 55 gallon drums containing non-radioactive beryllium-copper (2% beryllium alloy waste). This material was in solid physical form and was comprised of beryllium-copper metal shavings, turnings, etc., from manufacturing processes. Low level contaminated laboratory/protective equipment (i.e. paper towels, gloves, protective clothing) may also have been included in the drums. The drums were purchased from Nuclear Engineering Company Inc. and, therefore, were certainly acceptable containers per the then existing site policies. A copy of Nuclear Engineering Company Inc. radioactive shipment record is attached. This document describes the complete land disposal shipment which included the non-radioactive beryllium-copper material. You can see that Frank Dement signed this shipment record when he picked up the material on August 31, 1971. I am also enclosing a copy of the cover letter to Nuclear Engineering from Boeing describing the shipment in question. This letter and associated documentation was sent to Nuclear Engineering Company Inc. prior to the actual shipment taking place so that the documentation could be reviewed and approved before the actual shipment took place.

To our knowledge this is the only shipment from Boeing to the Richland site that contained any waste form that could be classified as "non-radioactive chemical wastes." We hope this information satisfies your request in the referenced letter.

Very truly yours,

W E Morgan

William E. Morgan
Radiation Health Protection
Org 4-1210 M/S 6Y-38
Phone 393-3050

GAW:rs

Enclosure

US Ecology, Inc.
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207
502/426-7160

JAN 23 1990 JAN 22 1990

ATTACHMENT 5 (Cont.)

USEcology

an *American Ecology* company

January 16, 1990

The Boeing Company
P. O. Box 3707
Seattle, Washington 98124

Dear Sir/Madam:

US Ecology, Inc. is the licensed operator of the commercial low-level radioactive waste disposal facility located on the Hanford Reservation near Richland, Washington. Current licensing requirements include characterization of facility activities over the lifetime of the facility in order to adequately plan for closure.

Our archives indicate that some chemical waste disposal activities were conducted during the late 1960's and early 1970's under the auspices of one of our predecessor companies, either California Nuclear Company or Nuclear Engineering Company. The records further show that your organization utilized these disposal services.

US Ecology is requesting your assistance in identifying, to the extent practicable, the volumes, waste streams, dates of shipment and physical/chemical forms of any material which your organization shipped to the Hanford facility. Any additional detail you can supply would be appreciated.

In order to comply with the requirements of our operating licenses, I must have this information no later than March 1, 1990. If you have any questions, please don't hesitate to call.

Sincerely,

Stephen A. Carpenter

Stephen A. Carpenter
Vice President

SAC:njc

SHIPPING SURVEY

TO

Name Nuclear Engineering Company Inc.
P.O. Box 638
Address Richland, Washington 99352

AEC License Number _____

Date Shipped 8/31/71

FROM

Organization 1-1881
Laboratory Radioactive Waste Area
AEC License Number WN-1005-5
Date of Pickup 8/31/71

Shipping Memo Number N/A

Radiation Survey Results:

mr/hr at S 1.0 to 40.0 MR/hr

mr/hr at 39" 0.1 to 4.0 MR/hr

contamination outside package None Detected

contamination inside package None Detected

Labels used AEC/DOT Radioactive Yellow II

Shipping Memo Item No.	Isotope	Quantity	Chemical Form
	MIXED (see attached sheets)	7 each - 55 gallon Drums containing Radioactive Material Waste	
	3-83 NOS <1.0mCi/box	5 each - Cardboard Boxes containing Low-level Contaminated Exhaust Hood Filters	

Remarks: 9 each - 55 gallon Drums containing non-radioactive Be-Cu Waste was included with this shipment.

Signed: JFS/GAM Radiation Monitor

Recorded in Log Book: Yes

Signed: WEM Radiation Specialist

1-1881

SHIPMENT #2

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

Environmental Health & Safety
201 Hall Health Center, GS-05
Radiation Safety Office, (206) 543-0463

April 11, 1990

Stephen A. Carpenter
US Ecology, Inc.
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207

Dear Mr. Carpenter:

This is in response to your letter requesting information on chemical waste disposal by the University of Washington at your facility during the 1960's and early 1970's.

There are two groups in our organization which would have used your site during this time period. One dealt with chemical waste and the other group with radioactive waste, which had to some extent a chemical waste component. The chemical group has assured me that chemical waste generated during these years was disposed through Western Processing Co., Kent, Washington and that none of their waste was sent to US Ecology or any predecessor companies.

Records regarding radioactive waste sent to your facility are not available prior to 1975. The available records after 1975 indicate that "radioactive" was the only term used to describe the waste disposed. No information regarding the chemical form is noted. Radioactive waste types sent after 1975 were listed as dry solid, animal carcasses, and liquid scintillation vials. Liquid scintillation fluid at that time would have been mainly toluene and xylene. Enclosed is a list of dates and volumes of vials of liquid scintillation waste sent to your facility for the period 1975 through 1980.

Lead was the only other likely chemical in the waste which was in the form of small shield containers for shipping radioactive material. We would have no way of knowing how much lead you were sent. However, we believe it represents an extremely small fraction of the total waste volume.

If I can be of any further assistance please let me know.

Very truly yours,

Don G. Brown, Ph.D.
Director

DGB:np
encl

Liquid Scintillation Vial Waste Sent to US Ecology or Predecessor Companies

DATE	VOLUME
12/11/80	173 ft^3
10/15/80	292 ft^3
8/23/80	180 ft^3
7/17/80	227 ft^3
5/21/80	180 ft^3
2/28/80	165 ft^3
1/25/80	172 ft^3
11/29/79	199 ft^3
9/13/79	293 ft^3
7/27/79	311 ft^3
6/19/79	124 ft^3
4/30/79	382 ft^3
3/28/79	202 ft^3
11/15/78	292 ft^3
7/27/78	187 ft^3
5/17/78	368 ft3
2/23/78	240 ft^3
8/30/77	225 ft^3
6/27/77	202 ft^3
5/19/77	142 ft^3
5/5/77	45 ft^3
3/23/77	172 ft^3
2/10/77	37 ft^3
1/13/77	157 ft^3
11/18/76	172 ft^3
10/28/76	202 ft^3
9/1/76	142 ft^3
7/28/76	180 ft^3
6/22/76	172 ft^3
5/13/76	67 ft^3
3/30/76	112 ft^3
3/3/76	102 ft^3
1/20/76	125 ft^3
12/11/75	73 ft^3
11/6/75	66 ft^3

TRIP ASSIGNMENT & PHONE ORDER

960

TO: Roy Jennings

FROM: Frank Dement

DATE: May 24, 1971

TIME: 1630

ASSIGNMENT: DATE: May 25, 1971 TIME: 0800

CUSTOMER: 56 drums of chemicals at Phizer 3333 NW Industrial road.

PICK UP:

DELIVER: Tractor to White Trucks 2705 NW Nicolai

CHECK LIST OF EQUIPMENT NEEDED				✓ YES
BY-PRODUCT		WEIGHT →		SIDE RACKS
		LENGTH →		TARP
S. N. M.		DRUMS →		PERMITS
		BOXES →		SIGNS
RAD. LEVELS		CARTONS →		MARKINGS
		SPEC. CONTAINERS		

SPECIAL INSTRUCTIONS

CONTACT MR. Eric Strid (Phizer) PHONE 222-9281

TRACTOR NO. Avis / TRAILER NO. 1 & NO.	HUB READING OUT: trac 70253 tlr 24798	HUB READING IN: TRAC 70753 TLR 24795	FUEL SITE: full	FUEL PURCH.: 184 GAL	OTHER:
DRIVERS: Roy Jennings	CASH ADVANCED	CASH OWED	OTHER CASH EXPENSE: CHECK NO.:		

LOAD – TRENCH NO. / TRENCH NO.	MILLICURIES	GRAMS-SNM	LBS.-SOURCE	CUBIC FEET	REMARKS:

TRIP MILES IN: ROUTE:	STATE	MILES
	Wash	334
	Ore	166
TOTAL PAY MILES		500

DRIVERS TIME RECORD	#1	#2
LOADING	2	
FUELING		
MISC. (HAND WORK)	1 1/2	
(DRIVING)	4	
TOTAL PAY HOURS	7 1/2	

DRIVERS REMARKS:

SIGNATURES:

X Roy Jennings

X

OFFICE - FILE

FORM - BCM 59 - Prescribed by the INTERSTATE COMMERCE COMMISSION Washington, D. C.

① DRIVER'S DAILY LOG

(One calendar day - 24 hours)

5 (Month) 26 (Day) 71 (Year) 477 (Total miles Driving today)

Tractor No. 4413 Trailer No. # 1

I certify that all entries on this page are true and correct:

(Driver's signature in full)

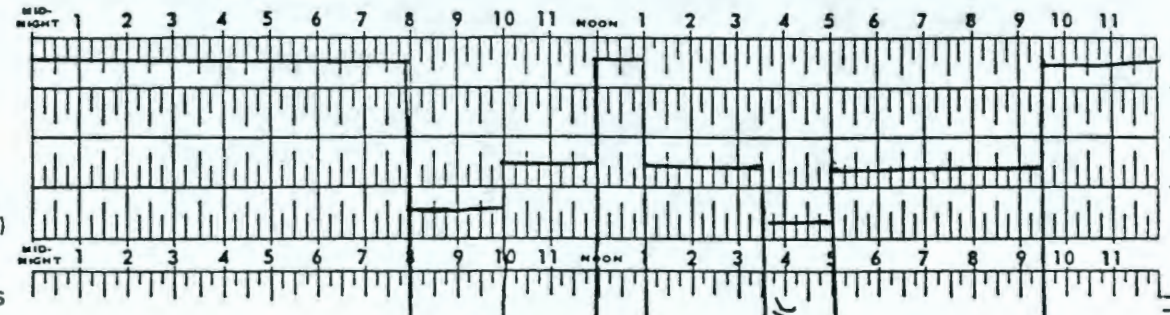
(Print Name of dr. helper)

Kennewick Wash (Home Terminal Address)

NUCLEAR ENGINEERING COMPANY INC.

P. O. BOX 4308
WALNUT CREEK, CALIF.

Form approved Budget Bureau No. 60-R253.2
ORIGINAL - File each day at home terminal
DUPLICATE - Driver retains in his possession for one month



Total Hours
11½
0
9
3½
24

REMARKS

Loading Portland
Lunch Loading
Yard Work

CUSTOMER Phizer

D. R

Check the time and enter name of place you reported and were released from work and when and where each change of duty occurred.
Shipping document, manifest number, or name of shipper and commodity information; required by Section 195.8 (a). Explain excess hours. Section 195.8 (a).

FROM: PORTLAND ORE (Starting point or place) Use Time Standard At Home Terminal

TO: ~~Seattle~~ Bremerton WASH (Destination or turn around point or place)

THIS FORM WILL NOT BE ACCEPTABLE UNLESS ALL SECTIONS ARE COMPLETED.

9413286-0493

VEHICLE CONDITION REPORT

②	OK	DEF.
Trailer Air Connector Hoses	☐	☐
Drive Line	☐	☐
Coupling Devices	☐	☐
Wheel Lugs	☐	☐
Tire Pressure	☐	☐
Springs	☐	☐
Bleed Air Reservoir	☐	☐
Glass	☐	☐
Fire Extinguisher	☐	☐
Torches, Fusees, Flags	☐	
Reflectors, Flags	☐	☐
Electric Lanterns, Flags	☐	
Horn	☐	☐
Windshield Wipers	☐	☐
Parking Brake	☐	☐
Steering	☐	☐
Service Brakes	☐	☐
Speedometer	☐	☐
Lights	☐	☐
Reflectors	☐	☐
Wiring	☐	☐
Other Items Requiring Attention	☐	☐

③ MILES DRIVEN BY STATE

	STATE	FROM	TO	ROUTE NO.		MILES
1	ORE	PORTLAND	The DALLES	80		83
2	WASH	The DALLES	HANFORD	14-240 18 90		394
3						
4						
5						
6						
7						

Crown Zellerbach Corporation
CHEMICAL PRODUCTS DIVISION
MANUFACTURERS OF PULP AND PAPER
CAMAS, WASHINGTON 98607

2

December 29, 1969

RECEIVED
JAN 9 - 1970
NECO

Nuclear Engineering Company, Inc.
P.O. Box 638
Richland, Washington

Attn: Mr. Frank Demint

Gentlemen:

Currently we use your company's services in disposing of a phenolic waste material. This material, contained in 55 gallon steel drums, is picked up at our plant about once a month (approximate load is 60 drums). As you know, costs to us for this service are $13.50 per drum.

In developing budget cost for the upcoming months, we are re-examining our entire waste disposal problem. For this reason we would appreciate an indication from you as to whether or not you anticipate any increases (or reductions) in the above cost.

Thank you for your consideration, and we await your reply.

Very truly yours,

John B. McComb

JOHN B. McCOMB/hw

Manager - Process Engineering

ATTACHMENT 9

8634 W
CHPH-44-71
Ket 30

Crown Zellerbach Corp.
Chemical Products Div.
Camas, Wash. 98607

Removed 8-23-71

60 drums phenolic waste
@ $13.50/dr. $810.00

NUCLEAR ENGINEERING COMPANY INC.
P. O. BOX 594
WALNUT CREEK, CALIF.

1989

NAME Crown Zellerbach Corp

ADDRESS Camas, Washington

↓ PICKED UP ↓

QUAN.	CONTAINER	SOLID	LIQUID	REMARKS
	4.5 CU. FT. BOX(ES)			
60	55 GAL DRUMS		X	

↓ DELIVERED ↓

	4.5 CU. FT. BOX(ES)			
	55 GAL DRUMS			

Other Data PO# CHPD-44-71

Date August 23, 1971 Received By Doug Millie

INVOICE COPY

CrownZellerbach

1500 S.W. First Avenue, Portland, Oregon 97201
(503) 227-6481

RECEIVED
AUG 19 1971
NECO

ORIGINAL

Purchase Order

DUNS No. IDENTIFYING VENDOR PAYING LOCATION MUST APPEAR ON ALL INVOICES.

DATE AUGUST 17, 1971

TO: NUCLEAR ENGINEERING COMPANY INC.
P. O. BOX 594
WALNUT CREEK, CALIFORNIA

ORDER NO. CHPD 44-71
MARK ABOVE ORDER NO. ON ALL SHIPMENTS, INVOICES, AND BILLS OF LADING.

TO INSURE PROMPT PAYMENT
SHIP AND MAIL 4 COPIES OF INVOICE WITH B/L.
TO: CHEMICAL PRODUCTS DIVISION, CAMAS, WN. 98607

ROUTING YOUR TRANSPORATION

WHEN SHIP ---

F.O.B. DESTINATION

TERMS AS MARKED

QUANTITY	DESCRIPTION	UNIT	LIST	DISCOUNT	FOR C. Z. USE ONLY
	PICKUP 60 DRUMS OF PHENOLIC WASTE & DISPOSE OF IT AT YOUR SITE	DRUM	13.50		1/2 2073-603-3 1/2 2073-603-3 DFM
	CONFIRMS PHONE TO FRANK DEMINT WEEK OF AUGUST 23RD.				

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KD TLN

CHECK ONE ☒ CHARGE TAX ☒ NOT FOR RESALE

FOR RESALE ☐ LA. 631-79-W127, 592-79-W109; MO. 120-3432; IND. 111933; CAL SY BH 98-002522; ILL 257-519; N.Y. 94-0413250-C, D.P. 000410; OHIO 23-09931; TEX. 1-94-0413250-8; WASH. C-409-001-231.

IMPORTANT INSTRUCTIONS

Do not substitute goods or change routing without our written approval. No charges will be allowed by us for boxing, packing, or cartage unless specified. Do not place marine insurance on any shipments. Attach to invoice original B/L and original E/B for any prepaid freight. Time is of the essence of this order.

This order, including the provisions on the reverse side, states all the terms of this purchase. ACCEPTANCE OF THIS ORDER IS EXPRESSLY LIMITED TO THESE TERMS AND NO OTHERS.

CROWN ZELLERBACH CORPORATION

BY K. D. Tomblesen (H)
PURCHASING DEPARTMENT

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AMENDMENT 17
WA 8967 1C

1-21-87

STATE OF WASHINGTON

RADIOACTIVE MATERIALS LICENSE

Pursuant to the Nuclear Energy and Radiation Control Act, RCW 70.98, and the Radiation Control Regulations, Title 2 WAC, and in reliance on statements and representations heretofore made by the licensee designated below, a license is reby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to e such radioactive materials for the purpose(s) and at the place(s) designated below. This license is subject to all applicable les and regulations promulgated by the State Department of Social and Health Services.

Licensee	3. License number WN-I019-2 is renewed in its entirety to read as follows:
Name US Ecology, Inc. Address 9200 Shelbyville Road, Suite 300 P.O. Box 7246 Louisville, Kentucky 40207	4. Expiration date November 30, 1990
	5. Reference number

6. Radioactive materials (element and mass number)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
Any radioactive material excluding source material and special nuclear material.	A. Dry packaged radioactive waste except as authorized by this license.	A. 60,000 curies (2.22×10^{15} Becquerel)
Source material.	B. Dry packaged radioactive waste except as authorized by this license.	B. 36,000 kilograms.
Any radioactive material excluding special nuclear material.	C. Any.	C. 0.1 curie (3.7×10^{9} Becquerel)

CONDITIONS

9. Authorized use:

A. & B. - Radioactive waste may be received, transferred, stored, repackaged and disposed at a low-level radioactive waste burial facility. The maximum radioactivity and/or quantity of radioactive material indicated in item 8A and 8B applies only to above ground activity.

C. - Check and calibration sources.

ATTACHMENT I

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I. The authorized place of use is a low-level waste burial facility located in southeast corner of Section 9, Township 12 North, Range 26E W.M., Benton County Washington, Route 4 - USDOE Hanford Reservation, Richland, Washington 99352, within the boundary of the land area described in Sublease Agreement with the state of Washington dated July 29, 1965, as amended. For the purposes of this license, the authorized place of use shall be referred to as the "facility".

1. Reference to the "Department" in this license shall mean the Department of Social and Health Services or successor agency.

2. The licensee shall notify the Department in writing within 30 days of the appointment of a new Facility Manager, Facility Assistant Manager and Corporate or Facility Radiological Control and Safety Officer, describing how the appointee meets or exceeds the minimum qualifications specified in the Facility Standards Manual.

13. Upon receipt of a shipment, the licensee shall furnish to the Department copies of all shipment manifests received. The licensee shall furnish to the Department, within 30 days of a specific written request, special reports consisting of selected information contained on shipment manifests. By the 10th of each month, the licensee shall submit a report totaling the volume and activity of the waste received during the previous month. In addition, two copies of a monthly facility receipt and burial activities report shall be submitted by the licensee, no later than the 15th day of the following month to the Department of Social and Health Services, Head, Radioactive Waste Management Section. The report shall include the following information for each shipment:

   a. name and address of the generator(s); broker (if any), and shipper;

   b. radionuclides and activity of each radionuclide in millicuries (total and by generator);

   c. grams of special nuclear material as received under NRC License No. 16-19204-01 (total and by generator);

   d. mass (in kilograms) of source material received (total and by generator);

   e. class totals of volume and activity of Class A, B, and C waste entrenched (total and by generator); and

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f. volume of packages disposed with radiation readings at the surface of the disposal container of:

≤ 50 mR/hr
> 50 mR/hr ≤ 200 mR/hr
> 200 mR/hr ≤ 1 R/hr
> 1 R/hr ≤ 10 R/hr
> 10 R/hr ≤ 100 R/hr
>100 R/hr

and to the extent practicable:

g) type and physical form of the waste, and
h) chemical form of the waste and solidification/stabilization/sorption agent.

GENERAL PACKAGING CONDITIONS

All radioactive waste shall be packaged, loaded, received, and transported in accordance with all applicable U.S. Department of Transportation Regulations, U.S. Nuclear Regulatory Commision Regulations, state regulations, and the requirements of this license. Nothing in this license shall in any way relieve the licensee from full compliance with all applicable state and federal laws and regulations, including but not limited to the Resource Conservation and Recovery Act of 1976, as amended, and the State Hazardous Waste Management Statutes of 1976, as amended, and subsequently enacted regulations.

5. Unless specifically authorized by the Department, all radioactive waste shall be received and buried in closed containers. Cardboard, corrugated paper and fiberboard are prohibited burial containers. Unless specifically authorized by the Department, radioactive waste packaged in wooden outer containers shall not be received after February 28, 1987.

6. All metal containers shall be secured by an intact heavy duty closure device when presented for disposal. Closure devices of open-head metal drums having 55-gallons or greater capacity shall be secured by bolts having 5/8 inch or larger diameters. DOT 7A Type A containers shall be tested by the generator or shall meet the use restrictions contained in "DOT 7A Type A Certification Document," MLM 3245. Appendix A lists examples of those containers and restrictions.

7. Radioactive waste shall be packaged in such a manner that waste containers received at the facility do not show:

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a. Significant deformation,

b. Loss or dispersal of contents,

c. An increase in the external radiation levels as recorded on the manifest, within instrument tolerances, or

d. Degradation due to rust or other chemical action which results in a loss of container integrity.

18. Void spaces within the radioactive waste and between the waste and its package shall be reduced to the maximum extent practicable. Unless specifically approved by the Department, void spaces in Class A stable , Class B and Class C waste packages shall be less than 15 percent of the total volume of the disposal package, provided the disposal package is not a high integrity container.

19. Waste shall not contain, or be capable of generating, toxic gases, vapors, or fumes during transportion, handling, or disposal.

). No pyrophoric, hazardous, or chemically explosive materials or materials which could react violently with water or moisture or when subject to agitation shall be accepted for disposal.

21. Waste or packaging shall not contain any liquid except as authorized by Conditions 28 and 32 of this license.

22. The licensee shall not accept radioactive waste unless each waste package has been:

a. Classified in accordance with Appendix B of this license and "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification," issued May 1983 by the U.S. Nuclear Regulatory Commission.

b. Marked as either Class A stable, Class A unstable, Class B or Class C, as defined in Appendix B of this license and "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification," issued May 1983 by the U.S. Nuclear Regulatory Commission; and

c. Stabilized, when required by this license, in accordance with criteria contained in "Technical Position on Waste Forms", issued May 1983 by the U.S. Nuclear Regulatory Commission using only those stabilization media approved by the Department and listed in Appendix D to this license, or High Integrity Containers approved by the Department and listed in Appendix E to this license. Stability may also be achieved using engineered barriers in the disposal unit. Specific approval of the Department is required prior to construction of any engineered barrier.

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The classification marking required by Condition 22 is in addition to any marking or labeling required by US NRC or US DOT and shall consist of lettering 1/2 inch high or greater in a durable contrasting color to the background surrounding the lettering. The classification marking shall be visible on the same side as the radioactive marking or label and in close proximity (within six inches). Waste packages marked "Radioactive", "Limited Quantity" or "Radioactive LSA" need only one classification marking whereas waste packages labeled White I, Yellow II or Yellow III shall have classification markings in close proximity (within six inches) to each label.

SPECIFIC WASTE FORM REQUIREMENTS

Except as allowed under Conditions 28 and 32, untreated liquids and wet sludges are not allowed for disposal. Liquids shall be rendered noncorrosive ($4 < pH < 11$) prior to treatment. Acceptable treatments are stabilization, solidification, or sorption, depending on waste class. Wet sludges or slurries, such as evaporator bottoms, shall be noncorrosive and shall be treated by stabilization or solidification. Ion exchange media shall not be treated by sorption.

Liquids treated by stabilization shall be processed in accordance with a process control program using an approved stabilization medium (see Appendix D). The resulting waste form shall contain no detectable free-standing liquid and shall meet the stability requirements of Condition 22. No detectable free-standing liquid is defined to be as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed one percent of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5 percent of the volume of waste processed to a stable form.

Liquids treated by solidification shall be processed in accordance with a process control program using an approved solidification medium (see Appendix C). The resulting waste form shall contain no detectable free standing liquid. No detectable free standing liquid is defined to be as little liquid as is reasonably achievable but in no case shall it exceed more than 0.5 percent (by volume) of liquid per container.

Liquids treated by sorption may be received provided that:

a. A metal outer disposal container is used which meets DOT 7A performance specifications and heavy duty closure devices as required by Condition 16.

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b. The metal container is lined with a minimum of 4 mil plastic liner, except as noted in Appendix F.

c. The liquid is contained in enough sorbent material to sorb at least twice the volume of liquid contents.

d. Only sorbents approved by the Department shall be used (see Appendix F).

e. A quality control program is used which verifies that the above conditions are met.

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28. Class A radioactive liquids in individual units or vials, not to exceed 50 milliliters per vial and used for clinical or laboratory testing, may be received provided that:

a. A metal outer disposal container is used which meets DOT 7A performance specification. (See Condition 16)

b. The metal disposal container is lined with a minimum of 4 mil plastic liner.

c. The individual units are layered in sufficient sorbent material to sorb twice the total volume of the liquid.

d. Only sorbents approved by the Department (see Appendix F) shall be used.

29. Waste containing biological (excluding animal carcasses, which are considered in Condition 30) pathogenic, or infectious material or equipment (e.g. syringes, test tubes, capillary tubes) used to handle such material, shall be treated to reduce, to the maximum extent practicable, the potential hazard from the non-radiological materials. The inner waste container shall be a metal container meeting either DOT 7A performance specifications (see Condition 16) or manufactured to DOT 17H specifications and shall be lined with a minimum 4 mil plastic liner which shall be sealed. The inner waste container shall be placed in an outer metal container meeting DOT 7A performance specifications with a heavy duty closure device (see Condition 16) and shall have a capacity at least 40 percent greater than the inner container. The void between inner container and outer container shall be completely filled by approved sorbent material and the outer container must be sealed. Only sorbents approved by the Department shall be allowed. (See Appendix F).

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0. Animal carcasses containing, or contained in, radioactive materials shall be packaged in accordance with the following requirements: the biological material shall be layered with absorbent and lime and placed in a metal container meeting either DOT 7A performance specification or manufactured to DOT 17H specifications, having a heavy duty closure device (see Condition 16). The inner container shall be sealed and placed in a metal container meeting DOT 7A performance specification with a heavy duty closure device, having a capacity at least 40 percent greater than the inner container. The void between the inner container and the outer container shall be completely filled by approved sorbent material and the outer container must be sealed. Only sorbents approved by the Department shall be used. (See Appendix F).

1. Waste in gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C. Total activity shall not exceed 100 curies (3.7×10^{12} Bqs) per container. Class A gaseous waste shall be contained within U.S. DOT specification cylinders. Specific approval of the Department is required if the gaseous waste is Class B or C.

Class A ion exchange and filter media containing radionuclides with half-lives greater than five years, the total concentration of which is one microcurie (3.7×10^4 Bqs) per cubic centimeter or greater, shall meet the stability requirements of Condition 22 and shall contain no detectable free-standing liquid. No detectable free-standing liquid is defined to be as little liquid as reasonably achievable but in no case shall the liquid exceed one percent of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5 percent of the volume of waste processed to a stable form. Other Class A ion exchange and filter media which are classified as unstable shall contain not more liquid than 0.5 percent by volume of the waste.

3. Radioactive waste containing radium and transuranic radionuclides, as described in Appendix B, are acceptable provided that the radium and transuranic radionuclides are essentially evenly distributed within an homogenous waste form. The receipt and disposal of waste in which the radium or transuranic radionuclides are not evenly distributed (components or equipment primarily contaminated with radium or transuranic radionuclides) or radium or transuranics in excess of Class A limits requires the specific approval of the Department.

4. Radioactive consumer products, the use and disposal of which is exempt from licensing control, may be received without regard to concentration limits of Appendix B provided the entire unit is received and is packaged with sufficient sorbent material so as to preclude breakage and rupture of its contents.

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This condition allows the disposal of such consumer products as intact household or industrial smoke detector units containing Americium-241 foils, and radium or other radioactive materials incorporated into self-luminous devices and electron tubes. Only sorbents approved by the Department shall be used (see Appendix F).

35. Incinerator ash which is classified as Class A waste according to Condition 22 shall be solidified, granular or treated in such a manner as to be rendered nondispersible in air, exclusive of packaging.

36. Until alternative waste management techniques such as incineration or recycling become generally available, waste liquids which have a pre-treatment concentration of oil in excess of ten percent by weight, shall be treated by either solidification or stabilization. Dilution by solidification or stabilization media shall not be allowed in determining waste composition. Oil means an organic liquid which is immiscible in water, the disposal of which is not regulated under RCRA or the state hazardous waste laws.

Until alternative waste management techniques such as incineration or recycling become generally available, waste liquids, which have a pre-treatment concentration of chelating agents in excess of one percent by weight, shall be treated by either solidification or stabilization. Dilution by solidification or stabilization media shall not be allowed in determining waste composition. Chelating agent means amine polycarboxylic acids (e.g., EDTA, DTPA), hydroxy-carboxylic acids and polycarboxylic acids (e.g., citric acid, carbolic acid, and glucinic acid), the disposal of which is not regulated under RCRA or the state hazardous waste laws.

38. The licensee shall not accept for disposal any neutron source (e.g., polonium-201, americium-241, radium-226 in combination with beryllium or other target) unless the generator has notified the licensee of the intent to ship such source to the licensee's disposal facility. The notification shall consist of telephone and written notification to the Facility Manager prior to shipment. The notification shall indicate the isotope, activity, form of the source, a description of the packaging utilized, and anticipated date of arrival.

RECEIPT, ACCEPTANCE AND INSPECTION CONDITIONS

39. The licensee is exempt from the timely inspection requirements of WAC 402-24-125(2)(a) and (3)(a) provided the requirements of the Facility Standards Manual and Conditions 40 through 42 of this license are met.

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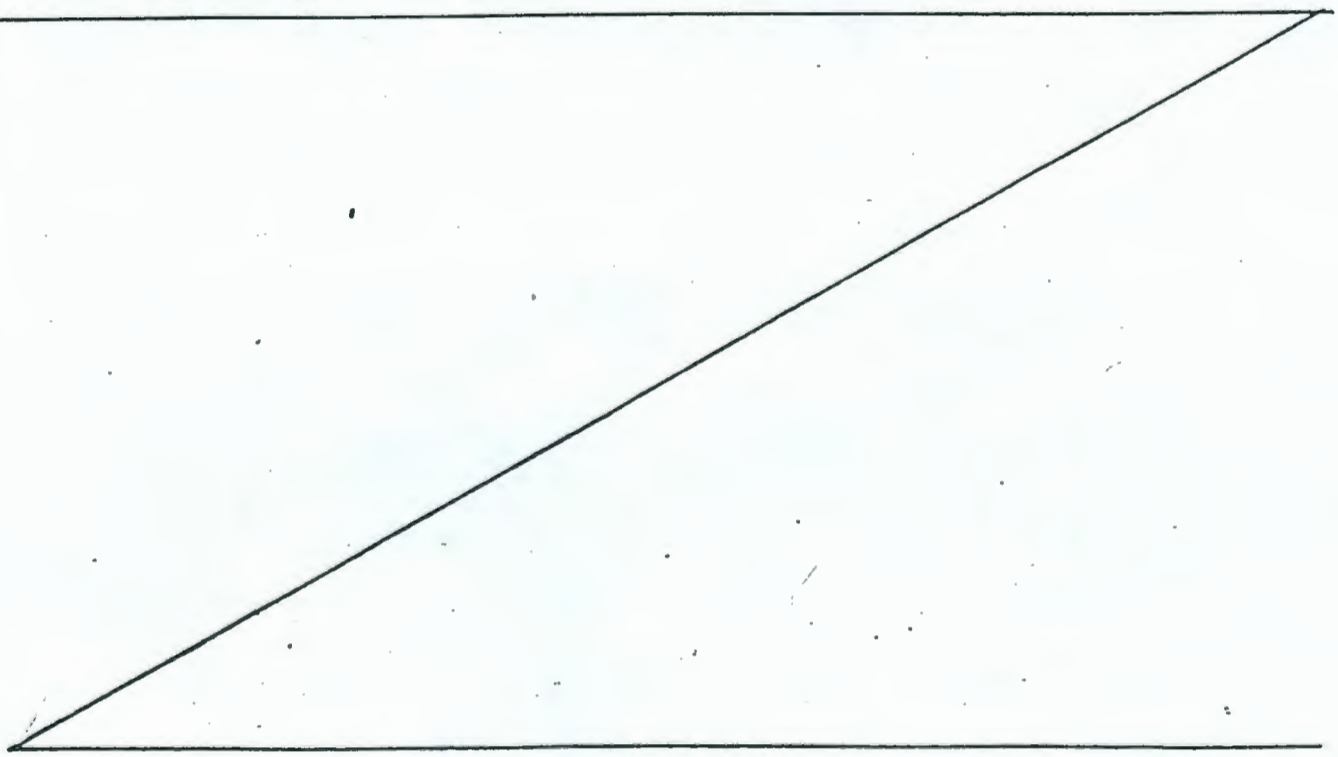
0. Waste shipments shall not be accepted at the facility unless accompanied by the following: (A single shipment shall consist of not more than one vehicle or one tractor with legal trailer(s) attached).

a. shipment manifest approved by the Department:

b. Washington State Patrol or Washington State Utilities and Transporation Commission vehicle inspection certificate, or a visible Washington State 90 day vehicle inspection seal.

c. Current certification Form RHF-31 properly executed by a representative of the shipper/generator of the waste, in accordance with requirements of Washington State Rules and Regulations for Radiation Protection, WAC 402-19-530(3).

d. Upon Departmental request, other permits or documentation required under state or federal law or regulation.



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41. Waste shipments shall not be accepted by the facility unless the accompanying Form RHF-31 is stamped as received and initialed by an authorized representative of the Department. (This individual may be the licensee when designated by telephone notification and confirming letter from the Department.)

42. a. The licensee shall acknowledge receipt of the waste as soon as practicable, but no later than seven days following its acceptance for disposal by returning a signed copy, or equivalent documentation, of the shipment manifest to the shipper. The shipper to be notified by the licensee is the one last possessing the waste and transferring it to the licensee.

b. The licensee shall indicate on the returned copy of the shipment manifest, shipping papers, or equivalent documentation any discrepancy between noted waste descriptions listed on the manifest or papers and the waste materials received in the shipment.

c. The licensee shall notify the shipper and the Department when any shipment or part of a shipment has not arrived 60 days after the separate copy of the shipment manifest or shipping papers was received by the licensee.

d. The licensee shall maintain copies of completed shipment manifests including annotations of discrepancies found in accordance with Condition 42.b.

BURIAL OPERATIONS CONDITIONS

43. Unless otherwise specifically authorized by the Department, the licensee is not authorized to open any package containing radioactive material at the facility, except for the following:

a. For purposes of repairing, repackaging, or overpacking leaking containers or containers damaged in transport in the event the material is to be disposed of, or returned to the generator if required for the protection of the health and safety of the employees or the environment.

b. For purposes of inspection and waste confirmation in the presence of a Department inspector for compliance with Title 402 WAC, other applicable federal and state regulations, and conditions of this license; or

c. For purposes of returning outer shipping containers.

The licensee shall maintain a facility in which the above operations can be safely conducted.

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4. Wastes containing chelating agents in excess of 0.1 percent by weight shall be segregated from other wastes by placing them in disposal units which are sufficiently separated from disposal units for other waste classes so that any interaction between these wastes and other wastes will not affect the radionuclide mobility of the other wastes for 100 years. Until engineering studies provide justification otherwise, minimum separation distance shall be ten feet. In addition to segregation, the licensee shall record the three dimensional location of these wastes.

5. Wastes containing solidified oils shall be segregated from other wastes by placing them in disposal units which are sufficiently separated from disposal units for other classes of waste so that any interaction between these wastes and other wastes will not affect the radionuclide mobility of the other wastes for 100 years. Until engineering studies provide justification otherwise, minimum separation distance shall be ten feet. In addition to segregation, the licensee shall record the three dimensional location of wastes containing solidified oils.

SITE DESIGN AND CONSTRUCTION CONDITIONS

6. All burial trenches or disposal units shall be in a controlled area surrounded by a chain link fence, eight feet high, and topped with barbed wire.

7. Thirty days prior to commencement of construction of Trench 12, the licensee shall submit to the Department a detailed engineering plan for this trench in accordance with the provisions of the Facility Standards Manual.

8. The licensee shall submit, for approval by the Department prior to commencement of construction of any new disposal unit subsequent to Trench 12, a comprehensive site utilization and engineering plan encompassing proposed site operations for the expected lifetime of the facility. The plan shall discuss the reasoning for the choice of design and shall include detailed drawings and calculations sufficient to support the conclusions reached. Changes to the approved plan shall be submitted to the Department for review and approval.

9. The licensee shall conduct closure and stabilization operations in accordance with the approved site utilization and engineering plan required by Condition 48 and the facility closure and stabilization plan required by Condition 61 as each trench is filled and covered.

0. In addition to the requirements of Condition 49, the licensee shall design and construct interim disposal unit caps in accordance with the specifications contained in the Facility Standards Manual. Interim disposal unit caps shall be established within one year of completion of a disposal unit or as described in the comprehensive site engineering plan required by Condition 48.

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51. The dimensions of burial trenches shall not exceed a width of 150 feet (46 meters), a depth of 45 feet (14 meters), or a length of 1000 feet (305 meters) without specific documented approval from the Department. Measurements shall be referenced to pre-1965 contours.

52. Until an agreement is secured with agencies controlling adjacent lands which meets the requirements of Condition 61(k) of this license, disposal units constructed after the effective date of this license shall be placed at least 100 feet away from the North, South and West subleasehold boundries. The set back distance for the East boundary shall be no less than 50 feet.

53. The licensee shall, within 90 days of filling each disposal unit, erect interim disposal unit monuments upon which the following information shall be displayed in a legible manner:

a. Total activity of radioactive material, in Curies, excluding source and special nuclear materials; total amount of source materials in kilograms, and total amount of special nuclear material in grams;

b. Trench number or disposal unit designation;

c. Date of opening and closing disposal unit; and

d. Volume of waste in the disposal unit.

The erection of interim monuments may be omitted if permanent monuments, required by Condition 60, are scheduled to be erected within six months of completion of the disposal unit.

ENVIRONMENTAL MONITORING AND SURVEY CONDITIONS

54. The licensee shall have its comprehensive site monitoring plan for ground water, air, soil, vegetation and direct radiation pathways operational by January 31, 1987. In addition, the licensee shall perform comprehensive pathway analyses to include air, soil, vegetation, fauna, and human impacts which shall be completed by October 31, 1987. Within 60 days of completion of the pathway analysis report, the licensee shall submit to the Department the licensee's evaluation of the report with respect to the environmental monitoring program including all modifications of the plan as may be supported by the pathway analysis report.

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55. The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the site to the environment. The program shall include collection of samples and analyses at frequencies specified in the Facility Standards Manual. The licensee shall coordinate sampling schedules with the Department to provide, when possible, duplicate samples on a prearranged frequency. A comprehensive annual report of the sample analyses, with statistical trend analyses and discussions of all anomalous results and actions taken, shall be forwarded to the Department by June 1 of each year. In addition, the licensee shall report immediately any environmental monitoring results in excess of action levels specified in the Standards Manual.

56. The licensee shall conduct an experimental monitoring program designed to determine the extent and modes of migration of disposed waste into the unsaturated zone, in accordance with procedures specifically approved by the Department. Annual reports shall be made to the Department and shall include a discussion of the results of the program.

57. The licensee shall submit a facility utilization report to the Department within three months of the issuance date of Amendment 17 to this license and by August 31 of each subsequent year. The report shall provide:

a. identification of each disposal unit and description of all waste emplaced during the previous calendar year. A three dimensional identification to describe the disposal location of each package of waste in excess of Class A concentrations and the disposal location of those wastes containing oils or chelates shall also be provided beginning with the effective date of this Amendment. Three dimensional identification shall be within 50 feet horizontally and within 10 feet in the vertical plane.

b. percent of utilization for each operating stable and unstable trench or disposal unit filled during the previous calendar year.

c. annual aerial photograph of the leasehold.

58. In addition to the annual report required by Condition 57, an historical report of operations shall be submitted to the Department within one year from the issuance date of Amendment 17 to this license which shall include:

a. Aerial and other photographs at the subleasehold which document the extent and type of disposal throughout the operational history of the facility.

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b. Large scale topographic maps denoting all radiological monitoring/sampling stations and location of radioactive materials on the leasehold.

c. Volumes of waste disposed in each disposal unit and an accounting of the total activity in Curies of byproduct material, kg of source material and grams of special nuclear material for each disposal unit. Major shipments or large activity sources within a disposal unit shall be noted with anecdotal information to the extent possible.

By June 30, 1990, the licensee shall report to the Department the detailed location and description of all waste disposed, with the total trench content of each radionuclide listed. The chemical inventory of the single chemical trench should also be listed using data from original manifests. Nothing in this condition shall preclude the Department of Ecology from obtaining information needed to carry out its responsibilities under RCW 43.200.

By June 30, 1988, results and analyses of all environmental monitoring conducted by or for the licensee since operations began, including appropriate statistical assessments of possible trends, and discussion of any anomalous results and actions taken, if any.

59. As radioactive material buried may not be transferred by abandonment or otherwise, unless specifically authorized by the Department, the expiration date of this license applies only to the above ground activities and to the authority to bury radioactive material wastes at the site specified in Condition 10. The license continues in effect and the responsibility and authority for possession of buried radioactive material wastes continues until the Department finds that the plan established for preparation of the facility for transfer to another person or custodial agency has been satisfactorily implemented in a manner to reasonably assure protection of the public health and safety and the environment and the Department takes action to terminate the licensee's responsibility and authority under this license. All requirements for environmental monitoring, site inspection, maintenance and site security continue whether wastes are being buried or not.

60. All trenches or disposal units shall be conspicuously marked with permanent stable monuments at each end consistent with the approved site closure plan required by Condition 61. Permanent monuments shall be designed to stand erect, well above the grade of the final trench cover, and in a manner which will not allow them to be covered or obscured by drifting sand during the institutional control period. Inscriptions shall be made so as to endure and remain legible well beyond the institutional control period. The permanent monuments shall be inscribed with the following information:

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a. Total activity of radioactive material, in Curies, excluding source and special nuclear materials; total amount of source material in kilograms; and total amount of special nuclear material, in grams, in the trench;

b. Trench number or other means of identifying the disposal unit.

c. Date of opening and closing the disposal unit;

d. Volume of waste in the disposal unit; and

e. Coordinates of the stable and unstable disposal units, including disposal unit depth and depth of cover at closure.

This same information shall be reported to the Department of Social and Health Services and the Department of Ecology within 30 days of completion of each trench or disposal unit.

The licensee shall submit to the Department for approval an interim facility closure and stabilization plan within three months of completion of the pathway analysis required by Condition 54. The plan shall be reviewed and updated as necessary every four years thereafter. The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:

a. Bury all waste in accordance with the requirements of the license.

b. Dismantle, decontaminate, as required, and dispose of all structures, equipment, and materials that are not to be transferred to the site custodian.

c. Document the arrangements and the status of the arrangements for orderly transfer of site control and for long term care by the government custodian. Also document the agreement, if any, of state or federal governments to participate in, or accomplish, and performance objective. Specific arrangements to assure availability of funds to complete the site closure and stabilization plan shall be documented.

d. Direct gamma radiation from buried wastes shall be essentially background at any accessible above-ground location, as determined by evaluation of environmental data from the licensee, U.S. Department of Energy and its contractors.

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e. Demonstrate by measurement and model during operations and after site closure that concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals will not result in any member of the public receiving an annual dose equivalent to 25 millirems (2.5×10^{-4} Sv) to the whole body, 75 millirems (7.5×10^{-4} Sv)to the thyroid and 25 millirems (2.5×10^{-4} Sv) to any other organ of any member of the public.

f. Render the site suitable for surface activities without resort to custodial care exceeding vegetation control, minor maintenance, and environmental monitoring. No active on-going maintenance shall be necessary. Final conditions at the site must be acceptable to the government custodian and compatible with its plan for the site.

g. Demonstrate that all trench elevations are above water table levels taking into account the complete history of seasonable fluctuations.

h. Eliminate the potential for erosion or loss of site or trench integrity due to factors such as ground water, surface water, wind, subsidence, and frost action. For example, an overall site surface water management system shall be established for draining rainwater and snowmelt away from the burial trenches. All slopes shall be sufficiently gentle to prevent slumping or gullying. The surface shall be stabilized to minimize erosion, settling, or slumping of caps.

i. Demonstrate that permanent trench markers are in place, stable, and keyed to benchmarks. Identifying information shall be clearly and permanently marked as required by Condition 60 of this license.

j. Compile and transfer to the Department complete records of site maintenance and stabilization activities, trench elevation and locations, trench inventories, and monitoring data for use during custodial care for unexpected corrective measures and data interpretation.

k. Maintain a buffer zone to provide space to stabilize slopes, incorporate off-site surface water management features, assure that any future excavation on adjoining areas shall be evaluated as to its potential to compromise trench or site integrity, and provide working space for unexpected mitigating measures, if needed, in the future. The buffer zone may be within the subleasehold or, on adjacent land, provided written agreements are secured with persons owning or controlling adjacent lands which shall allow the licensee or custodial agency the required access and actions.

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ll. Provide a secure passive site security system (e.g., a fence) that requires minimum maintenance.

mm. Stabilize the site in a manner to minimize environmental monitoring requirements for the long-term custodial phase and develop a monitoring program based on the stabilization plan.

m. Investigate the causes of any statistically significant levels of radioactive or hazardous materials in environmental samples taken during operation and stabilization. In particular, any evidence of unusual or unexpected rates or levels of radionuclide migration in or with the ground water shall be analyzed and corrective measures implemented.

ɷ. Eliminate the need for active water management measures, such as sump or trench pumping and treatment of water to assure that wastes are not leached by standing water in the trenches.

ɔ. Evaluate present and proposed activities on adjoining areas to determine their impact on the long-term performances of the site and take reasonable action to identify and minimize the effects.

A final facility closure and stabilization plan shall be submitted for state of Washington approval within 90 days following issuance by the Department of Ecology of the final closure and stabilization requirements. The final plan shall address how the licensee meets or plans to meet the requirements developed pursuant to 43.200.190.

62. Notwithstanding other requirements of this license or the sublease, one year prior to the anticipated transfer of the licensee's facility and buried radioactive waste to another person (including an agency of the state or federal government), the licensee shall submit a final version of the facility closure plan, including a schedule for implementation of all remaining plan elements prior to transfer, and a description of the mechanics of orderly transfer in coordination with the transferee.

63. Except as specifically provided by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in the documents listed below. The Department's "Rules and Regulations for Radiation Protection", Title 402 WAC shall govern the licensee's statements in applications or letters, unless statements are more restrictive than the regulations. Any change to the documents listed below shall require Departmental approval in the form of an amendment to this license.

A. Application dated December 24, 1986, (supercedes application dated July 19, 1985),

B. Facility Standards Manual, Revision 0, January 13, 1987.

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APPENDIX A

EXAMPLES* OF CONTAINERS MEETING 7A PERFORMANCE SPECIFICATION AND HAVING A HEAVY DUTY CLOSURE DEVICE

Spec. 6B Steel Drum (30 gallon)

Spec. 6C Steel Drum (5 and 10 gallon)

Spec. 6J Steel Drum (55 gallon)

Spec. 42B Aluminum Drum (55 gallon)

Spec. 17C Steel Drum (5 gallon)

Spec. 17C Steel Drum (55 gallon)

Spec. 17E Steel Drum (55 gallon)

Spec. 17H Steel Drum (30 gallon)

Spec. 17H Steel Drum (55 gallon) with 5/8" bolt closoure

Spec. 7A Steel Box (Argonne National Laboratory's Steel Bin)

Spec. 7A Steel Box (BCL-5 Shipping Container)

Spec. 7A Steel Box (Type A Steel Box)

Spec. 7A Steel Drum (Follansbee Drum-MS 24347-2)

Spec. 7A Steel Drum (4 gallon)

*These are merely examples of containers. The waste generator must comply with all DOT requirements pertinent to the container's selection, use, handling and transportation.

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Appendix B

WASTE CLASSIFICATION TABLE

RADIONUCLIDES	CONCENTRATION LIMITS IN CURIES/CUBIC METER*		
Group 1 (short-lived)	Class A	Class B	Class C
Total of all with half-life less than 5 years	₹ 700	NOTE 1	
H-3	₹ 40	NOTE 1 with specific departmental app-oval	
Co-60	₹ 700	NOTE 1	
Ni-63	₹ 3.5	₹ 70	₹ 700
Ni-63 in activated metal	₹ 35	₹ 700	₹ 7000
Sr-90	₹ 0.04	₹ 150	₹ 7000
Cs-137	₹ 1	₹ 44	₹ 4600
Group 2 (long-lived)			
C-14	₹ 0.8		₹ 8
C-14 in activated metal	₹ 8		80
Ni-59 in activated metal	₹ 22		₹ 220
Nb-94 in activated metal	₹ 0.02		₹ 0.2
Tc-99	₹ 0.3		₹ 3
I-129	₹ 0.008		0.08

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Appendix B (Cont.)

WASTE CLASSIFICATION TABLE

RADIONUCLIDES	CONCENTRATION LIMITS IN CURIES/CUBIC METER*		
Group 2 (long-lived)	Class A	Class B	Class C
	CONCENTRATION LIMITS IN NANOCURIES/GRAM		
Alpha emitting Transuranics (excluding special nuclear material) with half-life >5 years	≤ 10		≤ 100 with specific departmental approval
Radium	≤ 10		≤ 100 with specific departmental approval
Curium-242	≤ 2,000		20,000 with specific departmental approval

*curies/cubic meter is equivalent to microcuries/cubic centimeter

NOTE 1: There are no limits established for these radionuclides in Class B or C wastes. Practical considerations such as the effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes shall be Class B unless the concentrations of other nuclides in Table 2 determine the waste to be Class C independent of these nuclides.

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APPENDIX B (cont.)

(1) Unless specifically restricted elsewhere in the license, the concentration of a radionuclide or radionuclide mixture may be averaged over the volume (or mass) of the waste and, if used, the solidification agent or matrix. The concentration of radionuclides in filters encapsulated with a solidification agent or matrix shall be averaged over the volume of the filter, not the solidification agent. The volume (mass) of packaging containers, liners or overpacks shall not be included in this calculation, nor shall the volume (mass) of the waste mixture be artificially increased by the addition of heavy, nondispersable solids or objects even if considered as waste. Further guidance is provided in "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification," May 1983, or successor documents issued by the U.S. Nuclear Regulatory Commission.

(2) The waste is Class A if none of the listed radionuclides is present. Radium or Americium waste packaged in accordance with Condition 34 of this license shall be Class A unstable and the words "Condition 34" shall be noted on the manifest or other documentation accompanying the waste package.

(3) There are no Class B values for the last eight radionuclides listed; their presence classifies the waste as either Class A or Class C according to their concentrations.

(4) The waste class for mixtures of the listed radionuclides is determined by deriving for each radionuclide the ratio between its concentration in the mixture and its concentration limit in the table of this and the special nuclear materials license issued by the U.S. Nuclear Regulatory Commission and adding the resulting ratio values for each radionuclide group. All limits used in the calculations must be for the same waste class. The sum of the ratios for each radionuclide group must be equal to or less than 1.0 or the waste is the next higher classification than that used for the calculation.

If Class C limits are used in the calculation and the sum of ratios for either group exceeds 1.0, the waste is not acceptable for near-surface disposal without prior written approval from the Department.

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(5) If radioactive waste contains a mixture of radionuclides, some of which are listed on Group 1, and some of which are listed on Group 2, classification shall be determined as follows:

(i) If the concentration of a nuclide listed in Group 2 does not exceed the Class A limit, the class shall be that determined by the concentration of nuclides listed in Group 1.

(ii) If the concentration of a nuclide listed in Group 2 exceeds the Class A limit, but does not exceed the Class C limit, the waste shall be Class C, provided the concentration of nuclides listed in Group 1 does not exceed the Class C value.

(6) If concentrations for any single radionuclide exceed the Class C values in the table, the waste is not acceptable for near-surface disposal under this license.

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APPENDIX C

APPROVED SOLIDIFICATION MEDIA

Only approved solidification media can be used. Approved solidification media are:

1) Aztech (General Electric)
2) Aquaset I and II
3) Bitumen* (Waste Chem and ATI)
4) Chem-Nuclear Cement
5) Concrete (Structural)
6) Delaware Custom Media
7) Dow Media
8) Envirostone
9) Hittman Grout
10) Petroset I and II
11) Safe T Set
12) Other solidification media and processes which have been approved by USNRC and/or the Department.

*Note: For waste types that require solidification, both oxidized bitumen and straight distilled are acceptable.

Solidification means a resultant waste form which is a free standing solid and primarily relies upon a chemical reaction or encapsulation to contain the liquid. Approved stabilization media may also be used as solidification agents without conducting tests necessary to verify stability provided the resulting waste form is a free standing solid.

It is the responsibility of the person processing the waste into a solid form to adhere to a quality control program to verify the waste form is appropriate. If a material can also be used as a sorbent, the restrictions noted for its use in Appendix F shall apply to its use as a solidification agent.

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APPENDIX D

APPROVED STABILIZATION MEDIA

Only those stabilization media which have been evaluated or are in the process of being evaluated and are used with the stability guidance requirements of the U.S. Nuclear Regulatory Commission's Low-Level Licensing Branch, Technical Position on Waste Form or are specifically approved by the Department are considered acceptable stabilization media. Approved stabilization media are:

1) Aztech (General Electric)
2) Bitumen* (ATI and Waste Chem)
3) Chem-Nuclear Cement
4) Concrete**
5) Dow Media (Vinyl Ester Styrene)
6) Envirostone (U.S. Gypsum Cement)
7) LN Technologies Cement
8) Stock Equipment Cement
9) Westinghouse - Hittman Cement
10) Other stabilization media and processes which have been reviewed and approved by U.S. NRC and/or the Department as meeting waste form stability criteria.

*Note: Oxidized Bitumen only.

**Concrete, when used as an encapsulation medium around a small volume of radioactive material, e.g., a sealed source centered in a fifty-five gallon drum containing concrete, shall have a formulated compressive strength greater than or equal to 2500 psi.

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Appendix E

CERTIFICATES OF COMPLIANCE

C of C Number	Manufacturer	Package Identification Number
WN-HIC-01	Pacific Nuclear	DSHS-HIC-TMI-01
WN-HIC-02	Nuclear Packaging	DSHS-HIC-EA-50
WN-HIC-03	Chichibu Cement	DSHS-HIC-SFPIC 200L
WN-HIC-04	Chichibu Cement	DSHS-HIC-SFPIC 400L

Other High Integrity Containers which have been specifically approved by the Department.

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APPENDIX F

Approved Sorbents

Only those absorbents listed below have been approved by the state of Washington, Department of Social and Health Services, Office of Radiation Protection (Department) for general use in packaging and/or processing radioactive liquids or with materials that may contain a quantity of liquid that requires absorbing.

Absorbency efficiencies and quantity of absorbent required vary. In all cases, it is the responsibility of the waste generator and/or packager to determine the efficiency and proper proportions of absorbent for liquids being absorbed. Note: Enough absorbent materials must be provided to absorb at least twice the volume of radioactive liquid contents.

Media	Oil	Water
A. Clay Materials		
1. Speedi Dri	Approved	Approved
2. Hi Dri	Not Approved	Approved
3. Florco	Approved	Approved
4. Florco X	Not Approved	Approved
5. Instant Dri	Not Approved	Approved
6. Safe T Sorb	Not Approved	Approved
7. Opalex	Approved	Approved
B. Diatomaceous Earths		
1. Superfine	Approved	Approved
2. Floor Dry	Approved	Approved
3. Celetom	Approved	Approved
4. Safe N Dri	Approved	Approved
5. Solid-A-Sorb	Approved	Approved
C. Perlite		
1. Chemsil 30	Not Approved	Approved
2. Chemsil 50	Approved	Approved
3. Chemsil 3030	Approved	Approved
4. Dicaperl HP200	Approved	Approved
5. Dicaperl HP500	Approved	Not Approved

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APPENDIX F (Cont.)

Approved Sorbents

Media	Oil	Water
D. Others		
1. Dicalite Dicasorb	Approved	Not Approved
2. Petroset**	Approved***	Approved***
3. Petroset II**	Approved	Not Approved
4. Aquaset**	Not Approved	Approved
5. Aquaset II**	Not Approved	Approved*
6. Safe T Set	Not Approved	Approved

*Not for use with pure water

**Note: The products Aquaset, Aquaset II, Petroset, and Petroset II are exempt from Condition 27(B). These products shall only be used without an inner 4 mil plastic liner. Additionally, these products when used in accordance with the manufacturer's procedures incorporate the requirement of enough absorbent material to absorb at least twice the volume of radioactive liquid content.

***Note: The product Petroset is primarily used in conjunction with Petroset II or Aquaset II when a mixture of water and oils are present and the oils are in excess of five percent of the waste volume. Use of Petroset requires power mixing equipment.

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Amendment Number 16
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RADIOACTIVE MATERIALS LICENSE

Pursuant to the Nuclear Energy and Radiation Control Act, RCW 70.98, and the Radiation Control Regulations, Title 402 WAC, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules and regulations promulgated by the State Department of Social and Health Services.

Licensee	3. License number: WN-I019-2 is amended in its entirety to read as follows:
1. Name: US Ecology, Inc. 2. Address: 9200 Shelbyville Road, Suite 526 P.O. Box 7246 Louisville, Kentucky 40207	4. Expiration date: November 30, 1985 5. Reference number:

6 Radioactive Materials (element and mass number)	7. Chemical and/or physical form	8. Maximum quantity licensee may possess at any one time
A. Any radioactive material except source material as in B and special nuclear material.	A. Dry packaged radioactive waste except as otherwise authorized in the license	A. 60,000 Curies
B. Source material	B. Dry packaged radioactive waste except as otherwise authorized in the license	B. 36,000 kilograms

CONDITIONS

Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)

A & B Radioactive material may be received, transferred, stored, repackaged, and disposed of at a low level radioactive waste burial facility located in southeast corner of Section 9, Township 12 North, Range 26E, W.M. Benton County Washington and operated by US Ecology, Inc., Route 4 - USDOE Hanford Reservation, P.O. Box 638, Richland, Washington 99352, referred to hereinafter as the "Richland Facility."

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10. Operations at the facility shall be conducted by, or under the supervision of a Facility Manager; a Facility Assistant Manager; a Facility Radiological Control and Safety Officer; and other individuals designated by the licensee's Site Radiological Control Officer upon completion of the licensee's training program. The licensee shall notify the Washington State Department of Social and Health Services (hereinafter referred to as the Department), in writing within 30 days, regarding the appointment of a new site manager, site assistant manager or radiological control officer.

11. All new permanent US Ecology, Inc. employees must satisfactorily complete, within three months or less, the licensee's training program as described in Chapter 7 of the licensee's Radiological Control and Safety Manual, Revision 1, November 1, 1981.

12. The transportation of radioactive material within Washington State by the licensee shall be in accordance with Washington State Rules and Regulations for Radiation Protection, Chapter 402-19-500, "Preparation of Radioactive Material for Transport."

13. Radioactive materials authorized by this license are to be received at the site in shipping containers which have been authorized by the U.S. Department of Transportation (DOT) and U.S. Nuclear Regulatory Commission (NRC), and the use of which the Department has not restricted by this license.

14. Changes, Tests, and Experiments:

    a) The licensee may, upon notification to the Department but without prior Departmental approval, and subject to the provisions of subparagraph (b) below:

        i) Make changes in the disposal facility described in the application;

        ii) Make changes in the procedures described in the "Facility Operations Manual".

        iii) Conduct tests or experiments not described in the application.

    b) Prior Department approval is required if the proposed change, test, or experiment:

        i) Involves a change in a license condition other than Condition No. 14 (a)(ii).

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ii) Involves a reduction in the licensee's record keeping and reporting requirements:

iii) Increases the potential for release of radioactive material to unrestricted areas or otherwise causes a potential decrease in the protection of the health and safety of individuals in unrestricted areas, now or in the future; or

iv) Increases the potential for radiological exposure to site personnel, or otherwise causes a potential decrease in operational safety.

c) The licensee shall maintain a record of changes in the disposal facility and of changes in procedures made pursuant to this condition. Records of tests and experiments carried out pursuant to subparagraph (a) of this condition shall also be maintained. These records shall include safety evaluations which provide the basis for the determination that the changes, tests, or experiments do not involve conditions described in subparagraph (b) above. The licensee shall furnish the Department, within 30 days following the changes, tests, or experiments, a report containing a description of such changes, tests, or experiments, including a summary of the safety evaluation of each.

15. A monthly facility receipt and burial activities report shall be submitted by the licensee, no later than the 15th day of the following month, to the Supervisor, Radioactive Materials Unit, DSHS - Health Services Division, M.S. LF-13, Olympia, Washington 98504. The report shall include but not be limited to the following information:

a. name and address of the generator;

b. radionuclides and activity of each radionuclide in millicuries;

c. grams of special nuclear material as received under NRC License No. 16-19204-01; and

d. mass (in kilograms) of source material received; and

e. volume of Class A, B, and C waste entrenched.

16. Upon request the licensee shall furnish to the department copies of all RSR forms received during the monthly period covered in the report as an attachment to the monthly facility receipt and burial activities report.

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17. The licensee shall maintain all records pertaining to the receipt and burial of radioactive material at the Richland site unless authorization has been given by the Department to transfer or dispose of the records.

18. The licensee's corporate management audit program, described in Section 2.1.3. of the Facility Operations Manual, shall be expanded to require comprehensive management audits of those site activities and requirements of the license which are not specifically assigned to the Chief Radiological Control and Safety Officer. These audits shall include, but not be limited to, audits of trench filling methods and inspection of shipping records, certifications, and incoming packages and containers. Comprehensive management audits will be made at least once in each calendar quarter with two of the quarterly inspections each year being unannounced. Inspections shall include a direct observation of the receipt, handling, and burial of waste materials over a two work-day period. Audit information, inspection findings and corrective measures shall be documented.

19. The management audits described above (Condition 18) shall be made by an individual, or by individuals, other than the official designated as the Chief Radiological Control and Safety Officer.

20. The facility manager shall conduct and document a weekly inspection of the operating checklists and conduct a random sampling of supporting documents to verify that they are being completed properly.

WASTE TREATMENT, HANDLING AND PACKAGING CONDITIONS

21. Unless otherwise specifically authorized by the Department, the licensee is not authorized to open any package containing radioactive material at the facility, except for the following:

    (a) For purposes of repairing, repackaging, or overpacking leaking containers or containers damaged in transport in the event the material is to be disposed of, or returned to the generator if required for the protection of the health and safety of the employees.

    (b) For purposes of inspection in the presence of a state inspector for compliance with the Washington rules and regulations for radiation protection and conditions of this license;

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(c) For purposes of returning outer shipping containers; and

(d) For purposes of retrieving shipping documents.

22. If wastes contain both toxic chemicals (including pathogenic or infectious materials) and radioactive materials, the hazard of each shall be evaluated independently by the generator. If the chemical hazard exceeds the radiological hazard, the waste shall not be buried at the licensee's Richland site, except as specifically approved by the Department. Records of the hazard evaluation of such wastes shall be kept by the generator and furnished to the Department upon request.

23. The licensee shall not store any package containing radioactive material or source material above ground at the Richland site for a period greater than six months from the date of receipt of the package. Above ground storage shall not exceed 10,000 Curies of radioactive material, excluding source material, unless specific approval by the Department has been granted. Possession of radioactive materials (not to exceed the limits specified in license condition 8A and 8B) above ground for less than three work days does not constitute storage.

24. Except as provided in Conditions 25 and 29 or unless specifically approved by the Department, the licensee shall not receive waste containing transuranic elements. Under Condition 29, waste containing less than 10 nanocuries total transuranic nuclides per gram of waste is routinely acceptable provided transuranic nuclides are essentially evenly distributed within a homogenous waste form.

25. Household smoke detectors containing Americium 241 foils which may exceed the transuranic limit of 10 nanocuries per gram of material may be accepted for disposal provided the entire detector is disposed of.

26. Radioactive waste containing more than one (1) percent oil by volume shall be either solidified as specified in 27(a), or absorbed with a quantity of absorbent material capable of absorbing twice the total volume of oil to be absorbed. The waste container shall be restricted to a metal container meeting DOT 7A performance specification and having a heavy duty closure device (examples of containers meeting this specification are listed in Appendix D) and it shall be lined with a minimum 4 mil plastic liner which shall be sealed. Only absorbents and solidification processes approved by the Department shall be used.

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27. The licensee shall not receive packaged radioactive waste at the site unless packaging is in accordance with applicable NRC, DOT, and State regulations, and the conditions of this license, including the following:

(a) Unless specified in this license, the licensee shall not receive any liquids which have not been absorbed or solidified. Solidified radioactive waste shall be certified by the generator to have no detectable free standing liquids. No detectable free standing liquid shall be defined as not more than 0.5% liquid by volume. Department approval is required prior to shipment and receipt of radioactive wastes which do not meet the criterion for no detectable free-standing liquid. Absorbed liquids shall be absorbed in accordance with DOT regulations, in enough absorbent material to absorb at least twice the volume of radioactive liquid contents. Only absorbents approved by the Department shall be used. (See Appendix F).

(b) After December 31, 1984, liquid scintillation vials and fluids, and other organics with similar chemical properties, containing 0.05 microcuries or less of hydrogen 3 or carbon 14 per gram of medium will not be accepted for burial. Scintillation vials and fluids received for burial at the site must be packaged in sufficient absorbent material to absorb twice the total volume of liquid in the package. Absorbent materials treated for moisture resistance shall not be used. Waste containers shall be restricted to metal containers meeting DOT 7A performance specification and having a heavy duty closure device (see Condition 27i) and shall be lined with a minimum 4 mil plastic liner. Only absorbents approved by the Department shall be used. (See Appendix F).

(c) Radioactive materials in individual units or vials, not to exceed 50 milliliters, used for clinical or laboratory testing, may be received in metal containers meeting DOT 7A performance specification and having a heavy duty closure device (see Condition 27i) lined with a minimum 4 mil plastic liner, provided the materials are layered in sufficient absorbent material to absorb twice the total volume of the liquid in the containers. Only absorbents approved by the Department shall be used. (See Appendix F).

(d) Biological (excluding animal carcasses) pathogenic, or infectious material or equipment (e.g. syringes, test tubes, capillary tubes) used to handle such material, shall be treated so that the material, if non-radioactive, could have been disposed of at a sanitary land fill. The waste container shall be restricted to a DOT 17H specification container and it shall be lined with a minimum 4 mil plastic liner which shall be sealed. The waste container shall be placed in a metal container meeting DOT 7A performance

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specifications with a heavy duty closure (see Condition 27i) and having a capacity at least 40% greater than the inner container. The inner container shall be completely surrounded by an absorbent. Only absorbents approved by the Department shall be allowed. (See Appendix F).

(e) Liquids and wet sludges (e.g. evaporator bottoms, concentrates, filter media, ion exchange resins) which have been solidified with one of the solidification media specified below, and meet the requirements of Condition 27(a) of this license, may be received. Acceptable solidification media are:

i) Dow media

ii) Cement (Including Envirostone)

iii) Asphalt

iv) Delaware custom media

v) Other solidification media and processes which have been reviewed and approved by NRC and/or the Department.

(f) Waste containers received at the site must be without significant package deformation, loss or dispersal of the package contents, or an increase in the maximum radiation levels recorded or calculated at the external surface of the package, or significant chemical, galvanic, or other reaction among packaging components, or between the packaging components and the package contents. Except for overpacks which are removed prior to burial, cardboard, fiberboard, and paper packages are prohibited. All wooden boxes shall be banded with metal or equivalent bands.

(g) No pyrophoric or chemically explosive radioactive material that might react violently with water, moisture or agitation shall be accepted for disposal at the site without prior approval by the Department.

Waste must not contain, or be capable of generating quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radiaoctive gaseous waste packaged in accordance with Condition 28 of this license.

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(h) Animal carcasses containing, or contained in, radioactive materials shall be packaged in accordance with the following minimal requirements: the biological material shall be layered with absorbent and lime and placed in a metal container meeting DOT 7A performance specification and having a heavy duty closure device (see Condition 27i). The inner container shall be sealed and placed in a metal container meeting DOT 7A performance specification with a heavy duty closure device and having a capacity at least 40% greater than the inner container. The inner container shall be completely surrounded by additional absorbent material and the outer container must be sealed. Only absorbents approved by the Department shall be used. (See Appendix F).

(i) All metal drums with a capacity of 55 gallons or greater shall have a 5/8 inch or larger bolt for securing the closure device (ring). All metal containers shall have an intact heavy duty closure device when presented for disposal.

(j) Ion exchange resins and filter media containing radioactive material having a total specific activity of 1 uCi/cc or greater of materials with half-lives greater than 5 years must be stabilized by solidification or be placed in a high integrity container and shall contain no detectable free-standing liquids as defined in 27(a). Only those high integrity containers which have been specifically approved by the department for use at the Richland site shall be allowed.

(k) Each container of waste must be classified in accordance with Appendix E and marked to identify the classification assigned. The classification marking shall consist of the words Class A stable, Class A unstable, Class B or Class C in lettering greater than 1/2 inch high in a durable contrasting color to the background surrounding the lettering. The classification marking shall be visible on the same side as the radioactive marking or label. In the case of waste that is labeled White I, Yellow II or Yellow III, a classification label should appear next to or in close proximity (within six inches) to each label. Waste marked "Radioactive" or "Radioactive LSA" need only have one classification marking.

Waste classified as Class A unstable must meet the requirements of 27(b) through (l) inclusive Class A stable, Class B and C waste must meet the requirements of 27(b) through 27(m) inclusive.

(l) Void spaces within the waste and between the waste and its package must be reduced to the extent practicable.

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(m) Waste classified as Class A stable, Class B or Class C shall be in or of a form that is structurally stable and provides reasonable assurance that the waste will maintain its general physical dimensions and its form under the the expected disposal conditions, such as weight of soil overburden and compaction equipment, the presence in the burial environment of moisture and microbial activity, and factors internal to the waste itself such as radiation effects and chemical changes.

Structural stability can be provided by the waste form itself, processing the waste to a stable form, or placing the waste in a disposable container or structure as specifically approved by the department that provides stability after disposal.

28. The licensee may bury radioactive gases, provided the following criteria are met:

(a) Burial containers must be approved by the U.S. Department of Transportation.

(b) Internal pressure of containers may not exceed 1.5 atmospheres.

(c) Total activity in each container shall not exceed 100 curies.

(d) Containers must be buried in an upright position with a minimum space of ten (10) feet between each container.

RECEIPT, ACCEPTANCE AND INSPECTION CONDITIONS

29. Waste shipments shall not be accepted at the facility unless accompanied by the properly executed shipment manifest, certifications and permits required by state and federal laws and regulations. In addition, all waste shipments shall be accepted by a representative of the Washington State Radiation Control Program unless specific telephone or written approval is granted by the department authorizing the facility operator to accept shipments on behalf of the department. Minimum requirements for waste documentation and certification are as follows.

(a) The name, address, and telephone number of the person generating the waste;

(b) The name, address, and telephone number, or the name and EPA hazardous waste identification number, of the person shipping the waste;

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(c) A description of the waste by individual package, including: its physical form; its principal chemical form; its volume; and the identity and quantity of radionuclides contained in the waste. Any packages containing chelating agents of greater than 0.1 percent shall have the chelating agent identified and the estimated weight, percentage listed;

(d) In each shipment of waste, the total activity of radionuclides contained in the entire shipment and the total activities of H-3, C-14, Tc-99, and I-129 in the shipment shall be listed;

(e) The identity of waste classified as Class A, Class B, or Class C, in accordance with Appendix E, of this license;

(f) The identity of the solidification or absorbent agent used, if any;

(g) Washington State Patrol or Washington State Utilities and Transporation Commission vehicle inspection certificate, or a visible Washington State 90 day vehicle inspection seal.

(h) Certification Form RHF-31 (dated April 1980) properly executed by a representative of the shipper/generator of the waste, in accordance with requirements of Washington State Rules and Regulations for Radiation Protection, WAC 402-19-530(3).

30. Surveys of incoming vehicles shall be conducted in accordance with conditions set forth in Appendix B of this license. Surveys also shall be conducted during off-loading and handling operations to assess radiation and contamination levels and to identify problem situations. Vehicles shall be surveyed before release to determine compliance with DOT, NRC, and license requirements. Maximum radiation levels detected in receipt and release surveys shall be documented and records maintained for inspection. The requirements set forth in Appendix B are intended to define minimum requirements and are not meant to limit survey activities.

31. (a) The licensee shall acknowledge receipt of the waste as soon as possible, but no later than seven days of its acceptance for disposal by returning a signed copy, or equivalent documentation, of the shipment manifest to the shipper. The shipper to be notified by the licensee is the one last possessing the waste and transferring it to the licensee.

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(b) The licenses shall indicate on the returned copy of the shipment manifest, shipping papers, or equivalent documentation any discrepancy between noted waste descriptions listed on the manifest or papers and the waste materials received in the shipment.

(c) The licensee shall notify the shipper, and the Department when any shipment or part of a shipment has not arrived 60 days after the advance copy of the shipment manifest or shipping papers was received by the licensee.

(d) The licensee shall maintain a copy of all completed shipment manifests until authorized by the department to be disposed of.

32. The licensee shall maintain the capability for safely opening and inspecting the contents of waste packages received at the site, and overpacking damaged or leaking waste packages as required for disposal or return to shipper.

33. In the event that significant package deformation, loss or dispersal of package contents, or packages with maximum radiation levels in excess of DOT, NRC or State regulations are observed during waste receipt or an unloading operation, that operation shall be terminated. Appropriate safety measures as outlined in the Site Operations Manual shall be instituted concurrent with notification to the department of the incident and a description of the problem areas.

The customer shipping the waste shall be advised of the situation and given 24 hours to send a representative to inspect the container(s). After 24 hours, or if an inspection is waived by the customer, and with approval of the Department, the shipment in violation shall be either off-loaded from transport vehicles and overpacked prior to disposal, or be returned to the shipper, provided that return of the shipment would not be in violation of DOT regulations. Shipments in violation of placarding, labeling or bracing requirements may be off-loaded and disposed of. Future receipt of waste at the site from shippers in violation may be prohibited until corrective actions satisfactory to the Department, NRC and the licensee have been taken.

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SITE OPERATIONS CONDITIONS

34. Wastes containing chelating agents in packages with amounts greater than 1% of package volume shall be segregated from other wastes, stored separately, and be disposed of either in separate trenches or in specifically segregated areas within an existing trench, and isolated from other wastes with 10 feet of soil.

35. Excluding trenches 1 through 6, a minimum of eight feet of earth (compacted as possible) shall separate the radioactive wastes and the natural grade level of the trench opening. After final grading, the top of the trench shall be maintained at the natural grade level of the land prior to excavation.

    The dimensions of burial trenches shall not exceed a width of 150 feet (45.72 meters), a depth of 45 feet (13.72 meters), or a length of 1000 feet (304.80 meters) without specific documented approval from the department.

36. Open burial trenches, until filled and capped, shall be in a controlled area surrounded by a chain link fence, eight feet high, and topped with barbed wire. Those trenches which have been filled and capped may be surrounded by a barbed wire fence. Filled and capped burial trenches shall be completely covered with at least six inches of large gravel and rock which shall extend at least ten feet beyond the edges of the trench. After capping, trenches shall be marked with a monument inscribed with the following information:

    (a) Total activity of radioactive material, in Curies, excluding source and special nuclear materials; total amount of source material in kilograms; and total amount of special nuclear material, in grams, in the trench;

    (b) Trench number

    (c) Date of opening and closing the trench; and

    (d) Volume of waste in the trench.

37. The licensee shall conduct operations in a manner which will minimize dispersal of excavated material and erosion of the filled and capped trenches by wind.

38. A permanent record of the boundaries of each trench or other waste disposal area shall be kept. Boundaries of each future trench or disposal area shall be fixed by engineering surveys and reference made to a bench mark to be established by the licensee so that the boundaries can be accurately located at a later date.

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39. Those wastes having radiation readings, without shielding, in excess of 10 R/hr but less than 100 R/hr at any package surface, must be placed at a minimum depth of 16.5 feet (5 meters) below the natural grade level of the land. Wastes with radiation readings in excess of 100 R/hr on the package surface shall be placed a minimum of 30 feet (9 meters) below the natural grade level of the land. The intervening space between the top of the waste and the surface may be filled with other waste received for disposal provided that the requirements of the Condition and other conditions are met. Class C waste packages shall be buried at a depth such that the top of the package is at least 16.5 feet (5 meters) below natural grade.

40. Licensee personnel shall wear protective clothing (at a minimum, coveralls and gloves) at all times while handling or disposing of radioactive wastes. The licensee shall provide change rooms for the employees and maintain procedures for checking for contamination and for decontaminating personnel and clothing. In addition to the above, safety equipment (including respiratory equipment, fire extinguishers, and safety showers) must be provided and tested at least once every six months.

41. Waste handling and disposal operations shall be conducted according to specific written procedures and site criteria promulgated by the licensee. At a minimum, procedures shall be written for (a) overpacking operations, (b) decontamination operations, including packaging and disposal of removed contamination, and (c) handling and disposal of radioactive waste material, including handling and disposal of solid low-activity waste, organic and biological waste, and high-gamma content waste requiring shielding, and (d) inspection of waste packages.

42. During any disposal, decontamination, overpacking, or inspection operation, an employee whose sole responsibility is that of surveying, monitoring and recording radiation levels, and correlating waste packages with information contained in the shipment manifest documents shall be present. This employee shall be appropriately equipped with calibrated and operable survey and detection instruments in accordance with Condition 43.

43. Radioactive waste material receipt, handling, packaging, repackaging and disposal operations shall not be conducted unless, at a minimum, the following number of properly calibrated and properly functioning radiation detection instruments and samplers are available on-site. Radiation detection instruments, except pocket dosimeters, in order to be used under this license, shall be calibrated at intervals not to exceed six months. Each scale of the instrument shall be calibrated at approximately one-third and two-thirds of full scale. The licensee shall have available, at the site, instrumentation capable of measuring contamination levels equal to one-half of those stated in Appendix A, Part II (assuming smear samples are taken over an area 100 cm^2).

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(a) One continuous air sampler to be used in the area in which the disposal operations are taking place. In addition, a sampler shall be available as required for collecting iodine vapors. Potentially contaminated air is to be sampled and air sample filters analyzed in accordance with site operating procedures.

(b) A continuous air sample must be taken during any waste package content inspection or overpacking operation for the purpose of assessing airborne concentration levels and identifying the need for respiratory equipment at the location where the operations are being conducted. As required, air sampling media shall be capable of collecting iodine vapor.

(c) At least two survey meters for measuring low levels of beta-gamma radiation shall be available at the facility. At least one meter must be in use in the area in which receipt, handling and disposal operations are being conducted;

(d) At least two survey meters capable of measuring high levels of radiation shall be available at the facility. At least one meter must be in use in the area in which the receipt, handling or disposal operations are being conducted when potential radiation levels require the use of such an instrument.

(e) At least two survey meters capable of measuring alpha radiation shall be available at the facility. At least one meter must be in use in an operations area in which alpha contamination could be present.

(f) An operational liquid scintillation counter for analysis of smear samples shall be available at the site.

ENVIRONMENTAL MONITORING AND SURVEILLANCE CONDITIONS

44. The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the site to the environment. At a minimum, the program shall include collection of samples and analysis at frequencies listed in Section I of Appendix A to this license. Results of the sample analyses shall be forwarded to the Department within 30 days of receipt by the licensee.

45. In the event that action levels for gross radioactivity or individual radionuclide concentrations are exceeded in samples collected and analyzed in accordance with Condition 44, the licensee shall notify the US Ecology, Inc. Chief Radiation Control and Safety Officer and the Department within 48 hours. In addition, the licensee shall implement Section RW006 of the Facility Operations Manual. The licensee shall submit a written report as directed by the Department. Specific contingency actions may be directed by the Department.

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46. The licensee shall conduct a facility surveillance and personnel monitoring programs in order to maintain contamination of skin, personal clothing, protective clothing, items for unconditional release, sole use vehicles, and equipment to levels of radiation as low as reasonably achievable. Contamination limits must be within those specified in Section II, of Appendix A, of this license. The licensee shall perform at least the minimum facility radiological surveys listed in Section III, Appendix A, to determine compliance with the specified contamination limits. The results of the facility surveys shall be recorded on forms suitable for US Ecology, Inc. management audits and state inspection. If decontamination operations are required to meet the limits of Section II, Appendix A, the survey record shall state the readings observed both prior to and after decontamination operations are complete. In addition, the licensee shall conduct at least the minimum personnel surveys listed in Section IV, Appendix A.

47. The licensee shall provide, at a minimum, a quarterly facility inspection program and a facility maintenance program to verify proper maintenance and upkeep of all fences, filled and capped trenches, caissons and all disposal areas. Records of inspections and any maintenance performed shall be maintained and submitted with the stabilization plan for final site closure. The records are to include, but not be limited to:

    (a) The date of the inspection and/or maintenance or repair.

    (b) The name of the inspector and/or individuals performing the maintenance.

    (c) Identification of fences, trenches, caissons or other disposal areas which have been inspected.

    (d) Identification and location (marked on a scaled map of the site) of fences, caissons, trenches, or other disposal areas needing repair. (For example, trenches needing repair would be those exhibiting erosion, shrinkage, subsidence, settling, cracking, gullying, or loss or thinning of the gravel cap.) Maintenance of fences shall include, but not be limited to clearing away tumbleweeds and/or drifting sand.

    (e) A graphic description of the condition requiring repair. (For example, details such as the size and extent of cracks or the depth of any sunken areas.)

    (f) A description of the repairs made to the fence, trench, caisson, or disposal area (including a list of time and materials required to make the repairs).

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48. In addition to the environmental monitoring program discussed in Condition 44, the licensee shall place passive monitoring devices (e.g., film badges, TLD's) at the boundaries of restricted areas. These monitoring devices shall be replaced and analyzed on a monthly basis. The results of the analyses shall be recorded on a form suitable for inspection by the Department.

FACILITY CLOSURE AND STABILIZATION CONDITIONS

49. As material buried may not be transferred by abandonment or otherwise, in the absence of specific Department authorization, the expiration date on this license applies only to the above ground activities and to the authority to bury radioactive wastes at the licensee's Richland facility. All requirements for environmental monitoring, facility inspection and maintenance, and facility security continue whether or not wastes are being buried.

50. The closure and stabilization of the licensee's Richland facility shall be accomplished in accordance with a facility closure and stabilization plan prepared by the licensee and approved by the department. The facility closure and stabilization plan shall be prepared in accordance with Department's performance objectives outlined in Appendix C, "Position-Low-Level Waste Burial Ground Site Closure and Stabilization," dated May 17, 1979, as revised, September 24, 1982.

51. The licensee shall submit an update of the facility closure and stabilization plan and operational assessment as required in Conditions 50 for the Richland facility on or before November 30, 1985.

52. One year prior to the anticipated transfer of the licensee's Richland site and buried radioactive waste to another person (including the state or an agency of the U.S. Government), the licensee shall submit a final version of the facility preparation plan, including a schedule for implementation of all remaining plan elements prior to transfer, and a description of the mechanics of orderly transfer in coordination with the transferee.

53. On or before January 1, 1985, and thereafter annually on or before January 1, the licensee shall revise, update, and submit to the Department for approval, the "Facility Operations Manual."

54. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in the licensee's application dated October 28, 1981, signed by J.J. Scoville, President; letter dated November 7, 1983, also signed by J. J. Scoville, President; Facility Operations Manual, Revision 2, dated November 30, 1983; and Radiological Control and Safety Manual, Revision 2 also dated November 30, 1983.

FOR THE STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES

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APPENDIX A: ENVIRONMENTAL MONITORING AND SITE SURVEILLANCE

I. Environmental Monitoring Program

Samples	Location	Activity Detected	Frequency
aqueous	5 off-site wells[1]	as reported by U.S. DOE	quarterly or as performed by U.S. DOE
soil (split with DSHS at minimum one quarter of each year[2])	4 site corners	gross alpha[3] gross beta[4] gross gamma[5]	quarterly
vegetation (split with DSHS at minimum one quarter of each year[2])	4 site corners	gross alpha[3] gross beta[4] gross gamma[5]	quarterly
vegetation, if present	filled and capped trenches	gross alpha[3] gross beta[4] gross gamma[5]	at least annually, each trench
TLD's (Split with DSHS[2])	4 site corners	mR	quarterly
TLD's	1 at site perimeter in prevailing wind direction from operating trench and at closest point to burial operations being conducted.		

1. Wells routinely sampled are identified by the following numbers: 699-31-53B; 699-32-62; 699-33-56; 699-34-51; and 699-36-61B.
2. Department of Social and Health Services (DSHS) shall specify the quarterly samples that are to be split.
3. Action level of 20 picocuries per milliliter or gram.
4. Action level of 90 picocuries per milliliter or gram.
5. Action level of 200 picocuries per milliliter or gram.

Note: In the event that an action level is exceeded, a spectrum analysis shall be performed to determine the contributing isotopes.

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II. Operational Contamination Limits

(a) Skin and personal clothing:

No detectable alpha or beta-gamma activity*

(b) Protective clothing:

No detectable alpha activity

1000 dpm beta-gamma activity

(c) All items for unconditional release (e.g., waste transport vehicles):

Fixed contamination:

0.1 mrem/hr on any accessible surface

Removable contamination:*

220 dpm/100 cm^2 beta-gamma
22 dpm/100 cm^2 alpha

(d) Sole use vehicles:

Fixed contamination:

0.5 mrem/hr at any accessible surface

Removable contamination:

2200 dpm/100 cm^2 beta-gamma
220 dpm/100 cm^2 alpha

(e) All site areas, facilities, equipment, or tools outside restricted (radiation controlled) areas:**

Fixed contamination:

0.1 mrem/hr

Removable contamination:*

220 dpm/100 cm^2 beta-gamma
22 dpm/100 cm^2 alpha

*These contamination limits are considered met when a properly calibrated Eberline Model E-140N survey meter with pancake probe or equivalent is used for measuring beta gamma activity and PAC6/AC-24 or equivalent for measuring alpha activity.

**No decontamination operations may be conducted outside of the licensee's restricted area.

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(f) All site areas, facilities, equipment, or tools inside restricted (radiation controlled) areas:

Fixed contamination:

0.5 mrem/hr

Removable contamination:

1000 dpm/100 cm^2 beta-gamma
220 dpm/100 cm^2 alpha

III. Site Surveillance Program

Location	Inspection Frequencies: Removable Contamination	Inspection Frequencies: Fixed Radioactivity
radiation controlled facilities or buildings	daily	weekly
operational trench	N/A	daily
normal traffic areas outside operational trench area	N/A	weekly
site equipment	weekly	weekly
non-radiation controlled facilities or buildings	monthly	monthly
waste transport vehicles	arrival/ departure	arrival/ departure

IV. Personnel Surveillance Program

Location	Removable Contamination	Fixed Radioactivity
skin and personnel clothing	N/A	departure from a radiation controlled area
protective clothing, feet, and hands	N/A	departure from a radiation controlled area

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Location	Removable Contamination	Fixed Radioactivity
urine samples to be analyzed for H-3 and C-14.	N/A	quarterly and following major spills and decontamination operations for those involving H-3 and/or C-14 isotopes
(With a sensitivity greater than 10^{-3} microcuries per ml of urine for each isotope.)		
thyroid monitoring for iodine isotopes*	N/A	quarterly for all operations personnel
(With a sensitivity greater than 50 nanocuries of I-125 per person.)		

*A report of thyroid monitoring results shall be submitted to the department each quarter and following each special study due to a major spill or major decontamination activities.

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APPENDIX B: VEHICLE SURVEYS

Arrival Surveys:

Radiation levels shall be determined by monitoring all sides and the bottom of the transport vehicle at the vehicle surface, at six feet from the sides of the vehicle, and at the driver's position in the cab. Smears to check for the presence of removable contamination shall be taken at areas where contamination is most likely to occur, including cargo access doors and suspect areas as identified by visual inspections. At least two smears on each side of the vehicle, two from the exterior surface of the trailer door(s), and two from the deck or off-loading area shall be checked for alpha and beta-gamma contamination.

Handling and Operational Surveys:

At least three smears to check for removable alpha and beta-gamma contamination shall be obtained from accessible packages before off-loading begins. Additional smears shall be taken when visual inspection warrants. At least three additional smears of waste packages shall be taken at random during off-loading. These smears shall be checked for alpha and beta-gamma contamination with appropriate portable equipment available at the unloading site. Beta-gamma surveys shall be performed continuously as wastes are off-loaded except when the employee so designated by Condition No.42 is conducting visual inspection, shipment record checks, or record examinations. When applicable, at least one smear shall be analyzed for low energy beta and gamma emitters with an instrument capable of detecting isotopes of concern (e.g., C-14, H-3 and I-125).

Release Surveys:

Beta-gamma and alpha (if applicable) levels shall be determined on all interior and exterior vehicle surfaces by direct survey with appropriate instrumentation. Smears shall be taken to evaluate all hot spots in excess of levels stated in Appendix A. If decontamination is required, all surveys will be repeated until contamination is no longer detectable or is reduced to acceptable levels. When applicable, smears shall be analyzed for alpha, and low energy beta and gamma emitters (e.g., C-14, H-3 and I-125).

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APPENDIX C

DEPARTMENT OF SOCIAL AND HEALTH SERVICES
POSITION - LOW-LEVEL WASTE BURIAL GROUND SITE CLOSURE AND STABILIZATION
(Revised September 24, 1982)

BACKGROUND

Events in the past few years have emphasized the need for long-range planning for the eventual closure and decomissioning of a wider range of nuclear materials facilities to those concerned with reactors and the fuel cycle.

Termination of operations at several commercial low-level waste burial sites, closing of a tritium facility in Arizona, and a number of situations leading to passage of the Uranium Mill Tailings Radiation Control Act have caused the regulatory agencies to recognize that the long-term health and safety matters associated with these facilities must be addressed early on in the licensing process.

The Department has been involved in reassessing the terms and conditions of the license issued under Chapter 402 WAC, Rules and Regulations for Radiation Protection, for disposal of radioactive materials at the licensee's low-level waste burial ground. Until recently, neither the Nuclear Regulatory Commission (NRC) nor Agreement State licenses or leases for these burial grounds specifically addressed measures required to close and stabilize sites upon cessation of operations.

Originally, decomissioning of all types of nuclear facilities was addressed only in general terms, if at all. In recent years, decomissioning of fuel cycle facilities and stabilization of uranium mill tailings have received increased regulatory attention. Most licenses for fuel cycle facilities now specifically address decomissioning.

A Colorado State University report entitled, "Evaluation of Long-Term Stability of Uranium Mill Tailings Disposal Alternatives," was prepared in April 1979. The effectiveness and stability of various engineering designs for the tailings, embankments, liners and water diversion structures were assessed against failure modes such as wind erosion, floods, and settlements. Since the activities and the engineering are similar in many respects, work such as this, coupled with extensive experience in developing specific methods for uranium mill tailings management, contribute to both a conceptual and technical basis for formulating performance objectives for site closure and stabilization of shallow land burial sites.

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The Office of Standards Development, NRC has a major effort underway to develop criteria and standards for decomissioning all types of fuel cycle facilities. A comprehensive technical information base is being developed by Battelle's Pacific Northwest Laboratory. Reports on each type of fuel cycle facility are being prepared. Similarly, a report on decomissioning of low-level waste burial grounds is being prepared in close cooperation with the three states which currently license this type of facility. Although the report of this work is not completed, information on alternative methodologies and procedures, and the cost required for site closure and stabilization has been developed.

In addition, the NRC is developing a specific regulatory program for management of low-level waste (LLW). On October 25, 1978, NRC published in the Federal Register its intent to develop a proposed new 10 CFR Part 61 for LLW and invited advice, recommendations, and comments on the scope of the Environmental Impact Statement for the new part. Site decomissioning is intended to be an integral part of the new regulations. Upon adoption of the new regulations, the State of Washington will revise Chapter 402 WAC to incorporate them as a matter of compatibility under the terms of the U.S. NRC - State of Washington agreement.

On October 4, 1979, the Governor of the State of Washington ordered the Richland commercial low-level waste burial site closed due to evidence of infractions of U.S. Department of Transportation (DOT) and NRC regulations pertaining to packaging and transport of radioactive materials. The site was reopened on November 19, 1979, under the terms of Executive Order E079-09 of that date. In view of the Governor's explicit directions concerning handling of radioactive waste, and proposed new regulations which resulted from the aforementioned Executive Order, there was urgent need to update and renew the Richland site license. The urgency, however, necessitated development of an interim position before the regulatory framework and technical base specific for burial grounds could be completed. Toward this end, the NRC staff assisted the state in developing interim performance objectives for low-level waste burial sites, site closure, and stabilization, based on information available at the time. The State of Washington incorporated these performance objectives into their position.

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PURPOSE

Site closure and stabilization plans, developed to meet the objectives outlined below, are intended to maintain the site in a constant state of readiness for transfer to a custodial government agency. Custody by such an agency, or agencies, will be necessary until such time as the site can be released for unrestricted use. At this time, restricted use is considered in terms of a few hundred years. The site operator's responsibility and the authority to possess buried waste continue until the state finds that the requirements of the license, based on the plan, have been satisfactorily compiled with in a manner which will reasonably assure protection of the public health and safety. The state may then take action to terminate the responsibility and authority under the license. Site closure and stabilization requirements will vary depending on site-specific or region-specific parameters, such as geology, hydrology, and climate, as well as arrangements that may have been made between the licensee and the owner of the site. The history of the operations at a burial ground, the performance of a site as shown by records of maintenance and monitoring programs, the site inventory, and the anticipated use of the site in the future will also be important factors. The overall objective, however, is to operate the site in such a manner that the need for active on-going maintenance, after termination of the licensee's responsibility and authority, will be eliminated and that only passive surveillance and monitoring by the custodian will be required after termination.

POSITION

To achieve the overall objectives stated above, the low-level waste burial ground licensee shall develop a site closure and stabilization plan which, with due regard for site-specific conditions, will satisfy, at a minimum, the following performance objectives:

(1) To assure that all waste forms and types have been buried in accordance with the conditions of the license.

(2) To dismantle, decontaminate as required, and remove all structures, equipment, and materials that are not to be transferred to the custodial agency.

(3) To document the status of arrangements for orderly transfer of site control and for long-term care by the custodial agency.

(4) To document any agreement on the part of the state or federal government to participate in, or accomplish, any performance objectives.

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(5) To address the matter of pre- and post-closure stabilization and monitoring costs and the funding of those costs.

(6) To assure that direct gamma radiation from buried wastes shall be essentially background.

(7) To assure, and be able to demonstrate, that the rate of increase of radionuclides through air and ground and surface water pathways are at or below acceptable levels. Acceptable levels for water are those set forth in Chapter 402 WAC (or 10 CFR Part 20, of Appendix A), at the site boundary, and EPA drinking water limits at the nearest water supply. Acceptable levels for air are those found in Chapter 402 WAC (or 10 CFR Part 20, Appendix A).

(8) To assure that the site has been rendered suitable for surface activities during custodial care.

(9) To assure that final conditions of the site are acceptable to the custodial agency and are compatible with its plans for the site.

(10) To document that all trench bottom elevations are above the water table level, taking into account the history of seasonal fluctuation since recordkeeping began.

(11) To eliminate the potential for erosion, loss of site use, or trench integrity due to factors such as ground water, surface water, wind, subsidence, and frost action.

(12) To assure that all slopes are sufficiently gentle to prevent slumping or gullying.

(13) To assure that the surface is stabilized with an appropriate agent such as rock, riprap, or other materials deemed suitable as new technology is developed.

(14) To assure the trench caps are stabilized so that erosion, settling, or slumping of caps is extremely remote.

(15) To demonstrate that the trench markers are in place, stable, and keyed to benchmarks, and that identifying information is clearly and permanently inscribed on a long-lasting (brass) plaque.

(16) To assure that the custodial agency will receive complete records of site maintenance and stabilization activities, trench elevations and locations, trench inventories, and monitoring data for use during custodial care in the event there is need to take unexpected corrective measures or to interpret data.

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(17) To assure that a buffer zone has been established surrounding the site which is sufficient to provide space to stabilize slopes, incorporate surface water management features to assure that future excavation on adjoining areas will not compromise trench or site integrity, and to provide working space for unexpected mitigating measures in the future.

(18) To provide a secure passive site security system (e.g., a fence), that will require minimum maintenance.

(19) To assure that the site is stabilized in a manner which will minimize environmental monitoring requirements for the long-term custodial phase.

(20) To develop a monitoring program based on a stabilization plan for implementation by the custodial agency.

(21) To document the investigation of increases of any statistical environmental radiation levels which have occurred during operation and stabilization.

(22) To document that the causes of unusual or unexpected rates or levels of radionuclide migration in or with the ground water have been analyzed and that, if the migration has been found to originate from the LLW burial site, corrective measures have been taken.

(23) To assure that there is no need for active water management measures.

(24) To determine the impact of present and zoned activities on adjoining areas on the long-term performance of the site.

(25) To demonstrate that reasonable action was taken to minimize the effects enumerated in paragraphs #21 through #24, above, recognizing that such action would normally be limited to areas under control of the licensee.

IMPLEMENTATION

Existing licenses will be amended to add conditions requiring submittal of site closure and stabilization plans. This will include explicit requirements for satisfactory completion of the plan before the license can be terminated and before the materials which are buried at the site can be transferred to custodial government care.

New applicants will be required to submit preliminary site closure and stabilization plans as part of the initial application.

STATE OF WASHINGTON

RADIOACTIVE MATERIALS LICENSE

License Number WN-I019-2

APPENDIX D

EXAMPLES OF CONTAINERS MEETING 7A PERFORMANCE SPECIFICATION AND HAVING A HEAVY DUTY CLOSURE DEVICE

Spec. 6B Steel Drum (30 gallon)

Spec. 6C Steel Drums (5 and 10 gallon)

Spec. 6J Steel Drum (55 gallon)

Spec. 42B Aluminum Drum (55 gallon)

Spec. 17C Steel Drum (5 gallon)

Spec. 17C Steel Drum (55 gallon)

Spec. 17H Steel Drum (30 gallon)

Spec. 17H Steel Drum (55 gallon)

Spec. 7A Steel Box (Argonne National Laboratory's Steel Bin)

Spec. 7A Steel Box (BCL-5 Shipping Container)

Spec. 7A Steel Box (Type A Steel Box)

Spec. 7A Steel Drum (Follansbee Drum-MS 24347-2)

Spec. 7A Steel Drum (4 gallon)

FOR THE STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Date ..... By .....

STATE OF WASHINGTON

RADIOACTIVE MATERIALS LICENSE

License Number WN-I019-2

Appendix E

WASTE CLASSIFICATION

The licensee shall not accept for disposal any radioactive waste unless the person shipping it for disposal has marked each package to identify its classification as either Class A, Class B, or Class C waste and certifies that the waste materials have been classified and prepared for disposal in accordance with the following:

RADIONUCLIDES	CONCENTRATION LIMITS IN CURIES/CUBIC METER*		
Group 1 (short-lived)	Class A	Class B	Class C
Total of all with half-life less than 5 years	≤ 700	> 700	
H-3	≤ 40	> 40	
Co-60	≤ 700	> 700	
Ni-63	≤ 3.5	≤ 70	≤ 700
Ni-63 in activated metal	≤ 35	≤ 700	≤ 7000
Sr-90	≤ 0.04	≤ 150	≤ 7000
Cs-137	≤ 1	≤ 44	≤ 4600
Group 2 (long-lived)			
C-14	≤ 0.8		≤ 8
C-14 in activated metal	≤ 8		80
Ni-59 in activated metal	≤ 22		≤ 220
Nb-94 in activated metal	≤ 0.02		≤ 0.2
Tc-99	≤ 0.3		≤ 3
I-129	≤ 0.008		0.08
	CONCENTRATION LIMITS IN NANOCURIES/GRAM		
Transuranics	≤ 10	Specific approval required	
Ra-226	≤ 10	Specific approval required	

*curies/cubic meter is equivalent to microcuries/cubic centimeter

STATE OF WASHINGTON

RADIOACTIVE MATERIALS LICENSE

License Number WN-I019-2

(1) The concentration of a radionuclide or radionuclide mixture may be averaged over the volume of the waste and, if used, the solidification agent or matrix. If expressed in units of nanocuries per gram, concentrations may be averaged over the weight of the waste and, if used, the solidification agent. The weight of packaging containers, liners or overpacks shall not be included in this calculation, nor shall the weight of the waste mixture be artificially increased by the addition of heavy, nondispersable solids or objects.

(2) The waste is Class A if none of the listed radionuclides are present.

(3) There are no upper limits in Class B waste for the first three nuclides listed, as transportation and safety requirements involving radiation levels and internal heat generation will effectively limit the concentrations.

(4) There are no Class B values for the last nine radionuclides listed; their presence classifies the waste as either Class A or Class C according to their concentrations.

(5) The waste class for mixtures of the listed radionuclides is determined by deriving for each radionuclide the ratio between its concentration in the mixture and its concentration limit in the table and adding the resulting ratio values for each radionuclide group. All limits used in the calculations must be for the same waste class. The sum of the ratios for each radionuclide group must be equal to or less than 1.0 or the waste is the next higher classification than that used for the calculation.

If Class C limits are used in the calculation and the sum of ratios for either group exceeds 1.0, the waste is not acceptable for near-surface disposal without prior written approval from the department.

(6) If concentrations for any single radionuclide exceed the Class C values in the table, the waste is not acceptable for near-surface disposal without prior written approval from the department.

FOR THE STATE DEPARTMENT OF SOCIAL AND HEALTH SERVICES

Date ..... By .....

STATE OF WASHINGTON

RADIOACTIVE MATERIALS LICENSE

License Number WN-I019-2

Appendix F

ABSORBENTS

Only those absorbents listed below have been approved by the state of Washington, Department of Social and Health Services, Radiation Control Program (Department) for general use in packaging and/or processing radioactive liquids or with materials that may contain a quantity of liquid that requires absorbing.

Absorbency efficiencies and quantity of absorbent required could vary. In all cases, it is the responsibility of the waste generator and/or packager to determine the efficiency and proper proportions of absorbent for liquids being absorbed. Note: Enough absorbent material must be provided to absorb at least twice the volume of radioactive liquid contents.

A. Diatomaceous Earth

1. Superfine
2. Floor Dry
3. Celatom (MP-78)

B. Vermiculite

1. Zonolite (Grades 2, 3, or 4)
2. Krolite

C. Clay Materials

1. Speedi-dry
2. Hi Dri
3. Florco and Florcox
4. Instant-Dri
5. Safe-T-Sorb
6. Oil-Dri (Safe n Dri)

A. THE NATIONAL LOW-LEVEL RADIOACTIVE WASTE POLICY ACT

SHORT TITLE

Section 1. This Act may be cited as the "Low-Level Radioactive Waste Policy Act."

DEFINITIONS

Section 2. As used in this Act --

(1) The term "disposal" means the longterm isolation of low-level radioactive waste pursuant to requirements established by the Nuclear Regulatory Commission under applicable law.

(2) The term "low-level radioactive waste" means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section IIe.(2) of the Atomic Energy Act of 1954.

(3) The term "State" means any State of the United States, the District of Columbia, and, subject to the provisions of Public Law 96-205, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and any other territory or possessions of the United States.

(4) For purposes of this Act the term "atomic energy defense activities of the Secretary" includes those activities and facilities of the Department of Energy carrying out the function of (i) Naval reactors development and propulsion, (ii) weapons activities, verification and control technology, (iii) defense materials production, (iv) inertial confinement fusion, (v) defense waste management and (vi) defense nuclear materials, (vii) defense security and safeguards, (all as included in the Department of Energy appropriations account in any fiscal year for atomic energy defense activities).

GENERAL PROVISIONS

Section 3 (a). Compacts established under this Act or actions taken under such compacts shall not be applicable to the transportation, management, or disposal of low-level radioactive waste from atomic energy defense activities of the Secretary or Federal research and development activities.

(b) Any facility established or operated exclusively for the disposal of low-level radioactive waste produced by atomic energy defense activities of the Secretary or Federal research and development activities shall not be subject to compacts established under this Act or actions taken under such compacts.

LOW-LEVEL RADIOACTIVE WASTE DISPOSAL

Section 4. (a)(1) It is the policy of the Federal Government that --

(A) each State is responsible for providing for the availability of capacity either within or outside the State for the disposal of low-level radioactive waste generated within its borders except for waste generated as a result of defense activities of the Secretary or Federal research and development activities; and

(B) low-level radioactive waste can be most safely and efficiently

managed on a regional basis.

(2)(A) To carry out the policy set forth in paragraph (1), the States may enter into such compacts as may be necessary to provide for the establishment and operation of regional disposal facilities for low-level radioactive waste.

(B) A compact entered into under sub-paragraph (A) shall not take effect until the Congress has by law consented to the compact. Each such compact shall provide that every 5 years after the compact has taken effect, the Congress may by law, withdraw its consent. After January 1, 1986, any such compact may restrict the use of regional disposal facilities under the compact to the disposal of low-level radioactive waste generated within the region.

(b)(1) In order to assist the States in carrying out the policy set forth in sub-section (a)(1); the Secretary shall prepare and submit to Congress and to each of the States within 120 days after the date of the enactment of this Act a report which --

(A) Defines the disposal capacity needed for present and future low-level radioactive waste on a regional basis;

(B) Defines the status of all commercial low-level radioactive waste disposal sites and includes an evaluation of the license status of each such site, the state of operation of site, including operating history, and analysis of the adequacy of disposal technology employed at each site to contain low-level radioactive wastes for their hazardous lifetimes and such recommendations as the Secretary considers appropriate to ensure protection of the public health and safety from wastes transported to such sites;

(C) Evaluates the transportation requirements on a regional basis and in comparison with performance of present transportation practices for the shipment of low-level wastes, including an inventory of types and quantities of low-level wastes, and evaluation of shipment requirements for each type of waste and an evaluation of the ability of generators, shippers, and carriers, to meet such requirements; and

(D) Evaluates the capability of the low-level radioactive waste disposal facilities owned and operated by the Department of Energy to provide interim storage for commercially generated low-level wastes, and estimates the costs associated with such interim storage.

(2) In carrying out this sub-section, the Secretary shall consult with the Governors of the States, the Nuclear Regulatory Commission, the Environmental Protection Agency, the United States Geological Survey, and the Secretary of Transportation, and such other agencies and departments as he finds appropriate.

B. NORTHWEST INTERSTATE COMPACT ON LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT

Each party state of the Northwest Interstate Compact passed identical statutory authority. This Appendix section includes the basic Northwest Compact statutory authority plus the sections unique to each state. The Compact's statutory authority was divided in this manner for readability and to avoid duplication of the same information.

NORTHWEST INTERSTATE COMPACT ON LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT

ARTICLE I -- Policy and Purpose

The party states recognize that low-level radioactive wastes are generated by essential activities and services that benefit the citizens of the states. It is further recognized that the protection of the health and safety of the citizens of the party states and the most economical management of low-level radioactive wastes can be accomplished through cooperation of the states in minimizing the amount of handling and transportation required to dispose of such wastes and through the cooperation of the states in providing facilities that serve the region. It is the policy of the party states to undertake the necessary cooperation to protect the health and safety of the citizens of the party states and to provide for the most economical management of low-level radioactive wastes on a continuing basis. It is the purpose of this compact to provide the means for such a cooperative effort among the party states so that the protection of the citizens of the states and the maintenance of the viability of the states' economies will be enhanced while sharing the responsibilities of radioactive low-level waste management.

ARTICLE II -- Definitions

As used in this compact:

(1) "Facility" means any site, location, structure, or property used or to be used for the storage, treatment, or disposal of low-level waste, excluding federal waste facilities;

(2) "Low-level waste" means waste material which contains radioactive nuclides emitting primarily beta or gamma radiation, or both, in concentrations or quantities which exceed applicable federal or state standards for unrestricted release. Low-level waste does not include waste containing more than ten nanocuries of transuranic contaminants per gram of material, nor spent reactor fuel, nor material classified as either high-level waste or waste which is unsuited for disposal by near-surface burial under any applicable federal regulations;

(3) "Generator" means any person, partnership, association, corporation, or any other entity whatsoever which, as a part of its activities, produces low-level radioactive waste;

(4) "Host state" means a state in which a facility is located.

ARTICLE III -- Regulatory Practices

Each party state hereby agrees to adopt practices which will require low-level waste shipments originating within its borders and destined for a facility within another party state to conform to the applicable packaging and transportation requirements and regulations of the host state. Such practices shall include:

(1) Maintaining an inventory of all generators within the state that have shipped or expect to ship low-level waste to facilities in another party state;

(2) Periodic unannounced inspection of the premises of such generators and the waste management activities thereon;

(3) Authorization of the containers in which such waste may be shipped, and a requirement that generators use only that type of container authorized by the state;

(4) Assurance that inspections of the carriers which transport such waste are conducted by proper authorities, and appropriate enforcement action taken for violations;

(5) After receiving notification from a host state that a generator within the party state is in violation of applicable packaging or transportation standards, the party state will take appropriate action to assure that such violations do not recur. Such action may include inspection of every individual low-level waste shipment by that generator.

Each party state may impose fees upon generators and shippers to recover the cost of the inspections and other practices under this Article. Nothing in this Article shall be construed to limit any party state's authority to impose additional or more stringent standards on generators or carriers than those required under this Article.

ARTICLE IV -- Regional Facilities

Section 1. Facilities located in any party state, other than facilities established or maintained by individual low-level waste generators for the management of their own low-level waste, shall accept low-level waste generated in any party state if such waste has been packaged and transported according to applicable laws and regulations.

Section 2. No facility located in any party state may accept low-level waste generated outside of the region comprised of the party states, except as provided in Article V.

Section 3. Until such time as Section 2 takes effect as provided in Article VI, facilities located in any party state may accept low-level waste generated outside of any of the party states only if such waste is accompanied by a certificate of compliance issued by an official of the state in which such waste shipment originated. Such certificate shall be in such form as may be required by the host state, and shall contain at least the following:

(1) The generator's name and address;

(2) A description of the contents of the low-level waste container;

(3) A statement that the low-level waste being shipped has been inspected by the official who issued the certificate or by his agent or by a representative of the United States Nuclear Regulatory Commission, and found to have been packaged in compliance with applicable federal regulations and such additional requirements as may be imposed by the host state;

(4) A binding agreement by the state of origin to reimburse any party

state for any liability or expense incurred as a result of an accidental release of such waste during shipment or after such waste reaches the facility.

Section 4. Each party state shall cooperate with the other party states in determining the appropriate site of any facility that might be required within the region comprised of the party states, in order to maximize public health and safety while minimizing the use of any one party state as the host of such facilities on a permanent basis. Each party state further agrees that decisions regarding low-level waste management facilities in their region will be reached through a good faith process which takes into account the burdens borne by each of the party states as well as the benefits each has received.

Section 5. The party states recognize that the issue of hazardous chemical waste management is similar in many respects to that of low-level waste management. Therefore, in consideration of the state of Washington allowing access to its low-level waste disposal facility by generators in other party states, party states such as Oregon and Idaho which host hazardous chemical waste disposal facilities will allow access to such facilities by generators within other party states. Nothing in this compact may be construed to prevent any party state from limiting the nature and type of hazardous chemical or low-level wastes to be accepted at facilities within its borders or from ordering the closure of (of) such facilities, so long as such action by a host state is applied equally to all generators within the region composed of the party states.

Section 6. Any host state may establish a schedule of fees and requirements related to its facility, to assure that closure, perpetual care, and maintenance and contingency requirements are met, including adequate bonding.

ARTICLE V -- Northwest Low-Level Waste Compact Committee

The governor of each party state shall designate one official of that state as the person responsible for administration of this compact. The officials so designated shall together comprise the Northwest low-level waste compact committee. The committee shall meet as required to consider matters arising under this compact. The parties shall inform the committee of existing regulations concerning low-level waste management in their states, and shall afford all parties a reasonable opportunity to review and comment upon any proposed modifications in such regulations. Notwithstanding any provision of Article IV to the contrary, the committee may enter into arrangements with states, provinces, individual generators, or regional compact entities outside the region comprised of the party states for access to facilities on such terms and conditions as the committee may deem appropriate. However, it shall require a two-thirds vote of all such members, including the affirmative vote of the member of any party state in which a facility affected by such arrangement is located, for the committee to enter into such arrangement.

ARTICLE VI -- Eligible Parties and Effective Date

Section 1. Each of the following states is eligible to become a party to this compact: Alaska, Hawaii, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. As to any eligible party, this compact shall become effective upon enactment into law by that party, but it shall not become initially effective until enacted into law by two states. Any party state may

withdraw from this compact by enacting a statute repealing its approval.

Section 2. After the compact has initially taken effect pursuant to Section 1, any eligible party state may become a party to this compact by the execution of an executive order by the governor of the state. Any state which becomes a party in this manner shall cease to be a party upon the final adjournment of the next general or regular session of its legislature or July 1, 1983, whichever occurs first, unless the compact has by then been enacted as a statute by that state.

Section 3. Section 2 of Article IV of this compact shall take effect on July 1, 1983, if consent is given by Congress. As provided in Public Law 96-573, Congress may withdraw its consent to the compact after every five-year period.

ARTICLE VII -- Severability

If any provision of this compact, or its application to any person or circumstance, is held to be invalid, all other provisions of this compact, and the application of all of its provisions to all other persons and circumstances, shall remain valid; and to this end the provisions of this compact are severable.

SPECIFIC STATUTORY AUTHORITY BY PARTY STATE

Alaska

The Alaska compact legislation adds an implementation section to the basic compact language. It reads:

"The commissioner of environmental conservation may adopt regulations and do all things necessary or incidental to the carrying out of the Northwest Interstate Compact on Low-Level Radioactive Waste Management."

Hawaii

The Hawaii compact legislation includes three additional sections that read as follows:

"Compact administrator. The compact administrator, acting jointly with like officers of other party states, may promulgate rules and regulations to carry out more effectively the terms of the compact. The compact administrator shall cooperate with all departments, agencies, and officers of and in the government of this State and its subdivisions in facilitating the present administration of the compact or of any supplementary agreement or agreements entered into by this State thereunder. The compact administrator shall adopt the practices and may impose the fees authorized under article III of the compact, except that state and county law enforcement agencies and the public utilities commission shall retain their enforcement and inspection authority relating to carriers.

Supplementary agreements. The compact administrator may enter into supplementary agreements with appropriate officials of other states pursuant to the compact. In the event that the supplementary agreement requires or contemplates the use of any institution or facility of the State or requires or contemplates the provision of any service by the State, the supplementary agreement shall have no force or effect until approved by the head of the department or agency under whose jurisdiction the institution or facility is operated or whose department or agency will be charged with the rendering of such service.

Payment of state obligations. The compact administrator, subject to the approval of the comptroller, may make or arrange for any payment necessary to discharge any financial obligation imposed upon this State by the compact or by any supplementary agreement entered into thereunder."

Idaho

A section on implementation is added to the Idaho Compact legislation that reads:

"The state department of health and welfare, as designated state radiation control agency, shall adopt the practices and may impose the fees authorized under article III of the compact, except that the department of law enforcement and the public utilities commission shall retain their existing enforcement and inspection authority relating to carriers. The board of health and welfare shall adopt such rules and regulations as may be necessary to enable the department of health and welfare to carry out the

provisions of this section."

Montana

In addition to the basic compact legislation, a section on administration of the compact is incorporated. It reads as follows:

"Administration of compact -- fees. (1) The department of health and environmental sciences, as the state radiation control agency, shall administer the provisions of the compact.

(2) The department may assess and collect fees for services rendered in inspecting and regulating low-level radioactive waste generators, transporters, and disposal facilities. Such fees must cover the department's costs for those services and must be deposited in the earmarked revenue fund for use by the department. State and local government agencies, including the university system, are exempt from the payment of fees.

(3) The department may adopt rules under the authority contained in 75-3-201(3)(b) to implement the provisions of this compact."

Oregon

A section was added in the Oregon compact legislation which addresses the committee membership. It reads:

"The Oregon appointee to the Northwest Low-Level Waste Compact Committee shall be subject to Senate confirmation pursuant to section 4 Article III of the Oregon constitution."

Utah

No additional sections were added to the basic compact legislation in Utah.

Washington

Two additional sections have been added to Washington's statutory authority concerning the Northwest compact. One section addresses the requirements of Washington's representative to the Northwest Low-Level Waste Compact Committee and reads as follows:

"The person designated as the Washington representative to the committee as specified in Article V shall adhere to all provisions of the low-level radioactive waste compact. In considering special conditions or arrangements for access to the state's facilities from wastes generated outside of the region, the committee member shall ensure at a minimum, that the provisions of Article IV, Section 3 are complied with. The Washington representative shall approve access of such wastes to the state's facility only if there is no other feasible alternative available."

The second additional section states that the Department of Social and Health Services is authorized to adopt rules to carry out its responsibilities for the Northwest Interstate Compact Committee on Low-Level Waste Management (RCW 43.200.070).

C. PROCLAMATION/EXECUTIVE ORDERS CONCERNING THE HANFORD DISPOSAL SITE

On October 4, 1979, Governor Dixy Lee Ray declared a state of emergency and temporarily closed the Hanford, Washington low-level nuclear waste site. The site was closed because of serious deficiencies in packaging and transportation of low-level waste destined for the Hanford site such as serious mechanical defects, leakage, improper containerizing.

Governor Ray issued an Executive Order (E079-09) on November 19, 1979 reopening the disposal site. As a condition of reopening the site the Governor also ordered a site use permit and compliance certificate system be implemented. The certificate required that an inspection and compliance with applicable regulations had been conducted. The purpose of site use permit was to assist in correcting items of noncompliance.

Copies of the proclamation and executive order follow.

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STATE OF
WASHINGTON

Dixy Lee Ray
Governor

Legislative Building, Olympia, Washington 98504

PROCLAMATION BY THE GOVERNOR

Significant information concerning inspection of vehicles transporting low-level nuclear waste material to Hanford reveals serious mechanical defects, overloads, leakage, improper containerizing, and other questionable practices.

Inspections carried forward by the State of Washington including the Department of Transportation, Washington State Patrol, Nuclear Regulatory Commission and the Department of Social and Health Services confirms serious deficiencies in the packaging of low-level nuclear waste materials destined for delivery at the Hanford Works.

These conditions are hazardous to the life, health, safety and property of the people of the State of Washington causing public disorder and creating an emergency situation at the commercial low-level waste disposal site at Hanford, Washington.

Demands upon the Nuclear Regulatory Commission and upon the federal Department of Transportation requesting strict compliance with license and safety regulations, and proper certification, have not been met, although assurances were made last July that such protective measures would be followed.

The foregoing conditions are sufficient to constitute an emergency situation pursuant to the revised code of Washington.

NOW, THEREFORE, I, Dixy Lee Ray, Governor of the State of Washington, as a result of the conditions specified and under the provisions of RCW 43.06.010, .210 and .220 proclaim that a state of emergency exists affecting the life, health or property of persons in the area of the Hanford Works, at Hanford, Washington, and more specifically that portion of property being leased to the Nuclear Engineering Company and described as follows:

> One hundred (100) acres of land, more or less, in the east half of Section 9, Township 12 North, Range 26 EWM, Benton County, Washington, more particularly described as follows: Beginning at the Southeast corner of said Section 9; thence North 0° 53' 09" West along the East line of Section 9 a distance of 2942 feet; thence South 88° 50' 56" West 1480 feet; thence South 0° 53' 09" East 2942 feet to the South line of said Section; thence North 88° 50' 56" East along said South line of the Section 1480 feet to the point of beginning.

I direct that the described low-level waste site be immediately closed to the delivery or deposit of any low-level nuclear waste material, save and except those shipments now in transit and then only if the carrier and cargo is certified safe and in compliance with the Nuclear Regulatory Commission rules and regulations and further only if these are in compliance with the statutes, rules and regulations of the State of Washington.

I further order that this proclamation shall remain in full force and effect until further notice by this office.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the State of Washington to be affixed at Olympia this 4th day of October, Nineteen Hundred and Seventy-Nine.

Governor of Washington

BY THE GOVERNOR:

Assistant Secretary of State

STATE OF WASHINGTON

Dixy Lee Ray
Governor

OFFICE OF THE GOVERNOR
Legislative Building, Olympia, Washington 98504

EXECUTIVE ORDER EO 79-09

REOPENING THE HANFORD, WASHINGTON
WASTE DISPOSAL SITE

WHEREAS, on October 4, 1979, a proclamation was issued by Governor Dixy Lee Ray, pursuant to statutory authority, declaring a state of emergency and the temporary closure of the Hanford, Washington low-level nuclear waste site; and

WHEREAS, said proclamation was found necessary to protect the life, health, safety, and property of the people of the State of Washington, resulting from the serious deficiencies in the packaging and transportation of low-level nuclear waste materials destined for delivery at the Hanford Works; and

WHEREAS, since the closure of the Hanford facility, a number of important steps have been taken by the administration through personal action of the Governor, the State Energy Office and other state agencies resulting in the following assurances:

(a) Commitment by the United States Nuclear Regulatory Commission and the United States Department of Transportation for funds to train state personnel as additional inspectors. Further, that these departments will increase their respective enforcement powers over low-waste producers and shippers.

(b) A stepped up inspection and enforcement program, through the Washington State Patrol, of carriers of waste materials.

(c) A system of certification through the Department of Social and Health Services that requires more stringent and effective warranties and indemnification provisions.

(d) An inter-state agreement between the States of Washington, Nevada and South Carolina, that will provide that violations of rules and regulations in one state will result in suspension in each of the other states of the use of that state's site

(e) Congressional action in the authorization and location of additional low-level sites and the recognition that nuclear waste disposal is a federal, as well as, a state responsibility; and

WHEREAS, through the concerted actions of the Governors of the States of Washington, Nevada, and South Carolina, the nation's attention and the attention of the remaining Governors of the other states has been drawn to the need for each state to participate in the handling of low-level nuclear waste material, and for the Congress to take immediate steps for the location of additional sites; and

WHEREAS, there is an immediate need and a vital interest within the nation's medical institutions and research communities to establish storage sites for low-level radioactive residue, and there is recognition on the part of the medical fraternity that such materials must be properly packaged before disposal at such sites; and

WHEREAS, the Hanford site has been operated by Nuclear Engineering Company through a lease agreement with the State of Washington, and that said company has properly and safely operated said site but that certain provisions of the lease needed to be updated concerning increased perpetual care and maintenance payments, indemnity requirements, and other changes, and these things being now mutually agreed upon; and

WHEREAS, Nuclear Engineering Company, has agreed that upon a reopening of the site it will provide express service to it's regular Washington State customers, mainly hospitals and research institutions, upon application by the company for a Site Use Permit and provided an appropriate temporary waiver by the State of the conditions of this executive order is confirmed; and

WHEREAS, the Governor of Washington is authorized to issue orders to protect the public health and safety interests of the people and environment of the State of Washington.

NOW, THEREFORE, I, Dixy Lee Ray, Governor of the State of Washington, pursuant to the powers vested in me and in protection of the public health and safety, do hereby order that:

1. Any person who generates or packages commercial low-level radioactive waste for disposal at the Hanford, Washington facility shall be required to provide to the State of Washington a Compliance Certificate that shall be signed by an authorized representative of the generator or packager and shall warrant to the State of Washington that the waste shipment was inspected within forty-eight (48) hours prior to shipment and conforms in all respects to both Federal and State requirements for shipment, transportation and disposal. Said certification shall accompany each shipment of waste materials shipped to the Hanford, Washington facility. The generator or packager shall indemnify and hold harmless the State of Washington from any and all claims, suits, losses, damages or expenses on account of injuries to any and all persons whomsoever, and any and all property damage, arising or growing out of or in any manner for the failure of the generator/packager to comply with the warranties set forth herein.

2. Any broker, shipping and/or transporting commercial low-level radioactive waste into the State of Washington for disposal at the Hanford, Washington facility from the broker's warehouse facility, or any other independent intermediate point or facility, shall be required to conduct an external visual and dose-rate inspection of said packaged waste materials within forty-eight (48) hours prior to shipment or transport, and shall be required to certify to the State of Washington that said inspections have been conducted and revealed no items of non-compliance with all applicable laws, rules and regulations. Said certification shall accompany each shipment of waste shipped to the Hanford, Washington facility, and shall indemnify and hold harmless the State of Washington from any and all claims, suits, damages, or expenses on account of injuries to or death of any and all persons whomsoever, and any and all property damage, arising or growing out of or in any manner for the failure of the broker to comply with the warranties set forth herein. Broker shall mean, for the purpose of this section, any person, who acts as an agency or intermediary for a generator/packager or another person, provided it shall not include a carrier whose sole function is to transport low-level waste, a generator/packager of a low-level waste, or a low-level radioactive waste disposal site operator.

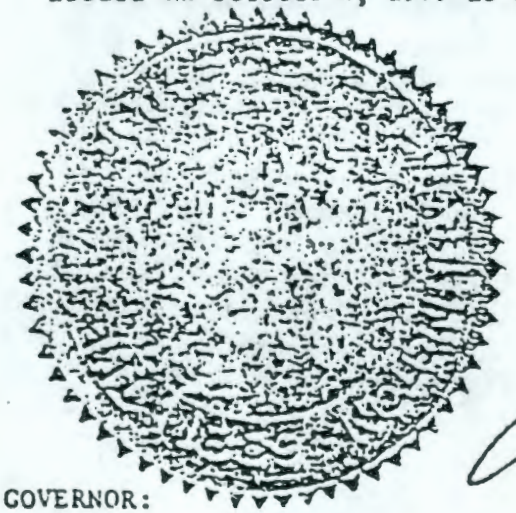
3. Any carrier, as defined by the United States Department of Transportation (DOT) Regulations, transporting commercial low-level radioactive waste into the State of Washington for disposal at the Hanford, Washington facility shall give at least four (4) hours but not more than forty-eight (48) hours advance notice in writing to the State of the intended movement of a shipment within, or the arrival from without the State, of low-level radioactive waste, and shall be required to certify to the State of Washington that the transportation vehicle is properly placarded and secured for transport and that all shipping papers are as required by the United States Department of Transportation, and all other applicable regulations and orders have been properly executed and delivered to said carrier, and said carrier certification shall accompany each load of waste transported to the Hanford, Washington facility.

4. The Department of Social and Health Services (DSHS) is hereby ordered to adopt Emergency Regulations for a Site Use Permit for the purpose of assisting in the correction of the conditions resulting in the Emergency Condition specified in the Governor's Proclamation dated October 4, 1979, said Emergency Regulations to be in accordance with the guidelines consistent with this Executive Order. The Department is further ordered to adopt, as soon as practicable, permanent regulations incorporating the elements of the corrective action set forth in this Executive Order. Any generator/packager or broker who desires to utilize the Hanford, Washington low-level radioactive waste disposal facility shall file with DSHS, prior to the initial use upon reopening, an intent to file an application for a User Permit. There shall be a provision made in the regulations adopted for the applicant to pay for the costs of the Department in administering the regulations.

5. That appropriate copies of assurances from federal and other agencies and persons involved, and proposed forms of compliance are attached and made a part of this order.

6. Effective this date, the Hanford, Washington low-level radioactive waste facility is authorized to resume full operations pursuant to its license, issued by the State of Washington, and pursuant to all applicable laws, rules and regulations, and the provisions of this executive order.

7. Pursuant to the provisions of RCW 43.06.210 the proclamation issued on October 4, 1979 is hereby terminated.



IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the State of Washington to be affixed at Olympia this November 19th, A.D. Nineteen hundred and seventy-nine.

Governor

BY THE GOVERNOR:

Assistant Secretary of State

10. The authorized place of use is a low-level waste burial facility located in the southeast corner of Section 9, Township 12 North, Range 26E W.M., Benton County, Washington, Route 4 - U.S. DOE Hanford Reservation, Richland, Washington 99352, within the boundary of the land area described in Sublease Agreement with the state of Washington, dated July 29, 1965, as amended. For the purposes of this license, the authorized place of use shall be referred to as the "facility".

11. Reference to the "department" in this license shall mean the Department of Health or successor agency.

12. The licensee shall notify the department in writing within 30 days of the appointment of a new Facility Manager, Facility Assistant Manager, and Corporate or Facility Radiological Control and Safety Officer, describing how the appointee meets or exceeds the minimum qualifications specified in the Facility Standards Manual.

13. By October 30, 1992, the licensee shall submit to the department for approval a complete copy and description of all revisions to Richland Facility Operations Procedures which are necessary to comply with the provisions of this license.

14. Upon receipt of a shipment, the licensee shall furnish to the department copies of all shipment manifests received. The licensee shall furnish to the department, within 30 days of a specific written request, special reports consisting of selected information contained on shipment manifests. By the 10th of each month, the licensee shall submit a report totaling the volume and activity of the waste received during the previous month. In addition, a monthly facility receipt and burial activities report shall be submitted by the licensee, no later than the th day of the following month to the Department of Health, Head, Waste Management Section. The report shall include the following information for each shipment:

    A. Name and address of the generator(s), broker (if any), and shipper.

    B. Radionuclides and activity of each radionuclide in millicuries (total and by generator).

    C. Grams of special nuclear material as received under NRC License No. 16-19204-01 (total and by generator).

    D. Mass (in kilograms) of source material received (total and by generator).

    E. Class totals of volume and activity of Class A, B, and C waste entrenched (total and by generator).

AMENDMENT NO. 18

WA 8967
No date
IC

State of Washington

Radioactive Materials License

Pursuant to the Nuclear Energy and Radiation Control Act, RCW 70.98, and the Radiation Control Regulations, Chapters 246-220 through 246-255 WAC, and in reliance on statements and representations heretofore made by the licensee designated below, a license is hereby issued authorizing such licensee to transfer, receive, possess and use the radioactive material(s) designated below; and to use such radioactive materials for the purpose(s) and at the place(s) designated below. **This license is subject to all applicable rules and regulations promulgated by the State of Washington Department of Health.**

1. Licensee Name 2. Address US ECOLOGY, INC. 9200 Shelbyville Road, Suite 300 Louisville, Kentucky 40222	3. License Number WN-I019-2 4. Expiration Date May 31, 1997 5. Reference number(s)

9413286.0561

6. Radioactive Material (element and mass number)	7. Chemical and/or Physical Form	8. Maximum quantity licensee may possess at any one time
A. Any radioactive material excluding source material and special nuclear material.	A. Dry packaged radioactive waste except as authorized by this license.	A. 60,000 curies (2.22 x 10^{15} Bequerels).
B. Source material.	B. Dry packaged radioactive waste except as authorized by this license.	B. 36,000 kilograms.
C. Any radioactive material, excluding special nuclear material.	C. Check and calibration sources in any form.	C. 0.1 Curie (3.7 x 10^{9} Bequerels).

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CONDITIONS

9. Authorized use.

A&B Radioactive waste may be received, transferred, stored, repackaged, and disposed at a low-level radioactive waste disposal facility. The maximum radioactivity and/or quantity of radioactive material indicated in items 8.A and 8.B applies only to above-ground activity.

F. Volume of packages disposed with radiation readings at the surface of the disposal container of:

≤ 50 mr/hr
> 50 mR/hr ≤ 200 mR/hr
> 200 mR/hr ≤ 1 R/hr
> 1 R/hr ≤ 10 R/hr
> 10 R/hr ≤ 100 R/hr
> 100 R/hr

and to the extent practicable:

G. Type and physical form of the waste.

H. Chemical form of the waste and solidification/stabilization/sorption agent used.

I. If an Engineered Barrier with a High Integrity Container (HIC), or High Integrity Container (HIC) was used (total and by generator).

J. Quantity and type of chelates in concentrations greater than 0.1 percent by weight (total and by generator).

15. The licensee shall maintain a record for each shipment of waste disposed at the facility. As a minimum, the record shall include:

A. The date of disposal of the waste.

B. The location of the waste in the disposal site.

C. The condition of the waste packages as received.

D. Any discrepancies between materials listed on the manifest and those received.

E. Any evidence of leaking or damaged packages or damaged packages or radiation or contamination levels in excess of limits specified in United States Department of Transportation and state of Washington regulations.

F. A description of any repackaging operations of any of the waste packages in the shipment.

GENERAL PACKAGING CONDITIONS

16. All radioactive waste shall be packaged, loaded, received, and transported in accordance with all applicable U.S. Department of Transportation regulations, U.S. Nuclear Regulatory Commission regulations, state regulations, and the requirements of this license. Nothing in this license shall in any way relieve the licensee from full compliance with all applicable state and federal laws and regulations, including but not limited to the Resource Conservation and Recovery Act of 1976, as amended, and the State Hazardous Waste Management Statutes of 1976, as amended, and subsequently enacted regulations.

17. Unless otherwise authorized, the licensee shall not receive for disposal any mixed low-level radioactive waste. Mixed waste is defined as any radioactive material which is no longer of use or value, and contains waste that either 1) is listed as dangerous waste in the state's Dangerous Waste Regulations, 2) causes the waste to exhibit any of the dangerous waste characteristics identified in the state's Dangerous Waste Regulations, 3) fulfills any of the 'dangerous waste criteria' identified in the state's Dangerous Waste Regulations, 4) listed as hazardous waste in Subpart D, 40 CFR Part 261, or 5) causes the waste to exhibit any of the hazardous waste characteristics identified in Subpart C, 40 CFR Part 261.

18. Unless specifically authorized by the department, all radioactive waste shall be received and buried in closed containers. Cardboard, corrugated paper, wood and fiberboard are prohibited burial containers.

19. All metal containers shall be secured by an intact heavy duty closure device when presented for disposal. Closure devices of open-head metal drums having 55-gallons or greater capacity shall be secured by bolts having 5/8 inch or larger diameters. The shipper of any DOT 7A Type A container must maintain on file, a complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction comply with that specification, or shall meet the use restrictions contained in "DOT 7A Type A Certification Document, MLM 3245. Appendix A lists examples of those containers and restrictions.

20. Radioactive waste shall be packaged in such a manner that waste containers received at the facility do not show:

    A. Significant deformation.

    B. Loss or dispersal of contents.

    C. An increase in the external radiation levels as recorded on the manifest, within instrument tolerances.

    D. Degradation due to rust or other chemical action which results in a loss of container integrity.

21. Void spaces within the radioactive waste and between the waste and its package shall be reduced to the maximum extent practicable. Unless specifically approved by the department, void spaces in Class A stable, Class B and Class C waste packages shall be less than 15 percent of the total volume of the disposal package, provided the disposal package is not a high integrity container nor contains activated metals that are too large to put into high integrity containers. For Class B and Class C waste packages containing activated metals, voids shall be reduced to the extent practicable and shall be demonstrated to be structurally stable by any of the methods discussed in WAC 246-249-050(2)(a). This documentation shall be submitted to the department prior to disposal, and shall be kept on file by the licensee.

22. Waste shall not contain, or be capable of generating, toxic gases, vapors, or fumes during transportation, handling, or disposal.

23. No pyrophoric, hazardous, dangerous, or chemically explosive materials or materials which could react violently with water or moisture or when subject to agitation shall be accepted for disposal.

24. Waste or packaging shall not contain any liquid except as authorized by this license.

25. The licensee shall not receive shipments of radioactive material unless appropriate lifting devices of sufficient length have been provided and securely attached to containers and palletized shipments within a cask.

26. The licensee shall not accept radioactive waste unless each waste package has been:

A. Classified in accordance with Appendix B of this license and the most recent version of the "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification, issued May 1983 by the U.S. Nuclear Regulatory Commission.

B. Marked as either Class A stable, Class A unstable, Class B or Class C, as defined in Appendix B of this license and the most recent version of the "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification," issued May 1983 by the U.S. Nuclear Regulatory Commission.

C. Marked with a unique package identification number, clearly visible on the package, and can be correlated with the manifest for that particular shipment.

D. Stabilized, when required by this license, in accordance with criteria contained in the most recent version of the "Technical Position on Waste Forms," issued May 1983 by the U.S. Nuclear Regulatory Commission, and procedures that are described in approved vendor topical reports. Only those stabilization media approved by the department and listed in Appendix D to this license, or High Integrity Containers approved by the department and listed in Appendix E to this license may be used. Stability may also be achieved using engineered barriers in the disposal unit. Specific approval of the department is required prior to construction of any newly designed or redesigned engineered barrier. Only those engineered barriers listed in Appendix F of this license are approved for use at the facility.

27. The classification and package identification marking required by Condition 26 is in addition to any marking or labeling required by U.S. NRC or U.S. DOT and shall consist of lettering 1/2 inch high or greater in a durable contrasting color to the background surrounding the lettering. The classification marking shall be visible on the same side as the radioactive marking or label and in close proximity (within six inches). Waste packages marked "Radioactive", "Limited Quantity," or "Radioactive LSA" need only one classification marking, whereas waste packages labeled White I, Yellow II or Yellow III shall have classification markings in close proximity (within six inches) to each label. Waste materials shipped in casks shall have the classification markings visible on the outside of the cask.

SPECIFIC WASTE FORM REQUIREMENTS

28. Except as allowed under this license, untreated liquids and wet sludges are not allowed for disposal. Liquids shall be rendered non-corrosive ($4 \leq$ pH ≤ 11) prior to treatment. Acceptable treatments are stabilization, solidification or sorption, depending on waste class. Wet sludges and slurries, such as evaporator bottoms, shall be noncorrosive and shall be treated by stabilization or solidification. Ion exchange media shall not be treated by sorption.

29. Liquids, ion exchange resins, or filter media treated by stabilization shall be processed in accordance with a process control program using an approved stabilization medium (see Appendix D). The resulting waste form shall contain no detectable free-standing liquid and shall meet the stability requirements of Condition 26. "No detectable free-standing liquid" is defined to be as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1.0% of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5% of the volume of waste processed to a stable form.

30. Liquids treated by solidification shall be processed in accordance with a process control program using an approved solidification medium (see Appendix C). The resulting waste form shall contain no detectable free-standing liquid. "No detectable free-standing liquid" is defined to be as little liquid as is reasonably achievable, but in no case shall it exceed more than 0.5 percent (by volume) of liquid per container.

31. Liquids treated by sorption may be received, provided that:

    A. A metal outer disposal container is used which meets DOT 7A performance specifications and heavy-duty closure devices as required by Condition 19.

    B. The metal container is lined with a minimum of a 4 mil plastic liner, except as noted in Appendix G.

    C. The liquid is contained in enough sorbent material to sorb at least twice the volume of the liquid contents.

D. Only sorbents approved by the department shall be used (see Appendix G).

E. A quality control program is used which verifies that the above conditions are met.

32. Class A radioactive liquids in individual units or vials, not to exceed 50 milliliters per vial and used for clinical or laboratory testing, may be received, provided that:

A. A metal outer disposal container is used which meets DOT 7A performance specification (see Condition 19).

B. The metal disposal container is lined with a minimum of a 4 mil plastic liner, except as noted in Appendix G.

C. The individual units are layered in sufficient sorbent material to sorb at least twice the total volume of the liquid contents.

D. Only sorbents approved by the department (see Appendix G) shall be used.

33. Waste containing biological (excluding animal carcasses, which are considered in Condition 34), pathogenic, or infectious material or equipment (e.g., syringes, test tubes, capillary tubes) used to handle such material, shall be treated to reduce, to the maximum extent practicable, the potential hazard from the non-radiological materials. The inner waste container shall be a metal container meeting either DOT 7A performance specifications (see Condition 19) or manufactured to DOT 17H specifications and shall be lined with a minimum 4 mil plastic liner which shall be sealed. The inner waste container shall be placed in an outer metal container meeting DOT 7A performance specifications with a heavy duty closure device (see Condition 19) and shall have a capacity at least 40 percent greater than the inner container. The void between inner container and outer container shall be completely filled by approved sorbent material and the outer container must be sealed. Only sorbents approved by the department shall be allowed (see Appendix G).

34. Animal carcasses containing, or contained in, radioactive materials shall be packaged in accordance with the following requirements: the biological material shall be layered with absorbent and lime and placed in a metal container meeting either DOT 7A performance specification or manufactured to DOT 17H specifications, having a heavy duty closure device (see Condition 19). The inner container shall be closed and placed in a metal container meeting DOT 7A performance specification with a heavy duty closure device, having a capacity at least 40 percent greater than the inner container. The void between the inner container and the outer container shall be completely filled by approved sorbent material and the outer container must be sealed. Only sorbents approved by the department (except Perlites) shall be used (see Appendix G).

35. Waste in gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C. Total activity shall not exceed 100 curies (3.7×10^{12} Bqs) per container. Class A gaseous waste shall be contained within U.S. DOT specification cylinders. Class A gaseous waste contained in hermetically sealed glass ampules, tubes, or sealed sources are exempt from the requirement for the specification cylinder provided that they are packaged in containers meeting DOT 7A specifications, having a heavy duty closure device (see Condition 19) and with sufficient sorbent material to prevent breakage and rupture of its contents. Specific approval of the department is required if the gaseous waste is Class B or C. Only sorbents approved by the department shall be used (see Appendix G).

36. Class A ion exchange and filter media containing radionuclides with half-lives greater than five years, the total concentration of which is one microcurie (3.7×10^{4} Bqs) per cubic centimeter or greater, except Cobalt 60 having a concentration of 50 microcuries per cubic centimeter or greater, shall:

    A. Meet the stability requirements of Condition 26 and shall contain no detectable free-standing liquid. "No detectable free-standing liquid" is defined to mean as little liquid as reasonably achievable, but in no case shall the liquid exceed 1.0% of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5% of the volume of waste processed to a stable form. Other Class A ion exchange and filter media which are classified as unstable shall contain no more liquid than 0.5% by volume of the waste.

B. The calculations of concentrations of isotope activity will adhere to the "sum of fractions being equal to or less than unity rule" for ion exchange resins and filter media containing isotopes with half-lives greater than five years, with the exception of Cobalt 60.

37. Radioactive waste containing radium and/or transuranic radionuclides, as described in Appendix B, is acceptable, provided that the radium and transuranic radionuclides are essentially evenly distributed within an homogenous waste form. The receipt and disposal of waste in which the radium or transuranic radionuclides are not evenly distributed (components, or equipment primarily contaminated with radium or transuranic radionuclides), or radium or transuranic radionuclides in excess of Class A limits, requires the specific approval of the department. Radioactive waste packaged in accordance with license condition 38 is exempt from this condition.

38. Radioactive consumer products, the use and disposal of which is exempt from licensing control (see WAC 246-232), may be received without regard to concentration limits of Appendix B, provided the entire unit is received and is packaged with sufficient sorbent material so as to preclude breakage and rupture of its contents. Only sorbents approved by the department shall be used (see Appendix G).

This condition allows the disposal of such consumer products as intact household or industrial smoke detector units containing Americium-241 foils, and radium or other radioactive materials incorporated into self-luminous devices and electron tubes. Documentation that the consumer product was manufactured under a U.S. Nuclear Regulatory Commission exempt license shall accompany each shipment made under this condition.

39. Incinerator ash which is classified as Class A waste according to Condition 26 shall be solidified, granular or treated in such a manner as to be rendered nondispersible in air, exclusive of packaging.

40. Until alternative waste management techniques such as incineration or recycling become generally available, waste liquids which have a treatment concentration of oil in excess of 10 percent by weight, shall be treated by either solidification or stabilization. Dilution by solidification or stabilization media shall not be allowed in determining waste composition. "Oil" means an organic liquid which is immiscible in water, the disposal of which is not regulated under RCRA or the state hazardous waste laws.

41. Until alternative waste management techniques such as incineration or recycling become generally available, waste liquids which have a pretreatment concentration of chelating agents in excess of 1.0 percent by weight, shall be treated by either solidification or stabilization. Dilution by solidification or stabilization media shall not be allowed in determining waste composition. "Chelating agent" means amine polycarboxylic acids (e.g., EDTA, DTPA), hydroxy-carboxylic acids and polycarboxylic acids (e.g., citric acid, carbolic acid, and glucinic acid), the disposal of which is not regulated under RCRA or the state hazardous waste laws.

42. The licensee shall not accept for disposal any neutron source (e.g., polonium 210, americium 241, radium 226 in combination with beryllium or other target) unless the generator has notified the licensee of the intent to ship such source to the licensees disposal facility. The notification shall consist of telephone and written notification to the Facility Manager prior to shipment. The notification shall indicate the isotope, activity, form of the source, a description of the packaging utilized, radiological data, and anticipated date of arrival. Additionally, a copy of the written notification must accompany the shipment made under this license condition.

RECEIPT, ACCEPTANCE AND INSPECTION CONDITIONS

43. The licensee is exempt from the timely inspection requirements of WAC 246-221-160(2)(a) and (3)(a), provided the requirements of the Facility Standards Manual and Conditions 44 through 46 of this license are met.

44. Waste shipments shall not be accepted at the facility unless accompanied by the following (a single shipment shall consist of not more than one vehicle or one tractor with legal trailer(s) attached):

A. Shipment manifest approved by the department.

B. Washington State Patrol or Washington State Utilities and Transportation Commission vehicle inspection certificate, or a current visible Washington State 90-day vehicle inspection seal.

C. Current certification Form RHF-31, properly executed by a representative of the shipper/generator of the waste, in accordance with requirements of Washington State Rules and Regulations For Radiation Protection, WAC 246-249-030.

D. Upon departmental request, other permits or documentation required under this license, or state or federal law or regulation.

45. Waste shipments shall not be accepted by the facility unless the accompanying Form RHF-31 is stamped as received, and initialed by an authorized representative of the department. (The individual may be the licensee, when designated by telephone notification and confirming letter from the department).

46. Upon acceptance for disposal of each waste shipment, the licensee shall:

A. Acknowledge receipt of the waste as soon as practicable, but no later than seven days following its acceptance for disposal, by returning a signed copy, or equivalent documentation, of the shipment manifest, to the shipper. The shipper to be notified by the licensee is the one last possessing the waste and transferring it to the licensee.

B. Indicate on the returned copy of the shipment manifest, shipping papers, or equivalent documentation any discrepancy between noted waste descriptions listed on the manifest or papers and the waste materials received in the shipment.

C. Notify the shipper and the department when any shipment or part of a shipment has not arrived 60 days after the separate copy of the shipment manifest or shipping papers was received by the licensee.

D. Maintain copies of completed shipment manifests, including annotations of discrepancies found in accordance with Condition 46.B.

BURIAL OPERATIONS CONDITIONS

47. Packages containing radioactive material shall not be stored above ground for a period of greater than six months from the date of receipt. Packages shall be stored in such a manner to maintain radiation exposures as low as reasonably achievable. Retention of packaged waste above ground for not more than three working days does not constitute storage.

48. Unless otherwise specifically authorized by the department, the licensee is not authorized to open any package containing radioactive material at the facility, except for the following:

A. For purposes of repairing, repackaging, or overpacking leaking containers or containers damaged in transport in the event the material is to be disposed of, or returned to the generator if required for the protection of the health and safety of the employees or the environment.

B. For purposes of inspection and waste confirmation in the presence of a department inspector for compliance with Title 246 WAC, other applicable federal and state regulations, and conditions of this license.

C. For purposes of returning outer shipping containers.

The licensee shall use and maintain a facility, in accordance with the Facility Standards Manual, where the above operations can be safely conducted.

49. Wastes containing chelating agents in excess of 0.1 percent by weight shall be segregated from other wastes by placing them in disposal units which are sufficiently separated from disposal units for other waste classes so that any interaction between these wastes and other wastes will not affect the radionuclide mobility of the other wastes for 100 years. Until engineering studies provide justification otherwise, minimum separation distance shall be ten feet. In addition to segregation, the licensee shall record the three-dimensional location of these waste cells.

50. Wastes containing solidified oils which have a pretreatment concentration in excess of 10 percent by weight, shall be segregated from other wastes by placing them in disposal units which are sufficiently separated from disposal units for other classes of waste so that any interaction between these wastes and other wastes will not affect the radionuclide mobility of the other wastes for 100 years. Until engineering studies provide justification otherwise, minimum separation distance shall be ten feet. In addition to segregation, the licensee shall record the three-dimensional location of these waste cells.

51. Class B and C waste packages stabilized with bitumen shall be backfilled immediately after waste placement. Sufficient backfill material shall be placed around each container to cover all sides around the packages.

SITE DESIGN AND CONSTRUCTION CONDITIONS

52. All burial trenches or disposal units shall be in a controlled area surrounded by a chain link fence, eight feet high, and topped with barbed wire.

53. Thirty days prior to commencement of construction of any new disposal unit, the licensee shall submit to the department a detailed engineering plan for the trench in accordance with the provisions of the Facility Standards Manual, or a statement that the proposed trench will be designed and constructed in accordance with Condition 54 of this license.

54. The licensee shall construct new disposal units in accordance with the March 6, 1991 approved Comprehensive Facility Utilization Plan, Document 200-DOC-001, Rev. 3. Changes to the plan must be submitted to the department for review and approval. Additionally, the licensee shall:

    A. Upon completion of the construction of any new trench, submit to the department two copies of the trench construction report. The report shall include at a minimum, as-built drawings, daily and final inspection reports, laboratory and field soil test results, and a description of any problems encountered during construction, in order to demonstrate that the construction of the disposal unit is in compliance with applicable plans and specifications contained in the approved Facility Utilization Plan.

    B. 30 days prior to use of any new trench, notify the department in writing of its intent to physically place waste in the trench.

55. The licensee shall conduct closure and stabilization operations in accordance with the March 6, 1991 department-approved Comprehensive Facility Utilization Plan and the Facility Closure and Stabilization Plan required by Condition 66 as each trench is filled and covered.

56. In addition to the requirements of Condition 55, the licensee shall design and construct interim disposal unit caps in accordance with the specifications contained in the Facility Standards Manual. Interim disposal unit caps shall be established within one year of completion of a disposal unit or as described in the Comprehensive Facility Utilization Plan approved by the department.

57. The dimensions of burial trenches shall not exceed a width of 150 feet (46 meters), a depth of 45 feet (14 meters), or a length of 1000 feet (305 meters) without specific documented approval from the department. Measurements shall be referenced to natural grade as established in the March 6, 1991 department-approved Comprehensive Facility Utilization Plan.

58. Until an agreement is secured with agencies controlling adjacent lands, which meets the requirements of Condition 66(K) of this license, disposal units constructed after the effective date of this license shall be placed at least 100 feet away from the North, South and West subleasehold boundaries. The set-back distance for the East boundary shall be no less than 50 feet.

59. The licensee shall, within 90 days of filling each disposal unit, closed after the effective date of this license, erect interim disposal unit monuments upon which the following information shall be displayed in a legible manner:

A. Total activity of radioactive material, in curies, excluding source and special nuclear materials; total amount of source materials in kilograms; and total amount of special nuclear material in grams.

B. Trench number or disposal unit designation.

C. Date of opening and closing disposal unit.

D. Volume of waste in the disposal unit.

E. Coordinates of the disposal unit.

The erection of interim monuments may be omitted if permanent monuments, required by Condition 65, are scheduled to be erected within six months of completion of the disposal unit.

ENVIRONMENTAL MONITORING AND SURVEY CONDITIONS

60. The licensee shall perform comprehensive pathway analyses to include air, soil, ground water, vegetation, fauna, burrowing animals, and human impacts. which shall be completed within 180 days of a department-approved closure plan. Additionally, the analysis shall be reviewed and updated as necessary every four years subsequent to the approval of the pathway analysis. Upon completion of the review, the licensee shall submit a copy of the review to the department. This requirement is in addition to the requirements found in WAC 246-250-060(1). Within 120 days of completion of the pathway analysis report, the licensee shall submit to the department the licensee's evaluation and analysis of the report with respect to the environmental monitoring programs. The analyses shall clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses shall clearly demonstrate that there is reasonable assurance that the exposure to humans from the release of radioactivity will not exceed the limits set forth in WAC 246-250-170.

61. The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the site to the environment. The program shall include collection of samples and analyses at frequencies specified in the Facility Standards Manual (FSM). The licensee shall coordinate sampling schedules with the department to provide. when possible, duplicate samples on a prearranged frequency. A comprehensive annual report of all sample analyses, with statistical trend analyses and discussions of all anomalous results and actions taken, specification of the quantity of each of the principal contaminants released to unrestricted areas in liquid and in airborne effluents during the preceding year, wind rose for the facility, depth to water and depth to bottom as well as nonradiological contaminates specified in the FSM, for all ground water wells, ventilation exhaust samples taken from the inspection facility, and comparisons of on-site ground water wells and U.S. DOE ground water wells in the vicinity of the facility shall be forwarded to the department by June 1 of each year. The report shall be submitted in general accordance with the departments document entitled "Recommended Content and Format for Annual Environmental Reports." Deviations in the reporting format must be approved by the department. In addition, the licensee shall report immediately any environmental monitoring results in excess of reporting levels specified in the Facility Standards Manual.

62. The licensee shall conduct an experimental monitoring program designed to determine the extent and modes of migration of disposed waste into the unsaturated zone, in accordance with procedures specifically approved by the department. Annual reports shall be made to the department by June 1, 1993 and June 1 of each year thereafter. The report shall include a discussion of the results of the program.

63. The licensee shall submit a facility utilization report to the department by June 30 of each year. The report shall provide:

A. Identification of each disposal unit and description of all waste emplaced during the previous calendar year. A three-dimensional identification to describe the disposal location of each package of waste in excess of Class A concentrations including the location of engineered barriers used to provide structural stability, and the disposal location of those wastes containing oils or chelates shall also be provided. Three-dimensional identification for cells shall be within 50 feet horizontally and within 10 feet in the vertical plane.

B. Percent of utilization for each operating stable and unstable trench or disposal unit filled during the previous calendar year.

C. Annual aerial photograph of the leasehold.

D. Summary, by waste class, of activities and quantities of radionuclides disposed.

E. A summary of disposal unit maintenance activities.

F. Any instances in which observed site characteristics were significantly different from those described in the application for the license.

G. The remaining capacity of the disposal facility and each open disposal unit.

H. Any other information that the department may require.

64. As radioactive material buried may not be transferred by abandonment or otherwise, unless specifically authorized by the department, the expiration date of this license applies only to the above-ground activities and to the authority to bury radioactive material wastes at the location specified in Condition 10. The license continues in effect, and the responsibility and authority for possession of buried radioactive material wastes continues until the department finds that the plan established for preparation of the facility for transfer to another person or custodial agency has been satisfactorily implemented in a manner to reasonably assure protection of the public health and safety and the environment, and the department takes action to terminate the licensee's responsibility and authority under this license. All requirements for environmental monitoring, site inspection, maintenance, and site security continue whether wastes are being buried or not.

65. All trenches or disposal units shall be conspicuously marked with permanent, stable monuments at each end, consistent with the approved site closure plan required by Condition 66. Permanent monuments shall be designed to stand erect, well above the grade of the final trench cover, and in a manner which will not allow them to be covered or obscured by drifting sand during the institutional control period. Inscriptions shall be made so as to endure and remain legible well beyond the institutional control period. The permanent monuments shall be inscribed with the following information:

A. Total activity of radioactive material, in curies, excluding source and special nuclear materials; total amount of source material in kilograms; and total amount of special nuclear material, in grams, in the trench.

B. Trench number or other means of identifying the disposal unit.

C. Date of opening and closing the disposal unit.

D. Volume of waste in the disposal unit.

E. Coordinates of the stable and unstable disposal units, including disposal unit depth and depth of cover at closure.

This same information shall be reported to the Department of Health and the Department of Ecology within 30 days of closure of each trench or disposal unit.

66. Upon approval of the Facility Closure and Stabilization Plan dated October 1990, the licensee shall review and update the plan as necessary every four years thereafter. A copy of this review shall be submitted to the department upon completion of the review. The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:

A. Bury all waste in accordance with the requirements of the license.

B. Dismantle, decontaminate, as required, and dispose of all structures, equipment, and materials that are not to be transferred to the site custodian.

C. Document the arrangements and the status of the arrangements for orderly transfer of site control and for long-term care by the government custodian. Also document the agreement, if any, of state or federal governments to participate in, or accomplish, performance objectives. Specific arrangements to assure availability of funds to complete the site closure and stabilization plan shall be documented.

D. Direct gamma radiation from buried wastes shall be essentially background at any accessible above-ground location, as determined by evaluation of environmental data from the licensee, U.S. Department of Energy, and its contractors.

E. Demonstrate by measurement and model during operations and after site closure that concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals will not result in any member of the public receiving an annual dose exceeding an equivalent to 25 millirems (0.25 mSv) to the whole body, 75 millirems (0.75 mSv) to the thyroid, and 25 millirems (0.25 mSv) to any other organ of any member of the public.

F. Render the site suitable for surface activities without resort to custodial care exceeding vegetation control, minor maintenance, and environmental monitoring. No active ongoing maintenance shall be necessary. Final conditions at the site must be acceptable to the government custodian and compatible with its plan for the site.

G. Demonstrate that all trench elevations are above water table levels, taking into account the complete history of seasonable fluctuations.

H. Eliminate the potential for erosion or loss of site or trench integrity due to factors such as ground water, surface water, wind, subsidence, and frost action. All slopes shall be sufficiently gentle to prevent slumping or gullying. The surface shall be stabilized to minimize erosion, settling, or slumping of caps.

I. Demonstrate that permanent trench markers are in place, stable, and keyed to benchmarks. Identifying information shall be clearly and permanently marked as required by Condition 65 of this license.

J. Compile and transfer to the department complete records of site maintenance and stabilization activities, trench elevation and locations, trench inventories, and monitoring data for use during custodial care for unexpected corrective measures and data interpretation.

K. Maintain a buffer zone to provide space to stabilize slopes, incorporate off-site surface water management features, assure that any future excavation on adjoining areas shall be evaluated as to its potential to compromise trench or site integrity, and provide working space for unexpected mitigating measures, if needed, in the future. The buffer zone may be within the subleasehold or on adjacent land, provided written agreements are secured with persons owning or controlling adjacent lands, which shall allow the licensee or custodial agency the required access and actions.

L. Provide a secure passive site security system (e.g., a fence) that requires minimum maintenance.

M. Stabilize the site in a manner to minimize environmental monitoring requirements for the long-term custodial phase, and develop a monitoring program based on the stabilization plan.

N. Investigate the causes of any statistically significant levels of radioactive or hazardous materials in environmental samples taken during operation and stabilization. In particular, any evidence of unusual or unexpected rates or levels of radionuclide migration in or with the ground water shall be analyzed, and corrective measures implemented.

O. Eliminate the need for active water management measures, such as a sump or trench pumping and treatment of water to assure that wastes are not leached by standing water in the trenches.

P. Evaluate present and proposed activities on adjoining areas to determine their impact on the long-term performances of the site, and take reasonable action to identify and minimize the effects.

A final facility closure and stabilization plan shall be submitted for Department of Health approval, following issuance by the Department of Ecology of the final closure and stabilization requirements. This final closure plan shall be submitted within 120 days following acceptance by the Department of Health of Rogers & Associates' final report on the draft closure plan. The final plan shall address how the licensee meets or plans to meet the requirements developed pursuant to RCW 43.200.190 and recommendations proposed in the Rogers & Associates final report.

67. The licensee shall develop specific procedures, and implement a program, approved by the department, which is designed to study A) erosion of soils onto and off of the facility, B) methods of revegetation of closed trenches and, C) subsidence of trenches, in accordance with criteria established by the department. Once approved, the licensee shall submit annual reports to the department which discusses the results of the program.

68. Upon closure of each disposal unit commencing with Trench 14, the licensee shall submit to the department a summary of;

A. All radionuclides and associated activities disposed in that trench.

B. Waste class totals by volume and activities.

C. Disposal locations and volume of chelates disposed.

D. A summary to the extent practical, of the physical and chemical forms disposed.

69. Notwithstanding other requirements of this license or the sublease, one year prior to the anticipated transfer of the licensee's facility and buried radioactive waste to another person (including an agency of the state or federal government), the licensee shall submit a final version of the facility closure plan, including a schedule for implementation of all remaining plan elements prior to transfer, and a description of the mechanics of orderly transfer in coordination with the transferee.

FINANCIAL ASSURANCES

70. By June 30 of each year, the licensee shall submit the following financial documentation to the department:

A. A copy of its financial report or a certified financial statement and Security and Exchange Commission (SEC) Form 10K.

B. A copy of its financial or surety arrangements for closure and stabilization of the disposal facility.

C. A copy of personnel and nuclear liability insurance held for the facility.

71. The licensee shall submit to the department, a copy of site surveillance fees paid, within 45 days after the end of each calendar quarter.

72. The licensee shall conduct a quality assurance/quality control program in accordance with US Ecology Quality Assurance Manual, and Quality Assurance Procedures Manual QA-MA-2. Changes to these documents shall be submitted to the department within 30 days of the change.

State of Washington

Radioactive Materials License

License Number WN-I019-2

Amendment No. 18

73. Except as specifically provided by this license, the licensee shall possess and use radioactive material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in the documents listed below. The department's "Rules and Regulations for Radiation Protection," Title 246 WAC, shall govern the licensee's statements in applications or letters, unless statements are more restrictive than the regulations. Any change to the documents listed below shall require departmental approval in the form of an amendment to this license.

A. Application and cover letter dated September 4, 1991.

B. Facility Standards Manual, Revision 1, dated May 1992.

C. Letter from John Ench, US Ecology, Inc. dated April 9, 1992.

D. Letter from Arthur J. Palmer, US Ecology, Inc., dated December 13, 1991.

FOR THE STATE OF WASHINGTON DEPARTMENT OF HEALTH

Date 29 May 1992

By Gary Robertson

Gary Robertson
Waste Management Section

APPENDIX A

EXAMPLES* OF CONTAINERS MEETING 7A PERFORMANCE SPECIFICATION AND HAVING A HEAVY DUTY CLOSURE DEVICE

Spec. 6B Steel Drum (30 gallon)

Spec. 6C Steel Drum (5 and 10 gallon)

Spec. 6J Steel Drum (55 gallon)

Spec. 42B Aluminum Drum (55 gallon)

Spec. 17C Steel Drum (5 gallon)

Spec. 17C Steel Drum (55 gallon)

Spec. 17E Steel Drum (55 gallon)

Spec. 17H Steel Drum (30 gallon)

Spec. 17H Steel Drum (55 gallon) with 5/8" bolt closure

Spec. 7A Steel Box (Argonne National Laboratory's Steel Bin)

Spec. 7A Steel Box (BCL-5 Shipping Container)

Spec. 7A Steel Box (Type A Steel Box)

Spec. 7A Steel Drum (Follansbee Drum-MS 24347-2)

Spec. 7A Steel Drum (4 gallon)

* These are merely examples of containers. The waste generator must comply with all DOT requirements pertinent to the container's selection, use, handling and transportation.

APPENDIX B

WASTE CLASSIFICATION TABLE

RADIONUCLIDES	CONCENTRATION LIMITS IN CURIES/CUBIC METER**	
Table 1 (long-lived)	Class A	Class C
C-14	≤ 0.8	≤ 8
C-14 in activated metal	≤ 8	≤ 80
Ni-59 in activated metal	≤ 22	≤ 220
Nb-94 in activated metal	≤ 0.02	≤ 0.2
Tc-99	≤ 0.3	≤ 3
I-129	≤ 0.008	≤ 0.08
CONCENTRATION LIMITS IN NANOCURIES/GRAM		
Alpha emitting Transuranic radionuclides with half-lives greater than five years (excluding special nuclear material) ★	≤ 10	≤ 100 with specific departmental approval
Radium 226	≤ 10	≤ 100 with specific departmental approval
Curium 242	≤ 2,000	≤ 20,000 with specific departmental approval
Plutonium 241★	≤ 350	≤ 3,500

APPENDIX B (Cont.)

WASTE CLASSIFICATION TABLE

RADIONUCLIDES	CONCENTRATION LIMITS IN CURIES/CUBIC METER**		
Table 2 (short-lived)	Class A	Class B	Class C
Total of all with half-life less than 5 years	≤ 700	◆	
H-3	≤ 40	◆ with specific departmental approval	
Co-60	≤ 700	◆	
Ni-63	≤ 3.5	≤ 70	≤ 700
Ni-63 in activated metal	≤ 35	≤ 700	≤ 7000
Sr-90	≤ 0.04	≤ 150	≤ 7000
Cs-137	≤ 1	≤ 44	≤ 4600

** Curies/cubic meter is equivalent to microcuries/cubic centimeter

★ Although disposal of Special Nuclear Material is covered under Nuclear Regulatory Commission (NRC) license # 16-19204-01, those radionuclides must be included in any concentration calculation, including the sum of fractions rule.

◆ There are no limits established for these radionuclides in Class B or C wastes. Practical considerations such as the effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes shall be Class B unless the concentrations of other nuclides in Table 2 determine the Waste to be Class C independent of these nuclides.

APPENDIX B (Cont.)

Note 1. Unless specifically restricted elsewhere in the license, the concentration of a radionuclide or radionuclide mixture may be averaged over the volume (or mass) of the waste and, if used, the solidification agent or matrix. The concentration of radionuclides in filters encapsulated with a solidification agent or matrix shall be averaged over the volume of the filter, not the solidification agent. The volume (mass) of packaging containers, liners or overpacks shall not he included in this calculation, nor shall the volume (mass) of the waste mixture be artificially increased by the addition of heavy, nondispersible solids or objects even if considered as waste. Further guidance is provided in "Low-Level Waste Licensing Branch Technical Position on Radioactive Waste Classification," May 1983, or successor documents issued by the U.S. Nuclear Regulatory Commission.

Note 2. The waste is Class A if none of the listed radionuclides is present. Waste packaged in accordance with Condition 38 of this license shall be Class A unstable and the words "Condition 38" shall be noted on the manifest or other documentation accompanying the waste package.

Note 3. There are no Class B values for Table 1 radionuclides; their presence classifies the waste as either Class A or Class C according to their concentrations.

Note 4. The waste class for mixtures of the listed radionuclides is determined by deriving for each radionuclide the ratio between its concentration in the mixture and its concentration limit in the table of this and the special nuclear materials license issued by the U.S. Nuclear Regulatory Commission and adding the resulting ratio values for each radionuclide group. All limits used in the calculations must be for the same waste class. The sum of the ratios for each radionuclide group must be equal to or less than 1.0, or the waste is the next higher classification than that used for the calculation.

If Class C limits are used in the calculation and the sum of ratios for either group exceeds 1.0, the waste is not acceptable for near-surface disposal without prior written approval from the department.

APPENDIX B (Cont.)

Note 5. If radioactive waste contains a mixture of radionuclides, some of which are listed on Table 1, and some of which are listed on Table 2, classification shall be determined as follows:

A. If the concentration of a nuclide listed in Table 1 does not exceed the Class A limit, the class shall be that determined by the concentration of nuclides listed in Table 2.

B. If the concentration of a nuclide listed in Table 1 exceeds the Class A limit, but does not exceed the Class C limit, the waste shall be Class C, provided the concentration of nuclides listed in Table 2 does not exceed the Class C value.

Note 6. If concentrations for any single radionuclide exceed the Class C values in the table, the waste is not acceptable for near-surface disposal under this license.

APPENDIX C

APPROVED SOLIDIFICATION MEDIA

Only approved solidification media can be used. Approved solidification media are:

1. Atcor Cement
2. Aquaset I and II
3. Aztech (General Electric)
4. Bitumen* (Waste Chem and ATI)
5. Chem-Nuclear Cement
6. Concrete (Structural)
7. Delaware Custom Media
8. Dow Media
9. Envirostone
10. LN Technologies Portland Cement Formula for Oils
11. Pacific Nuclear Portland Cement
12. Petroset I and II
13. Safe T Set
14. SEG (Westinghouse - Hittman) Cement
15. Other solidification media and processes which have been approved by U.S. NRC and/or the department.

APPENDIX C (Cont.)

*Note: For waste types that require solidification, both oxidized bitumen and straight distilled are acceptable.

"Solidification" means a resultant waste form which is a free-standing solid and primarily relies upon a chemical reaction or encapsulation to contain the liquid. Approved stabilization media may also be used as solidification agents without conducting tests necessary to verify stability, provided the resulting waste form is a free-standing solid.

It is the responsibility of the person processing the waste into a solid form to adhere to a quality control program to verify the waste form is appropriate. If a material can also be used as a sorbent, the restrictions noted for its use in Appendix G shall apply to its use as a solidification agent.

APPENDIX D

APPROVED STABILIZATION MEDIA

Only approved stabilization media may be used. Approved stabilization media are:

1. Aztech (General Electric)
2. Bitumen* (Waste Chem)
3. Concrete**
4. Dow Media (Vinyl Ester Styrene)
5. Other stabilization media and processes which have been reviewed and approved by U.S. NRC and the department as meeting waste form stability criteria.

*Note: Oxidized Bitumen only.

** Concrete, when used as an encapsulation medium around a small volume of radioactive material, e.g., a sealed source centered in a fifty-five gallon drum containing concrete, shall have a formulated compressive strength greater than or equal to 2500 psi.

APPENDIX E

CERTIFICATES OF COMPLIANCE FOR HIGH INTEGRITY CONTAINERS

Only those High Integrity Containers which have been approved by the department and used in accordance with the Certificate of Compliance (C of C) may be used. Approved High Integrity Containers are:

C of C Number	Manufacturer	Package Identification Number
WN-HIC-01	Pacific Nuclear	DSHS-HIC-TMI-01
WN-HIC-02	Nuclear Packaging	DSHS-HIC-EA-50
WN-HIC-03	Chichibu Cement	DSHS-HIC-SFPIC 200L
WN-HIC-04	Chichibu Cement	DSHS-HIC-SFPIC 400L
WN-HIC-05	Nuclear Packaging	DSHS-HIC-EA 142-A
WN-HIC-06	Nuclear Packaging	DSHS-HIC-EA 50-A
WN-HIC-07	Nuclear Packaging	DSHS-HIC-EA 140-A
WN-HIC-08	Nuclear Packaging	DSHS-HIC-EA 190-A
WN-HIC-09	Nuclear Packaging	DSHS-HIC-EA 210-A
WN-HIC-10	Nuclear Packaging	DSHS-HIC-EA 50-C
WN-HIC-11	Nuclear Packaging	DSHS-HIC-EA 140-C
WN-HIC-12	Nuclear Packaging	DSHS-HIC-EA 142-C
WN-HIC-13	Nuclear Packaging	DSHS-HIC-EA 190-C

APPENDIX E (Cont.)

WN-HIC-14	Nuclear Packaging	DSHS-HIC-EA 210-C
WN-HIC-15	(SEG) LN Technologies	DSHS-HIC-LN 179-H
WN-HIC-16	(SEG) LN Technologies	DSHS-HIC-LN 131-H
WN-HIC-17	(SEG) LN Technologies	DSHS-HIC-LN 118-H
WN-HIC-18	(SEG) LN Technologies	DSHS-HIC-LN 96-H

Other High-Integrity Containers which have been specifically approved by the department.

APPENDIX F

Certificates of Compliance For Engineered Barriers

Only those Engineered Barriers approved by the department and/or NRC and used in accordance with the Certificate of Compliance (C of C) may be used. Approved Engineered Barriers are:

C of C Number	Issued To
WN-EB-01	US Ecology, Inc.
WN-EB-02	US Ecology, Inc.

Other Engineered Barriers which have been specifically approved by the department.

APPENDIX G

APPROVED SORBENTS

Only those absorbents listed below have been approved by the state of Washington, Department of Health, Division of Radiation Protection, (department) for general use in packaging and/or processing radioactive liquids or with materials that may contain a quantity of liquid that requires absorbing.

Absorbency efficiencies and quantity of absorbent required vary. In all cases, it is the responsibility of the waste generator and/or packager to determine the efficiency and proper proportions of absorbent for liquids being absorbed. Note: Enough absorbent materials must be provided to absorb at least twice the volume of radioactive liquid contents.

	Media	Oil	Water
A.	Clay Materials		
1.	Speedi Dri	Approved	Approved
2.	Hi Dri	Not Approved	Approved
3.	Florco	Approved	Approved
4.	Florco X	Not Approved	Approved
5.	Instant Dri	Not Approved	Approved
6.	Safe T Sorb	Not Approved	Approved
7.	Opalex	Approved	Approved
8.	Moltan Plus	Approved	Approved
B.	Diatomaceous Earths		
1.	Superfine	Approved	Approved
2.	Floor Dry	Approved	Approved
3.	Celetom	Approved	Approved
4.	Safe N Dri	Approved	Approved
5.	Solid-A-Sorb	Approved	Approved
6.	Ultrasorb 248	Approved	Approved

APPENDIX G (Cont.)

	Media	Oil	Water
C.	Perlite ****		
1.	Chemsil 30	Not Approved	Approved
2.	Chemsil 50	Approved	Approved
3.	Chemsil 3030	Approved	Approved
4.	Dicaperl HP2OO	Approved	Approved
5.	Dicaperl HP5OO	Approved	Not Approved
D.	Others		
1.	Dicalite Dicasorb	Approved	Not Approved
2.	Petroset**	Approved***	Approved***
3.	Petroset II**	Approved	Not Approved
4.	Aquaset**	Not Approved	Approved
5.	Aquaset II**	Not Approved	Approved*
6.	Safe T Set	Not Approved	Approved

* Not for use with pure water

** Note: The products Aquaset, Aquaset II, Petroset, and Petroset II are exempt from Condition 31(B). These products shall only be used without an inner 4 mil plastic liner. Additionally, these products, when used in accordance with the manufacturer's procedures, incorporate the requirement of enough absorbent material to absorb at least twice the volume of radioactive liquid content.

*** Note: The product Petroset is primarily used in conjunction with Petroset II or Aquaset II when a mixture of water and oils are present and the oils are in excess of five percent of the waste volume. Use of Petroset requires power mixing equipment.

**** Note: Perlite products shall not be used for packaging animal carcasses.

Dan, Carrie (Mike hasn't seen).

3 of 18

American Ecology Corporation
5333 Westheimer, Suite 1000
Houston, Texas 77056-5407

713/624-1934
Fax: 713/624-1915

WA 8967
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American Ecology

STEPHEN W. TRAVERS
General Counsel and
Secretary

October 14, 1993

9413286.0596

Carrie L. Sikorski
Project Supervisor, RCRA Permit Section
U.S. EPA, M/S HW-106
1200 Sixth Avenue
Seattle, WA 98101

Michael Gearheard
Program Manager, Waste Management Branch
U. S. EPA, M/S HW-102
1200 Sixth Avenue
Seattle, WA 98101

Dear Ms. Sikorski and Mr. Gearheard

I am writing on behalf of US Ecology, (USE), a wholly-owned subsidiary of American Ecology Corporation, to inquire about certain proposed actions by your agencies that relate to the USE low-level radioactive waste (LLRW) disposal facility at Hanford. As you know, the facility disposes of LLRW pursuant to a Radioactive Materials License under authority of the Atomic Energy Act, is regulated by the Washington Department of Health, and is the dedicated LLRW regional disposal facility for the Northwest Compact, pursuant to the laws of the Compact states, including Washington.

It has come to my attention that WDOE and U.S. EPA have indicated an intention to include the USE site in the USDOE RCRA Part B draft permit for the Hanford Reservation. As you know, the USE site is not a RCRA permitted facility, and USE is not seeking a permit under RCRA. Therefore I am confused by the stated intention to include the USE site in the USDOE draft permit.

I am equally confused by the information I have received from David Dabroski and USE staff concerning a proposal to amend the Radioactive Materials License in some unspecified way to address issues unrelated to the Atomic Energy Act.

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In order for the Company to make informed decisions concerning these issues, we must be provided certain basic information that has not been provided to date. Please provide detailed responses to the following basic questions:

1. Why are WDOE and U.S. EPA intending to include the USE site in the USDOE Part B draft permit?

2. What is the legal basis or authority upon which you rely to include the USE site in that draft permit?

3. What are any of the agencies involved intending to accomplish by proposing to amend the Radioactive Materials License, or attempting to impose other actions at the USE site over and above the current license requirements?

4. What is the legal basis or authority upon which you rely in seeking to amend the Radioactive Materials License, or impose other actions at the USE site?

5. What specific facts are you relying upon that lead you to believe there is any need for the proposed activity directed to the USE site?

6. What specific action are you proposing for the USE site, either through an amendment to the Radioactive Materials License or otherwise?

7. What is the legal basis or authority for each action proposed by you to be implemented at the USE site?

8. Why has US EPA failed to respond to USE's comments dated January 13, 1993 concerning the inaccuracies in the RFA prepared by PRC Environmental Management, Inc.?

The Company is not aware of any change of circumstances at the facility or any fact whatsoever that could reasonably lead to the need for any of the activity proposed by you. If you are aware of any such facts, please inform the Company immediately.

The information requested in this letter is necessary for the Company to respond. Without it, you will be asking the Company to make a blind and uninformed decision affecting such important issues as the site Radioactive Materials License.

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I look forward to hearing from you at your earliest convenience because it appears this process is moving quickly. Thank you for your cooperation.

Very truly yours,

Stephen W. Travers
General Counsel and Secretary

SWT/mdg

Copies to:

Dean Ingemansen
Assistant Regional Counsel
U. S. EPA, Office of Regional Counsel
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Seattle, WA 98101

Tanya Barnett
Assistant Attorney General
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P. O. Box 40117
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OREA BEATTY RINIKER
Director

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3a

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

LEAD DISPOSAL AT THE US ECOLOGY LOW-LEVEL WASTE LANDFILL DISCUSSION PAPER

CURRENT STATUS

The US Ecology site receives many varieties of low-level radioactive waste for disposal. Prior to November 8, 1985 the site received three (3) basic types of lead waste : (1) lead used for the sole purpose of shielding radioactive waste during waste packaging; (2) waste lead contaminated by radioactivity but no longer used as shielding, i.e., spent shielding; and, (3) nonradioactive or radioactive lead which is an integral part of the waste mixture.[1] The type 2 and 3 wastes are classified as "mixed waste." "Mixed wastes" are wastes which are regulated under RCRA (40 CFR Part 261), by the state's dangerous waste regulations (Chapter 173-303 WAC), and by the NRC (10 CFR Part 61).

Regulation under RCRA and the state regulations is the result of lead failing the Extraction Procedure (EP) Toxicity Test. Regulation under 10 CFR Part 61 is due to radioactivity.

After November 8, 1985 the US Ecology facility lost interim status under RCRA due to the site failing to comply with the ground water requirements set forth in 40 CFR 265.90. This loss of interim status currently prevents the facility from receiving "mixed waste." It can continue to receive waste that exhibits only low-level radioactivity (type 1) and subject only to 10 CFR Part 61.

ISSUES

Much interest has been expressed by the regulated community and government agencies regarding the regulatory status of all three types of lead waste. Nationwide, facilities have been storing "mixed wastes" on-site due to the lack of

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[1] This includes process equipment containing lead or other metal bearing components that will cause the equipment to be designated as a hazardous waste pursuant to 40 CFR Part 261 or Ch. 173-303-070, WAC.

guidance by regulators and the lack of disposal sites capable of receiving "mixed waste."

Although the regulatory status of waste types 2 and 3 is acknowledged, and the only only way to respond to the shortfall in disposal capacity is to permit more "mixed waste" facilities, there is still some discussion on the type 1 waste. Specifically, the applicability of regulating

lead used solely for the purpose of shielding during packaging under the dangerous waste regulations. A related concern focuses on the appropriateness of placing lead, which can be in immediate contact with the disposal environment, in unlined disposal trenches regulated under 10 CFR Part 61.

DISCUSSION

Lead used for the sole purpose of shielding a radioactive source from the environment is, in itself, not a waste. The lead shielding is analogous to a container which holds hazardous waste. What is regulated is not the container, but the waste within the container. Although containers are required to be compatible with the waste they contain, there is no requirement to actually determine a container's toxicity under RCRA and the state dangerous waste regulations.[2] Thus even though lead may be deleterious to the environment under certain environmental situations, it's use as a container is currently allowed.

If it is determined that a practice poses an imminent and substantial threat to public health and the environment, the department does have special powers to restrain that activity (see Chapter 173-303-960 WAC). In the case of lead shielding, reasonable cause for direct regulatory involvement appears not to be justified. This is based on the following:

* Most waste packages containing lead used as shielding at the US Ecology site are set in concrete in DOT approved 55 gallon barrels. A

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[2] WAC 173-303-630(4) states that, "... a container [must be] made of or lined with materials which will not react with, and are otherwise compatible with, the dangerous waste to be stored, so that the ability of the container to contain the waste is not impaired."

Packaging requirements for waste shipment, and thus disposal, must be in accordance with USDOT regulations on packaging, 49 CFR Parts 173, 178, and 179.

small percentage of the waste packages which incorporate lead shielding also utilize high integrity containers (HIC). The most common material used in HICs are HDPE, special steel alloys, polyester resin, and concrete. Stainless steel and poly impregnated steel reinforced concrete are approved HICs by Washington state.

* The climatic and hydrogeologic conditions at the US Ecology site appear to be favorable for a disposal site. Annual precipitation is about 6 inches per year and the annual potential evapotranspiration is approximately 29 inches. The uppermost aquifer is encountered at elevations between 320 and 330 feet below the surface.

* Although ground water monitoring at the US Ecology site is not adequate, Ecology does not have any information to date which indicates that ground water has been contaminated due to disposal operations.

Although most of the lead waste currently being disposed of at US Ecology is placed within concrete lined DOT approved barrels or approved HICs, some low-level only waste streams using lead shielding do not: principally, radioactive process equipment which is too large to use HICs or other containment vessels. These large waste streams are surrounded by lead shielding and placed directly in the landfill cell typically using only a wood or similar covering device whose primary purpose is packaging during transport. The lead shielding of these waste streams is almost in direct contact with the disposal environment.

It has not been determined to what extent the disposal environment at the US Ecology site can minimize the potential migration of metallic lead. Factors to be considered include: site geology, hydrology, types of soils, soil chemistry, site climate, current landfill design, and waste characteristics. From an environmental standpoint, these factors should be investigated to ensure the site is secure.

CONCLUSION

The US Ecology site is prohibited from receiving mixed waste streams for disposal. They are currently allowed, from a regulatory standpoint, to receive waste which is surrounded

by lead shielding for the purpose of worker protection.[3] Lead used as shielding for radioactive wastes does not fall under the purview of RCRA or the state's dangerous waste regulations.

However, some questions still remain regarding the appropriateness of allowing the facility to receive lead waste of any sort due to lead's inherent toxicity. These concerns should focus only on those waste streams which are too large for outside containment vessels such as concrete lined drums or HICs. Factors that can be evaluated include: site hydrology, geology, soil characteristics (both chemical and physical), climatology, landfill design, waste characteristics, and actual volume of material destined for disposal.

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[3] The US Ecology site currently does not receive any leaded waste due to a verbal request by the Department of Ecology.

Wayne F.
WA8967 3a
[redacted] 2 26 86

US Ecology, Inc.
9200 Shelbyville Road, Suite 526
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

Control
CAD
cc WMED + PSPD
Get OGC
Concurrence -
send them
a copy of this

Ken Feigner - Please
call me about
this AsAP. Draft
response attached.
Thanks
Bob Aylward
FTS 382-[redacted]

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USEcology

February 26, 1986

RECEIVED
MAR 13 1986
WASTE MANAGEMENT BRANCH

Ms. Marsha Williams, Director
Office of Solid Waste
United States Environmental Protection Agency
Washington, D.C. 20460

Dear Ms. Williams:

In a letter dated August 17, 1983 Mr. John Skinner, then Director of the Office of Solid Waste, US EPA , indicated that certain waste, although classified as low level radioactive waste, may in fact be regulated by US EPA under the Resource Conservation Recovery Act (RCRA) as opposed to sole regulation by the United States Nuclear Regulatory Commission (NRC) under the Atomic Energy Act (AEA). Subsequent communications between US Ecology and representatives of US EPA -Washington, D.C., US EPA - Region X, and representatives of the Washington State Department of Ecology (WDOE) have confirmed that scintillation vials containing small volumes of xylene, toluene, benzene or other organic material, although containing radioactivity and being required by the US Nuclear Regulatory Commission and its agreement states to be disposed of at licensed low-level radioactive waste disposal facilities, may in fact still fall into this category.

On April 30, 1985, United Stated EPA Region X formally requested submittal of US Ecology's Part "B" Permit Application pursuant to RCRA for its Richland, Washington Low-Level Radioactive Waste Disposal Facility. On October 29, 1985, US Ecology complied with that request by submitting its Part "B" Permit Application for a Post-Closure Permit, as well as its Closure/Post Closure Care Plans pursuant to 40 CFR 265 Interim Status Closure Requirements. At that time US Ecology stated its intention to cease receipt of the scintillation cocktails in question on or before November 8, 1985. In that transmittal letter and attachment thereto, the company acknowledged that if the materials were in fact to be subject to RCRA they would be hazardous in their liquid form by virtue of the characteristic of ignitibility, EPA Hazardous Code D001. As was stressed at that point and is maintained by US Ecology, the D001 Ignitibility characteristic would apply only to the scintillation cocktail in liquid form, if the mixture posses a flash point of less than 140° Fahrenheit. Should the scintillation cocktail be rendered a solid as defined in 40 CFR 261 either by solidification or absorption, the ignitibility characteristic for a solid material would no longer apply and thereby the mixture would no longer be RCRA hazardous.

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The company acknowledged in the Part "B" Permit Application the previous acceptance at the facility of scintillation vials containing chemical constituents in liquid form. However, whether those materials were required to be disposed of since 1980 at a facility which was either fully permitted under RCRA or had maintained interim status was questionable. Under RCRA certain small quantity generators of hazardous waste are not nor have they ever been subject to the RCRA regulations. As such they have been excluded from the requirement to use the Uniform Hazardous Waste Manifest Form for shipment of all RCRA regulated hazardous waste. Since the Richland facility has received no such forms since the 1980 implementation of RCRA, and since the generators have contractually warranted to US Ecology that they will comply with all applicable laws and have indemnified US Ecology for any failure to do so, the company can only conclude that the generators in not using Uniform Hazardous Waste Manifest must in fact fall under the small quantity exclusion contained in 40 CFR Part 261.5. The requirements in 40 CFR 265.1(c)(5) provide that the interim status standards imposed upon treatment, storage or disposal facilities managing RCRA hazardous waste do not apply to "the owner/operator facility permitted license or registered by state to manage municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulations under this Part 261.5 of this chapter." Since it was concluded that due to the lack of enforcement on the part of the EPA of the 40 CFR Part 262 standards for generators of hazardous waste, particularly with respect to the use of the Uniform Hazardous Manifest, it must also be concluded that the Richland facility which received only such non-regulated waste would be exempted from application of the 40 CFR Part 265 standards.

The above conclusion is based on the small quantity exemption applying to generator's of less than 1000 kilograms per month of hazardous material. Since 1000 kilograms of waste contained in scintillation vials would represent in excess of 120,000 vials per month or 40 drums from any one generator, company representatives, had concluded that virtually all those institutions generating the waste vials would probably fall within the small quantity exemption. However, the HSWA's reduction in the small quantity limitation required by the Hazardous & Solid Waste Amendments of 1984 (HSWA), has caused the company to question the continuation of this practice.

As you are aware, beginning August 5, 1985, generators of RCRA hazardous waste between 100 kg and 1000 kg per month were required to begin utilizing the Uniform Hazardous Waste Manifest even though still allowed to ship off site to treatment storage and disposal facilities licensed for municipal and industrial solid waste but not fully RCRA permitted nor maintaining interim status. Further, beginning March 31, 1986, those materials must be treated, stored and disposed of only at facilities which have obtained a

final RCRA permit, or have maintained interim status. US Ecology seriously questions whether the same generators believed to produce less than 1000 kg/month of scintillation cocktails could reduce their generation process to less than 100 kg/month. Since this new level constitutes only 12,000 vials or 4 drums of waste, we feel it highly unlikely that generators once exempt can maintain that status.

While US Ecology's Richland facility was the only facility in the nation for land disposal of scintillation vials containing ignitable liquid, there are in excess of 12 facilities which continue in some manner to either dispose of the material via incineration or store the waste at transfer facilities until sufficient volume is reached to allow economically acceptable transportation to these disposal facilities. US Ecology which maintains one such transfer facility at Pleasanton, California, has observed no use of the Uniform Hazardous Waste Manifest subsequent to August 5, 1985. Since that date not one shipment of the subject waste, regardless of volume, has been received accompanied by the necessary manifest.

While current RCRA requirements do not apply to the transfer and disposal facilities if the only waste received is from generators of less than 1000 kg beginning March 31, 1986, these facilities must be compliant with these same RCRA requirements in order to continue to service the generators of more than 100 kg but not less than 1000 kg. We feel, therefore, that several issues should be addressed regarding the March 31, 1986 provision imposed by the HSWA '84 and its impact on both the generators of this low-level radioactive waste, and the facilities that service them.

1) Have or will generators of vials in excess of 100 kg/month but less than 1000 kg/month be required to obtain an EPA ID number? Will those that fail to register be inspected for accumulation of more than 100 kg at any one time? If these generators accumulate the material for more than 180 days, a practice which is likely, will they be required to obtain a RCRA storage permit after March 31, 1986. Storage after that date must occur at a RCRA permitted facility unless the facility maintains interim status. Interim status is not possible for most of these generators since they filed no notification in 1980.

2) Beginning March 31, 1986, will brokerage facilities throughout the country be required to comply with the 10 day transfer facility restriction, or cease operation with regard to storage of these materials, until such time as their Part B permit application can be processed and their final RCRA permit issued?

3) Will Part "B" permit applications be requested from treatment and incineration facilities which are presently handling scintillation cocktails? Will their final permits be issued prior to March 31, 1986? If not will they be unable to continue service to these generators.

4) Will incinerators, such as the ones utilized by Quadrex Corporation in Florida (fuel for rotary kiln) or Environmental Enterprises, Inc., in Virginia, disposing of these radioactive scintillation materials be required to obtain a radionuclide permit under the requirements of 40 CFR 61 subpart I? Should these facilities immediately cease operations until they obtain such authority? (See 40 CFR 61.05(a)

5) If operations cease at the brokerage warehouses and disposal facilities throughout the country, will the generating facilities posses adequate physical means as well as the necessary RCRA permit status to store their waste until such time as the brokerage facilities can be fully RCRA permitted. That process is estimated to take 3 - 4 years.

6) The US EPA is required by the Hazardous and Solid Waste Amendments of 1984 to educate the new category of small quantity generators as to their additional compliance responsibilities under the statute, prior to issuance of EPA regulations, specifically for those generators. EPA has a thirty month allowance for promulgation of those regulations. What educational programs are being prepared? Will any educational programs be available prior to the March 31 statutory imposition of disposal requirements.

As one of the major companies who have historically served these generating industries and institutions, the future management of this waste is of serious concern to US Ecology. In the past we have been able to provide uninterrupted service to these generators and many have historically looked to US Ecology for advice, counsel and guidance in their radioactive waste management programs. At this point in time, however, US Ecology is unable to continue that service, due to regulatory interpretations beyond our control. We feel it extremely important, therefore, that we be able to assist them in redirecting their programs. However, neither we nor the generators themselves can begin that task until the questions raised herein are resolved.

We look forward to your earliest response and stand willing to assist in any way possible. In the meantime, should you have any questions or wish to discuss the matter further please contact me.

Sincerely,

David R. Fetter
Director, Regulatory Compliance

DRF:jt

DRAFT

David R. Fetter, Director
Regulatory Compliance
US Ecology, Inc.
9200 Shelbyville Road, Suite 526
Louisville, KY 40207

Dear Mr. Fetter:

In your letter of February 26, 1986, you raise a number of issues relative to US Ecology's Richland, Washington, low-level radioactive waste facility and the applicability of RCRA permitting requirements to that facility.

Before responding to the specific questions raised in your letter, there are a number of points that require clarification. First, with respect to the March 31, 1986, HSWA imposed deadline for promulgation of regulations for small quantity generators, you should be aware that the Administrator recently signed the final rules required by Section 3001(d) of the HSWA. Because the Agency completed this rulemaking prior to the March 31, 1986 hammer date, the hammer requirements have no relevance whatsoever, and no additional requirements go into effect for these generators until the effective date of the regulations. In the case of the Part 262 generator standards, as well as off-site facilities managing wastes from 100-1000 kg/mo generators, the effective date will be six months from the date of publication of the final rules in the Federal Register (i.e., mid-September). The final rules are expected to be published in the Federal Register shortly.

A second, and more important clarification, concerns US Ecology's assumption that since no manifests have been received by the Richland facility since 1980, all generators utilizing the facility must be small quantity generators, and the facility must, therefore, be excluded from permitting and interim status requirements under § 264.1(g)(1) and § 265.1(c)(5). The flaw in this logic stems from the fact that a generator's status as a small quantity generator, under both the old scheme as well as the recently finalized rules, is determined by the total quantity of all hazardous waste the generator accumulates over any period of time or produces in a calendar month, not the total quantity of any one waste stream shipped to a single facility. US Ecology's conclusion that more than 120,000 vials, or 40 drums, of 'scintillation cocktails' would have to be generated by one institution in a single month--an unlikely scenario--in order to exceed the small quantity generator cutoff, does not take into consideration other hazardous wastes that may, and in fact are likely to be generated or accumulated by that institution.

Due to the uncertainty that has existed in the past as to the regulatory status under RCRA of 'scintillation cocktails', as noted in your letter, it is not surprising that generators have not manifested these vials to US Ecology's facility to date. In addition, US Ecology's reliance upon their customers to comply with all applicable laws and regulations is not considered by us to be sufficient documentation of their customers' continuous small quantity generator status. Your own statements on page 3 that: 1) generators who were previously exempt under the 1000 kg/mo small quantity generator cutoff would be unlikely to remain exempt under the reduced 100 kg/mo cutoff, and 2) the absence of compliance with the August 5 manifest requirement by these very same generators, diminishes your argument that an obligation to comply is sufficient evidence of small quantity generator status.

Consequently, US Ecology's assertion that 'virtually all' of their generators must be exempt from regulation under 261.5 and the Richland facility exempt under 265.1 is not, on its own, pursuasive. Since only one of US Ecology's customers would have needed to exceed 1000 kg of hazardous waste in a calendar month (or accumulate over that amount at any time) for only one month since 1980 in order to disqualify the Richland facility for the 265.1(c)(5) exemption for facilities receiving wastes only from small quantity generators, we believe it unlikely that your facility would qualify for the exemption, as asserted.

However, should US Ecology be able to document, either through affidavits, signed letters, or some other equally unequivocal means that they have accepted wastes only from exempt small quantity generators for the period from November 19, 1980 through November 8, 1985, we would reconsider your assertion that the Richland facility is exempt from Parts 264 and 265 of the hazardous waste regulations.

A final clarification concerning interim status is necessary before proceeding to respond to your individual questions. Section 3005(e)(1)(A)(ii) of RCRA, as amended by the HSWA of 1984, specifically allows a facility to obtain interim status, even if they did not do so in 1980, if the facility was "...in existence on the effective date of statutory or regulatory changes under this Act that render the facility subject to the requirement to have a permit under this section,...". Thus, any facility that is in existence on the effective date of the small quantity generator regulations, and which first becomes subject to permitting requirements on that date, may obtain interim status and continue to operate under the interim status standards until a full RCRA permit is issued.

With respect to your first question, the final rules for 100-1000 kg/mo generators will require them to obtain a US EPA Identification number by the effective date of the regulations (i.e., September 1986) and comply with somewhat modified Part 262 generator standards, including the existing roundtrip manifest system. These generators will also be allowed to accumulate hazardous waste on-site for 180 or 270 days (for shipments to facilities over 200 miles away) without the need to obtain interim status or a storage permit. However, these requirements do not take effect on March 31, 1986, as stated in your letter. If a generator elects to become a fully permitted treatment, storage, or disposal facility under RCRA, the generator need not obtain interim status until 1 year after the publication of the final rules (i.e., March 1987). However, off-site facilities managing wastes from previously exempt small quantity generators must either modify their Part A permit applications to reflect these wastes, or obtain interim status if they did not already do so, by September 1986 (i.e., the effective date of the Part 262 standards).

Your second, third, and fifth questions, which relate to permitting and the March 31, 1986 hammer date, should be adequately addressed by the clarifications at the beginning of this letter.

The fourth question, concerning the applicability of radionuclide permitting under 40 CFR 61.05(a), is not within the purview of this Agency. Consequently, I am unable to provide a response.

Your final question concerns the education program that EPA is directed

to mount for these small quantity generators. In response to the August 5, 1985 manifest requirement, the Agency printed and distributed close to half a million brochures (copy enclosed) designed to help small quantity generators to comply with the initial manifest requirement. Eighteen separate industry inserts were prepared to provide industry-specific information on waste descriptions and DOT codes. In addition, a large percentage of a $4.3 million grant allocation was distributed through the Regions to states and other non-profit entities to conduct small quantity generator education and implementation activities. A similar pot of money will be available this year. We are now printing a short question and answer brochure on the final regulations which we intend to distribute with each Federal Register reprint we distribute. Finally, we are preparing a comprehensive 'how to comply' guide for these generators for distribution this summer. We will continue to work closely with trade associations, States, and Regions to disseminate information on the new requirements prior to the September 1986 effective date.

I hope this information will be helpful to US Ecology in its efforts to keep its clients up to date on their obligations under RCRA. If you would like to discuss any of the information contained in this letter further, please feel free to contact Bob Axelrad at 202 382-5216.

Sincerely,

Marcia Williams
Director
Office of Solid Waste

US ENVIRONMENTAL PROTECTION AGENCY
TELECOMMUNICATIONS CENTER
WASHINGTON, DC 20460

EPA

FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: KEN FEIGNER, CHIEF, WMB

OFFICE/PHONE: 399-2782

REGION/LAB: 10

FROM: Robert Axelrad

PHONE	MAIL CODE
382-5218	WH-562B

OFFICE: OSW/CAD

DATE	NUMBER OF PAGES TO INCLUDE THIS COVER SHEET
3/13/86	8

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES TO EPA HEADQUARTERS

EQUIPMENT	FACSIMILE NUMBER NUMBER	VERIFICATION NUMBER
RAPICOM	(202) 382-7883 (auto)	(202) 382-2078
PANAFAX	(202) 382-7884 (auto)	(202) 382-2078
PANAFAX	(202) 382-7886 (auto)	(202) 382-2078
MANUAL	(202) 382-2078	

The EPA Communications Center has the capability for sending and receiving facsimile messages to CCITT Group I, II, and III Equipment.

EPA Form 5040-5 (Rev. 12-83) Replaces EPA Form 5040-5A and the previous edition of EPA Form 5040-5, which are obsolete.

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No date
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Revise condition III.E.2 to read as follows: When deemed necessary to protect human health or the environment, the Permittee shall, when directed by the Administrator, implement interim measures without an approved Interim Measures plan or revisions to an approved plan. In addition, the Permittee may implement interim measures without prior approval of the Administrator or without an approved Interim Measures plan or revisions to an approved plan when such action is deemed necessary by the Permittee to protect human health or the environment. In cases where the Permittee determines that it is necessary to implement an interim measure without the prior approval of the Administrator, the Permittee shall provide notification of the activity to the Administrator within 24 hours of initiation.

Revise condition III.E.3 to reflect the proposed language in 40 CFR 264.540, as follows: When directed to implement interim measures by the Administrator, the Permittee shall implement the specified actions as soon as practicable, in accordance with a schedule specified by the Administrator.

Delete condition III.E.4 - these are the responsibility of the Administrator, not the Permittee (see proposed 40 CFR 264.540.)

Revise condition III.E.5 to read as follows: Interim measures and schedules for implementation shall be incorporated into this HSWA permit in accordance with HSWA permit condition I.C.1.

Revise the second sentence of the footnote on page 28 to read as follows (see 55 FR 30815 - 30816): The health-based level for carcinogens represents a concentration associated with an excess upper bound lifetime risk of 1×10^{-6} for Class A and B carcinogens and 1×10^{-5} for Class C carcinogens.

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To: Dan Duncan / EPA Seattle
Fax - 553-0957

From Ron Bruka
509 376-2663

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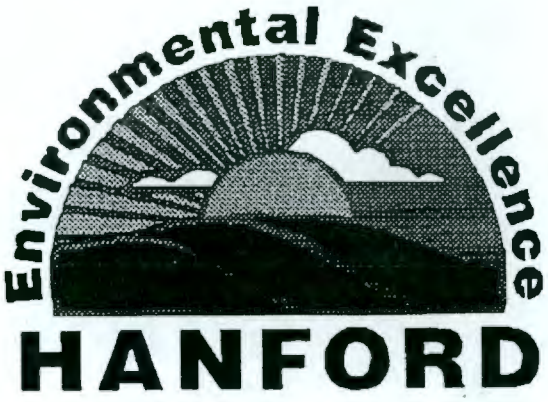

Regulatory Support
RCRA Unit Permits

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington, 99352

9413286.0613

Date: August 31, 1993

To: Dan Duncan **Fax:** (206) 553-0957

Location: **Phone:** (206) 553-6693

From: R. C. Brunke **Phone:** (509) 376-2663 **MSIN:** H6-24

FAX: 376-2816 **Verify:** (509) 376-2663

This Fax consists of 6 pages including cover sheet.

Message: Please see attached.

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COMMENTS ON DRAFT HSWA PORTION OF RCRA PERMIT

1. **"Introduction," third paragraph, 2nd sentence, page 3:** The statement that "[t]he Permittee *shall be required* to take corrective action for any such releases . . ." is an improper extension of authority. The RCRA statute actually states that such action shall be taken "where necessary to protect human health and the environment." In recognition of the fact that corrective action may not always be necessary (i.e., a release may not always result in a threat to human health and the environment), the proposed language of Subpart S to 40 CFR 264 also requires corrective action "where necessary." The language in the HSWA portion of the RCRA permit - which currently implies that corrective action is mandatory in all cases - should be revised to reflect that such action is required "where necessary to protect human health and the environment."

2. **"Action levels" definition, page 5:** The definition indicates that corrective action is required when an action level is exceeded. This is inconsistent with the intended use of action levels. Although it is true that corrective action will often be necessary when action levels are exceeded, this is not always the case. EPA has recognized this on a national level, as demonstrated by the proposed language of 40 CFR 264.520(c) which allows a permittee to apply for a determination of no further action even though the action level has been exceeded. (See 55 Federal Register 30875.) The definition of action level in the HSWA portion of the RCRA permit should be revised to indicate that when an action level is exceeded, "corrective action *may* be required."

3. **"Corrective Action Management Unit" definition, page 5:** As written, the CAMU definition would apply only to remediation waste from RCRA corrective action. At Hanford, efforts are underway to develop a CAMU facility for receipt of remediation wastes from CERCLA activities as well as from RCRA corrective action. The draft permit definition could inadvertently eliminate this option. The CAMU definition should be revised to indicate that such a unit could receive remediation waste from CERCLA activities as well as from RCRA corrective actions.

4. **"RCRA Past Practice Units" definition, page 6:** The draft definition appears to extend the corrective action requirements beyond statutory authority. In the FFACO, "RCRA Past Practice Units" includes "single incident releases." (See discussion in Section 5.2.2 of the FFACO.) In contrast, RCRA corrective action authority extends only to solid waste management units. SWMUs are defined as discernible units, and generally exclude single incident releases. (See discussions beginning at 50 Federal Register 28712 and 55 FR 30808). To remain within the constraints of HSWA and RCRA authority, the corrective action requirements throughout the permit must be revised to address corrective action at solid waste management units, not all RCRA past practice units identified in the FFACO.

5. **"Remediation Waste" definition, page 7:** As with the definition of "corrective action management unit," the draft definition of

"remediation waste" could inadvertently preclude co-disposal of CERCLA waste in a single unit (see comment 3). The definition should be revised to recognize that wastes generated from the CERCLA process qualify as remediation waste as well as wastes generated from RCRA corrective action.

6. **"Temporary Units" definition, page 7:** The definition of "temporary units" appears to have been derived from the proposed rule for Subpart S of 40 CFR 264. This definition was changed to be more restrictive in the final rule promulgation of February 16, 1993. (See discussion beginning at 58 FR 8673). Per this promulgation, temporary units now are restricted to two types of temporary units: tanks and container storage areas. The final rule did, however, extend the time associated with use of temporary units from 180 days (the limit cited in the draft permit) to one year. The draft permit definition should be changed to reflect the final regulatory scope and time limits for temporary units rather than using the obsolete language from the proposed rule.

7. **"Monitoring and Records" section, item I.L.1, second sentence, page 11:** Mandating the sampling methods of Appendix I of 40 CFR Part 261 for all samples taken pursuant to the HSWA portion of the RCRA permit is inappropriate. Appendix I is required by regulation only for a few specific purposes, and was not intended to be required in all cases. (See further discussion in comment 8). Generic imposition of these methods for other purposes is inappropriate.

8. **"Monitoring and Records" section, item I.L.2, third sentence, page 11:** Mandatory use of the Third Edition of Test Methods for Evaluating Solid Waste (SW-846) is inappropriate and, in certain instances, violates regulatory requirements. As EPA noted in the Federal Register discussion of September 29, 1989, "except where regulations specifically require the use of certain SW-846 test methods or QC procedures, use of the methods contained in SW-846 are not mandatory." EPA further notes that, until the Third Edition of SW-836 is officially adopted by regulation, the Second Edition is required to be used in certain applications. The discussion then identifies the 5 instances wherein the Second Edition is mandatory. In all other cases, any reliable analytical methods, including any version of SW-846, may be used to meet other requirements in parts of 260-270." The requirement to use the Third Edition of SW-846 is inappropriate because (1) it requires use of a document that EPA has formally recognized as discretionary except in a handful of instances and (2) in those few instances where SW-846 is required by regulation, the mandatory version is the Second Edition rather than the Third Edition, pending regulatory change. Incorporation of the Third Edition in the HSWA portion of the RCRA permit could result in duplicative analytical efforts: one effort, done in conformance with the Second Edition of SW-846 to satisfy the regulatory requirements (which EPA cannot merely waive via terms of a permit condition) and another effort, done using the Third Edition to meet the permit requirements. The permit should be revised to mandate SW-846 only when required by regulation (consistent with the position established by EPA

on a national level), and in those cases the mandatory version should be the Second Edition.

9. **"Monitoring and Records" section, item I.L.2, first sentence, page 11:** The first sentence references the "documentation produced pursuant to 40 CFR 268." The FFACO recognizes that certain requirements of land disposal restrictions of 40 CFR 268 cannot be met with regards to radioactive mixed waste. The permit condition should be revised to recognize that LDR requirements may be revised by the FFACO and that, as a consequence, some documents identified in 40 CFR 268 may not be available.

10. **"Land Disposal Restrictions" section, item II.G.1, page 19:** The requirement to comply with LDR provisions, unless authorized in the FFACO, fails to recognize the possible establishment of a CAMU, in which case LDR provisions would not apply. The permit language should be revised to provide for the CAMU exception to LDR standards.

11. **"Land Disposal Restrictions" section, item II.G.2, first sentence, page 19:** This permit condition should be revised to recognize the LDR exception for corrective action wastes managed in CAMUs, similar to the issue noted in comment 10.

12. **"Land Disposal Restrictions" section, item II.G.2, second sentence, page 19:** What timetable is pertinent to the requirement to "develop and implement treatment technologies necessary to achieve full compliance with LDR requirements for mixed wastes at the facility?" Without some schedule, this requirement is meaningless. Perhaps the FFACO schedule for development of LDR treatment technology could be incorporated by reference.

13. **"Integration with the FFACO" section, item III.A.1, second paragraph, page 20:** The FFACO is issued pursuant to both RCRA and CERCLA authority, not just "pursuant to Section 120(e)(2)" of CERCLA. As noted in Article I of the FFACO, EPA authority for the agreement is pursuant to Section 120(e) of CERCLA "and Sections 6001, 3008(h), and 3004(u) and (v) of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. Sections 6961, 6928(h), 6924(u) and (v), as amended by the Hazardous and Solid Waste Amendments of 1984 . . ." The permit language should be revised to recognize the additional authorities of the FFACO.

    The statement that CERCLA "provides another mechanism which can be used to investigate and clean up releases of hazardous waste *and constituents*" is incorrect. CERCLA provides authority to clean up hazardous substances which includes all hazardous wastes, but not necessarily all hazardous constituents per se. The permit language should be revised to correctly state the CERCLA authority.

14. **"RCRA Past Practice Units" section, item III.A.2.b, page 20:** As noted in comment 4, HSWA corrective action authority is legally applicable only to solid waste management units, not all RCRA past practice units identified in the FFACO. The HSWA portion of the RCRA permit should be

restricted to conditions for which legal authority exists. The FFACO is a separate agreement that occasionally extends beyond RCRA corrective action authorities. Attempts to incorporate these additional provisions into a RCRA permit is inappropriate.

15. **"RCRA Facility Investigation" section, item III.C.1, page 23:** The listing of elements in the RFI workplan should be deleted and replaced with the elements identified in the proposed 40 CFR 264.512. Establishment of a unique set of requirements that do not correspond with the anticipated regulatory requirements is improper.

16. **"RCRA Facility Investigation" section, item III.C.1.e, page 23:** Specification of the Third Edition of SW-846 is inappropriate and, in certain cases, may be in direct conflict with regulatory requirements that mandate use of the Section Edition (see comment 8). Revise this permit condition to specify that the analytical procedures to be used must be specified in the RFI workplan, which is subject to agency approval.

17. **"Interim Measures" section, item III.E.2, page 25:** The condition specified in this item should be revised to indicate that the Permittee is required to implement interim measures in cases of immediate response *when so directed by the Administrator*. As currently written, the condition implies that the Permittee is unilaterally required to implement such actions. This is inconsistent with the proposed 40 CFR 264.540, wherein the Administrator is to direct the Permittee to implement interim actions, when necessary.

18. **"Interim Measures" section, items III.E.4.a through III.E.4.i, page 26:** The list of items which the draft permit would impose on the Permittee are, in fact, issues to be considered *by the Administrator* per the proposed requirements of 40 CFR 264.540(b). To transfer this duty onto the Permittee is an inappropriate delegation of responsibility except in cases where the Permittee voluntarily seeks to initiate an interim measure. In cases where the Administrator seeks to impose such actions, he should act in accordance with the responsibility assigned in the regulations and evaluate need based upon the factors listed in these items rather than deferring to the Permittee to establish justification.

19. **"Discovery of New Solid Waste Management Units," item III.F.1.a, page 27 - 28:** The list of items to be provided for newly discovered SWMUs does not correspond with the information the Permittee is required to submit pursuant to 40 CFR 270.14(d). Revise the permit condition to reflect the information submittals required by regulation.

20. **"Discovery of New Solid Waste Management Units," item III.F.1.b, page 27:** With regards to wastes managed in the unit, the permit condition should require submittal of this information "to the extent available," as specified in 40 CFR 270.14(d)(1)(v). When this information is not available for a SWMU at the time of unit identification, it is impossible to comply with a permit condition to provide such data upon initial identification of the unit.

21. **"Discovery of New Solid Waste Management Units," item III.F.1.c, page 27:** The draft permit condition requires submittal of a variety of information concerning releases from a SWMU. In many cases, the detailed information may not be available. In recognition of this fact, 40 CFR 270.14(d)(2) requires submittal of "all available information pertaining to any release" from a SWMU. In contrast, as currently written the draft permit condition requires submittal of release information regardless of whether or not it is available, apparently under the presumption that such information will always be present. Revise the condition to require provision of "all available information pertaining to any release."

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HANFORD FACILITY DANGEROUS WASTE PERMIT
(DRAFT 8/25/93)
REGULATORY AUTHORITY ANALYSIS

The Washington State Department of Ecology (Ecology) procedures for decision making when processing RCRA permit applications are in WAC 173-303-840. In particular, 173-303-840((1)(e) requires that all draft permits "be accompanied by a fact sheet that is supported by administrative record and made available for public comment." WAC 173-303-840(1)(f)(iii)(C) states that the required fact sheet shall include "a brief summary of the basis for the draft permit conditions including supporting references." However, the corresponding federal regulation of 40 CFR 124.8(b)(4) clarifies this requirement by stating that the fact sheet shall include "a brief summary of the basis for the draft permit conditions **including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record required by 124.9.**"

When the initial draft permit was issued on January 15, 1992, several permit conditions were identified that appeared to extend beyond what can be supported by administrative record in accordance with WAC 173-303-840. The unofficial draft permit that we are currently looking at (dated August 25, 1993) is not much different in this regard.

Following are individual examples of conditions that appear to be without regulatory basis. These examples do not constitute an exhaustive analysis of the draft permit, nor are rationales for examples comprehensive. Instances of apparent inconsistency with applicable regulations for several conditions are succinctly summarized.

Condition I.A.3: There is no regulatory basis for including **any** interim status activities within the scope of a final status permit. The EPA has indicated this to Ecology by letter in at least one other permitting process. The FFACO is **clearly** written with consideration for interim status closure in lieu of permitting.

Condition I.A.4: There is no regulatory basis for incorporating activities outside the scope of RCRA final facility standards in the permit.

Condition I.E.9: This condition fails to reflect the regulation of 40 CFR 270.30(i) requiring presentation of other documents **as may be required by law.**

Condition I.E.10: This condition adds to the requirements of WAC 173-303-810(11)(a)-(e) without regulatory basis. Each sub-condition below contains something beyond regulatory authority:

Condition I.E.10.a: There is no regulatory basis for mandating SW-846 for groundwater monitoring samples. Most RCRA designation sampling does not even mandate use of SW-846 (58 FR 46040, 55 FR 4441).

Condition I.E.10.b: This condition requires that the records be kept at the unit for at least 10 years from the date of [the activity], even though the regulation states they be kept for "at least 3 years." Although it is likely that monitoring and other records will be kept at the units, there is no regulatory basis for mandating it.

Condition I.E.10.c: Basically, this condition is redundant to the one above, except that it requires records to be kept at the Facility, or other approved location and extends the retention period to an even longer period of at least 10 years from the date of certification of completion of postclosure care or corrective action for the Facility whichever is later.

Condition I.E.10.d: There is no regulatory basis for extending record retention to 10 years beyond the conclusion of enforcement action. The automatic extension provision of WAC 173-303-380(3)(b) is for the purpose of extending retention during unresolved enforcement action regarding the facility, not to penalize the permittee after the conclusion of the action.

Condition I.E.10.e: This condition requires the title and affiliation be documented for sampling and analysis activities in addition to the name of the individual.

Condition I.E. 12: The 15 day period in this condition is calculated from date of receipt, whereas the regulation at 173-303-810(14)(a)(iii) requires calculation from the date of submittal.

Condition I.E.13: There is no regulatory basis for requiring at least 30 days advance notice for planned changes that might result in noncompliance. WAC 173-303-810(14)(b) only requires that advance notice be given. The condition then goes on to possibly contradict 30 day notice requirement.

Condition I.E.15: This condition differs radically from the requirements of WAC 173-303-810(14)(f) without regulatory basis. All other permits reviewed in Washington reflected the above citation accurately. There are no less than half a dozen requirements in this condition without basis.

Condition I.E.16: There is no regulatory basis for this condition. WAC 173-303-810(14(f) accurately reflects the written reporting requirements for any noncompliance which may endanger health or the environment.

Conditions I.E.17 and I.E.18: There is no regulatory basis for including on-site transfers in the scope of off-site manifesting requirements.

Condition I.E.19: There is no regulatory basis for requiring other noncompliance information to be submitted with annual reports. The regulation at WAC 173-303-810(14)(g) requires that such noncompliance be reported at the time monitoring reports are submitted.

Condition I.H: The is no regulatory basis for requiring these documents be kept at the facility, or some other location approved by Ecology for 10 years after postclosure care or corrective action. WAC 173-303-806(9) requires this information be kept for a period of 3 years from the date the application is signed (however, WAC 173-303-380(1) requires that the operating record need only be kept until closure of the facility).

Condition II.A and II.B: These conditions are excessive and mandate unnecessary rigidity to a plan that should retain allowable flexibility for optimal response and protection of human health and the environment. If the permit conditions were patterned after language in other Washington permits, the conditions would more accurately reflect the regulatory requirements.

Condition II.C.2: There is no regulatory basis for Ecology to exclude their employees from applicable training. See comment above for condition I.E.9. For access, regulators must present documents required by law, including proof of applicable training.

Condition II.D (all): Waste analysis plan development should be in accordance with WAC 173-303-300, and should take into consideration the FFACO Action Plan, section 6.5. Each WAP should be incorporated into the permit along with the applicable unit via the permit modification process.

Condition II.E (all): These conditions are without regulatory basis. Facility QA/QC requirements should be consistent with the FFACO Action Plan, section 6.5 approach/referenced documents.

Condition II.F (all): These conditions are not based on the regulations of WAC 173-303-645(8) and contain many ostensibly arbitrary requirements. In fact, these conditions are not ripe for inclusion in the permit, because this initial issuance does not contain any "regulated units" as defined by WAC 173-303-040.

Condition II.G: This condition fails to clarify the actual requirements associated with WAC 173-303-282.

Condition II.H: This condition has been drafted despite the exemption of WAC 173-303-620(1)(c).

Condition II.I (all): There is no regulatory basis for maintaining the operating record for 10 years after postclosure or corrective action, or for recording information into the record within 48 hours. The draft permit also extends the body of documents required in the operating record beyond what is called for by WAC 173-303-380(1).

Condition II.J (all): The concept of closure seems to have been extrapolated without regulatory basis and without regard for the approach of the FFACO. The facility closure plan required by WAC 173-303-610(3) should grow in the same manner as the Hanford Facility permit. There is no regulatory basis nor relevance in mandating submittal of some ambiguous Facility Wide Closure Plan within one year of issuance of the Remediation Final Environmental Impact Statement.

Condition II.K (all): This condition is unduly complicated and contains elements that are without regulatory basis. The condition should be keyed to the regulation of 173-303-610 just as other permits issued in the state.

Condition II.L.1: This condition as drafted reflects deviation from the requirement contained in the first paragraph of WAC 173-303-340.

Condition II.L.2: This condition arbitrarily adds the phrase in accordance with sound engineering and scientific practice. Such language is subjective, and is not found in the standard permit condition of WAC 173-303-810(6).

Condition II.L.3 (all): Regulatory basis for these conditions is unknown.

Condition II.N.3: There is no regulatory basis for mandating unit specific operating records. WAC 173-303-380 requires the owner or operator of a facility to keep a written operating record. There are no provisions in 173-303-380 that require separate operating records for individual units.

Condition II.O: The scope of the general inspection requirements has been enlarged greatly without regulatory basis. WAC 173-303-320 requires a written schedule for inspecting of specific equipment with inspection frequency based on rate of possible deterioration and the probability of an environmental or human health incident. Condition II.O.2.a arbitrarily requires large land areas to be inspected either every 4 months, every 6 months, or yearly.

Condition II.Q: This condition is without regulatory basis. WAC 173-303-370 specifically applies to wastes received from off-site sources.

Condition II.T: This condition has been erroneously tied to a FFACO paragraph dealing with access under CERCLA.

Conditions II.U and II.V: These conditions have expanded the requirement of WAC 173-303-380(1)(b) without regulatory basis.

Conditions II.W (all): These conditions expand greatly on the requirement of WAC 173-303-800(5).

Condition III.1.A: The incorporation of an entire Part B permit application is unprecedented and will lead to ambiguity concerning appropriateness of enforcement.

Condition III.1.B: Many of the subconditions modify and/or mandate as a condition information without regulatory basis. Examples include III.1.B.m,n,t,v,w,z,kk.

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ISSUE: JURISDICTION OVER RADIOACTIVE MATERIALS	
Contentious Element(s) • Hazardous substances definition • Atomic Energy Act (AEA) jurisdiction • Distinction recognized by FFACO	Applicable Evaluation Criteria • Regulatory authority • FFACO consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Inconsistency with FFACO • High appeal and litigation potential • Increased spill reporting costs (~$300,000/year) • Other cost increases (incalculable)	Proposed Resolution Approach • Eliminate explicit references
Comments:	

ISSUE: ONSITE WASTE MOVEMENT	
Contentious Element(s) • Onsite versus offsite requirements • Shipping paper requirements • Facility-wide versus unit-specific waste analysis plans • 616 NRDWSF and 305-B waste analysis plan status • Waste confirmation approach • Use of process knowledge	Applicable Evaluation Criteria • Regulatory authority • Level of control • State-wide consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Increased administrative costs • Increased analytical costs (~$250,000 to $2,500,000 for nonradioactive samples) • Redundant sampling and analysis activities • Increased analytical system demands • Increased personnel exposure	Proposed Resolution Approach • Shipping paper documentation usage • Waste confirmation approach • Revised waste analysis plan completion
Comments:	

ISSUE: REGULATORY AGENCY AUTHORITY	
Contentious Element(s) • Rationale • Consistency	Applicable Evaluation Criteria • Regulatory authority • Level of control • State-wide consistency
Potential Impacts if Unresolved • Cost versus benefit • Funding diversion	Proposed Resolution Approach • Address listing • Complete Fact Sheet
Comments:	

ISSUE: PERMITTING APPROACH	
Contentious Element(s) • "Umbrella" versus "building block" approach • Application of final status conditions, coverage • 2 separate permits • Facility-wide plans • Permit application basis • Closure plan inclusion	Applicable Evaluation Criteria • Regulatory authority • Level of control • FFACO consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Ambiguity • Increased costs (~$900,000) • High appeal potential	Proposed Resolution Approach • Reassess facility-wide plans • Closure plan delineation
Comments:	

ISSUE: RCRA/CERCLA INTEGRATION	
Contentious Element(s) • Facility-wide closure plan utility • Corrective Action and CERCLA redundancy	Applicable Evaluation Criteria • Regulatory authority • Level of control • State-wide consistency • FFACO consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Ambiguity • High appeal potential	Proposed Resolution Approach • Use unit-specific closure plans • Defer to FFACO, Corrective Action, and CERCLA provisions
Comments:	

ISSUE: CORRECTIVE ACTION	
Contentious Element(s) • Inclusion of AEA-licensed facility • Lack of demonstrated release • EPA, Ecology, DOH authorities	Applicable Evaluation Criteria • Regulatory authority • Level of control
Potential Impacts if Unresolved • Ambiguity • High appeal and litigation potential	Proposed Resolution Approach • Identify monitoring requirements • Use AEA license, not RCRA Permit
Comments:	

ISSUE: MAPPING AND MARKING OF UNDERGROUND PIPELINES	
Contentious Element(s) • Time frames	Applicable Evaluation Criteria • Level of control • State-wide consistency • FFACO consistency
Potential Impacts if Unresolved • Budget redirection (~$5,000,000) • Cost versus benefit	Proposed Resolution Approach • Re-evaluate time frames • Use phased approach
Comments:	

ISSUE: RECORDS ACCESS/SITE ACCESS	
Contentious Element(s) • Regulatory basis • Prescriptive requirements • AEA requirements	Applicable Evaluation Criteria • Regulatory authority • Level of control • State-wide consistency • FFACO consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Increased costs • Litigation potential	Proposed Resolution Approach • Adherence to regulations • Re-evaluate response time • Acknowledge AEA requirements
Comments:	

ISSUE: INCLUSION OF DOCUMENTS	
Contentious Element(s) • Incorporation of documents as enforceable conditions • Necessity of excerpting	Applicable Evaluation Criteria • Regulatory authority • Level of control • State-wide consistency • Efficiency/cost effectiveness
Potential Impacts if Unresolved • Ambiguity • Increased costs	Proposed Resolution Approach • Use Waste Water Pilot Plant as model • Excerpt appropriate information
Comments:	

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DON'T SAY IT--WRITE IT!!

Date: August 26, 1993
To: Dave Jansen
From: George Jackson
Subject: ISSUE RESOLUTION STATUS ASSESSMENT

Per our phone conversation, attached is an assessment by RL and its contractors of the issue resolution status of 15 key permitting issues. This assessment, provided as a discussion draft, is intended to serve as a basis for meeting with you in the very near future. The purpose of this meeting will be to discuss with you the benefits of deferring issuance of the revised Draft Permit beyond September 15, 1993, and the potential impacts if the mid-September issuance date is adhered to. The basis for recommending deferral of the mid-September issuance date is summarized as follows:

- Two working meetings, and the free exchange of Draft Suggested Language and revised Draft Permit language between our staffs, have resulted in a more mutually agreeable Draft Permit approach and/or language for 6 of the 15 permitting issues.

- Using the same meeting and language exchange process, and some management involvement, it is believed that the development of a more mutually agreeable Draft Permit approach and/or language could be achieved for the following issues:

  - Regulatory Agency Authority: A mutual evaluation could be conducted of the Draft Permit requirements that have been expanded beyond the Dangerous Waste Regulations; such an evaluation could be used to ensure that a well-founded Fact Sheet is developed and that the Hanford Facility is being regulated in a manner consistent with other Washington State TSD facilities.

  - Permitting Approach: If closure plans are included in the Draft Permit, an approach should be taken to ensure that these interim status TSD units are addressed in a manner distinct from final status TSD units. Additional effort would enable more appropriate language to be crafted that could better articulate this distinction.

  - Inclusion of Documents: Additional time would enable the excerpting of appropriate information from permit application documents and other permit attachments to prepare clear, enforceable permit conditions. The present Draft Permit approach of including entire documents and attachments will cause implementation and enforcement requirements to be ambiguous for both the permittee and the regulators.

- Corrective Action: The August 23, 1993, meeting showed that with regards to inclusion of US Ecology in the Draft Permit, the regulatory role of EPA and Ecology, in relation to DOH, is unclear. Additional time would enable the identification of specific monitoring requirements that should be dealt with in the Atomic Energy Act license issued to US Ecology, rather than through the RCRA Permit.

- Onsite Waste Movement: Deferral of the Draft Permit issuance for at least a month would enable the completion of revisions of the 616 NRDWSF and 305-B waste analysis plans. The contents of these revised plans will likely offer a satisfactory alternative to the flat 5% verification requirement currently in Part III of the Draft Permit. Furthermore, the provision of these plans would address the "lack of permit application completeness" documented in the joint EPA/Ecology comment letter issued on June 14, 1993.

- RCRA/CERCLA Integration: The intent of the Facility-wide closure plan requirement included in the Draft Permit is unclear and appears to be redundant to the provisions of the FFACO and Corrective Action section of the Permit. Because RCRA/CERCLA integration is so key to the cost effective clean up of the Hanford Site, every effort should be made to eliminate this ambiguity.

- Records Access/Site Access: The records access requirements currently outlined in the Draft Permit appear to lead to duplicate recordkeeping and to require record entry time frames that cannot be cost effectively achieved. A closer look should be taken to ensure that the Draft Permit language does not preclude the development of a more workable recordkeeping system.

While I do acknowledge that total agreement on all open issues cannot be achieved in the near team, I believe the actions noted above should be taken before the Draft Permit is issued for public comment. I am concerned that once the Draft Permit is in the public arena, it will be more difficult for Ecology to substantially revise the permit, even if conditions warrant.

Please give me a call on (509) 376-9315 regarding the setting up of a meeting to discuss the contents of this memo, the attached Issue Resolution Status Assessment, and the Draft Permit issuance schedule.

cc: Joe Witczak

RESOURCE CONSERVATION AND RECOVERY ACT PERMIT FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE ON THE HANFORD FACILITY

ISSUE RESOLUTION STATUS ASSESSMENT

EXPLANATION

The U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) issued a letter on July 27, 1993, stating that a revised Draft Hanford Facility Dangerous Waste Permit (Draft Permit) was scheduled to be issued for public comment on September 15, 1993. The U.S. Department of Energy, Richland Operations Office (DOE-RL), and their contractors expressed concerns with this proposed issuance date, particularly because of the unresolved status of 15 key permitting issues. On August 6, 1993, a follow up letter was received from Ecology committing to remain open to modification of the September 15, 1993, issuance date for the revised Draft Permit, should conditions warrant. The purpose of this Issue Resolution Status Assessment is to provide DOE-RL/Contractor input on the decision as to whether to modify or proceed with the proposed mid-September issuance date.

Previously, on January 15, 1992, Ecology and EPA issued the initial Draft Permit for public comment. On March 16, 1992, DOE-RL and its contractors responded by providing extensive comments. These comments were based on the application of five criteria: These criteria were that the permit requirements must be:

1. Based on clear regulatory authority
2. Reflect an appropriate level of control
3. Consistent with other RCRA permits issued in Washington State
4. Consistent with the Hanford Federal Facility Agreement and Consent Order (FFACO)
5. Consistent with management efficiency and cost effectiveness.

The March 16, 1992, comments of greatest concern generally can be categorized into one of the 15 key permitting issues.

At the end of July 1993, DOE-RL and their contractors received from EPA and Ecology, respectively, a revised Corrective Action section and selected portions of the Dangerous Waste section of the Draft Permit related to 12 of the 15 key permitting issues. On August 5, 1993, EPA, Ecology, and DOE-RL and its contractors met to discuss this text. On August 13, 1993, DOE-RL and its contractors submitted Draft Suggested Language to Ecology on the Dangerous Waste section of the Draft Permit. DOE-RL and its contractors also met with EPA on August 13, 1993, to provide comments on the Corrective Action section of the Draft Permit. On August 16, 1993, DOE-RL and its contractors received a revised draft of the entire Dangerous Waste section of the Draft Permit and met on August 20, 1993, to discuss this revision, particularly those areas of the revision that did not incorporate the Draft Suggested Language provided to Ecology on August 13, 1993. At the August 20, 1993, meeting, DOE-RL and its contractors also received

another revised Dangerous Waste section and Corrective Action section of the Draft Permit. This Issue Resolution Assessment is based on discussions held at the August 20, 1993, meeting and on the Draft Permit revisions received at that meeting.

Based on the results of the August 20, 1993, meeting, and the revised Draft Permit sections received at that meeting, six of the 15 key permitting issues are considered to be nearing resolution (issues designated with an asterisk).

Issue:	Topic:
*1.	Design and Construction Impact
2.	Mapping and Marking of Underground Pipelines
3.	Regulatory Agency Authority
4.	Permitting Approach
5.	Inclusion of Documents
6.	Corrective Action
7.	On-Site Waste Movement
*8.	Relationship Between the FFACO and the Permit
9.	RCRA/CERCLA Integration
*10.	Designation of Permittee
11.	Jurisdiction Over Radioactive Materials
*12.	Regulation of Air Emissions
*13.	Contract Laboratory Program
14.	Records Access/Site Access
*15.	Professional Engineer Certification

* Issue considered to be nearing resolution (awaiting confirmation of revised language from Ecology).

Nine of the 15 key permitting issues listed above remain open (those not marked with an asterisk) and are requested to be the subject of a management evaluation prior to making a decision as to whether to proceed with the September 15, 1993, revised Draft Permit issuance date. These issues are addressed in the remainder of this assessment by providing:

- A succinct statement of the issue
- A summary of language in the Draft Permit dated August 20, 1993
- The DOE-RL response provided in the most recent meetings held with EPA and Ecology on August 20, 1993, and on August 23, 1993
- The basis for the DOE-RL response keyed to the five evaluation criteria listed on page 1
- The impact of proceeding with the approach contained in the Draft Permit dated August 20, 1993 (all cost estimates cited are of a preliminary nature)
- An assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language if additional time and/or management involvement were available.

Issue 2: MAPPING AND MARKING OF UNDERGROUND PIPELINES

The Draft Permit requires the provision of maps of all dangerous waste underground pipelines within a 36 month period. In addition, the Draft Permit requires, within 24 months, the marking of dangerous waste underground pipelines outside of the fenced security areas.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)

• Provide maps of all dangerous waste underground pipelines located:
  • Outside of the fenced security areas within 24 months (Condition II.U.1)
  • Within the fenced security areas within 36 months (Condition II.U.3)
	• Provide maps of all TSD unit dangerous waste underground pipelines (used to transport nonradioactive dangerous waste as of 11/19/80 and radioactive dangerous waste as of 11/23/87) located:
	  • Outside of the fenced security areas within 36 months (Condition II.U.1)
	  • Within the fenced security areas within 60 months (Condition II.U.3)

• Within 36 months provide piping schematics of all dangerous waste underground pipelines located within the fenced security areas (Condition II.U.2)	• Within 48 months provide piping schematics of all TSD unit dangerous waste underground pipelines (used to transport nonradioactive dangerous waste as of 11/19/80 and radioactive dangerous waste as of 11/23/87) located within the fenced security areas (Condition II.U.2)
• Within 12 months submit report describing procedures to compile information (Condition II.U.4) Note: in a teleconference with Ecology on 8/23/93, Ecology agreed to insert after the word "pipelines" in Conditions II.1, II.2, and II.3 the following: "(used to transport nonradioactive dangerous waste as of 8/18/80 and radioactive dangerous waste as of 7/26/87)."	• Within 24 months submit report describing procedures and methods to compile information (Condition II.U.4)
• Within 24 months mark underground pipelines in Condition II.U.1; markings every 100 meters where practicable	• Within 48 months mark underground pipelines in Condition II.U.1; markings every 100 meters where practicable

Issue 2: MAPPING AND MARKING OF UNDERGROUND PIPELINES	
	Applicable Evaluation Criteria: 2. Appropriate level of control 5. Management efficiency and cost effectiveness

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Draft Permit approach requires redirecting of budget dollars committed to other clean-up activities (i.e., the DOE has not specifically delineated this work as a line item in the current 5-year budget planning documentation)
  - Approach is not phased based on the availability of Part B, closure plan, and CERCLA work plan information
  - To meet the Draft Permit schedule, ~40 manyears of effort will be required to prepare and reproduce maps within the specified 36 month period for an estimated initial cost of ~$5,000,000.
- Acceleration/implementation of Draft Permit mapping and marking activities will not provide clear additional benefit to the protection of human health and the environment above the map system and excavation permit process presently in place

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language: Moderate

Issue 3: REGULATORY AGENCY AUTHORITY

The Draft Permit embodies an approach at the Hanford Facility that is only loosely based on the Dangerous Waste Regulations. Sufficient justification of the expanded requirements has not been provided.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
Examples of conditions within the Draft Permit which are without regulatory basis include: • Condition I.A.3: Making a final permit decision pursuant to 173-303-840 for closure plan reviews; interim status activities are outside the scope of final status permits • Condition I.E.10.a: Monitoring and monitoring records extending beyond WAC 173-303-810(11) • Condition I.E.15: Spill reporting requirements extending beyond WAC 173-303-810(14)(f) • Condition I.E.17 and II.Q.: Including onsite transfer requirements in the scope of off-site manifesting requirements specified in WAC 173-303-370. • Condition I.E.19: Noncompliance information reporting extending beyond WAC 173-303-810(14)(g) • Condition I.H: Recordkeeping requirements extending beyond WAC 173-303-806(9) • Condition II.E: Establishment of facility-wide QA/QC requirements having no regulatory basis in the WAC	• A sufficient rationale to justify conditions which are not explicitly based in the Dangerous Waste Regulations must be provided in Ecology's Fact Sheet • Application of the regulations on the Hanford Facility should be consistent with application at other Washington state TSD facilities

Issue 3: REGULATORY AGENCY AUTHORITY

- Condition II.I: Operating record requirements extending beyond WAC 173-303-380(1)

Note: A comprehensive list of other examples will be provided to Ecology to assist in further resolution of this issue.

Applicable Evaluation Criteria:

1. Regulatory authority
2. Appropriate level of control
3. Statewide consistency of regulatory requirements

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Increased cost resulting from exceeding regulatory requirements has no clear benefit to the protection of human health and the environment
- Funding that could be used for field clean-up activities will be diverted for administrative purposes that are not well-founded in the regulations

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language: Moderate, if more time is available to develop and evaluate the Fact Sheet basis and to provide Draft Suggested Language

Issue 4: PERMITTING APPROACH

The Draft Permit uses an "umbrella" approach that imposes final status permit requirements on the entire Hanford Facility with limited exceptions for "interim status units." This approach, and the issuance of essentially two separate permits by EPA and Ecology, is inconsistent with the FFACO and the Dangerous Waste Regulations.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
• "Umbrella permit" that would impose final status requirements on the entire Hanford Facility with limited exceptions for "interim status units"	• Permit should use the "building block" approach delineated in the FFACO • Final status conditions should only apply to the TSD units incorporated into the Permit • Activities and areas outside of TSD units should not be subject to permit coverage; these areas are subject to other regulations
• Essentially two separate permits are being issued by EPA and Ecology	• Current approach of issuing two separate permits is inconsistent with the process clearly laid out in the FFACO and also is not consistent with the WAC regulations
• Conditions address waste management activities which may not be directly associated with a distinct operating unit or which may be associated with many units (i.e., Transportation, Training, Contingency Planning, etc.)	• With the exception of the Contingency Plan, facility-wide plans are redundant with TSD unit-specific plans

Issue 4: PERMITTING APPROACH	
• Permit includes facility-wide plans submitted in the Hanford Dangerous Waste Permit Application, Revision 0 • Permit includes closure plans for interim status TSD units	• The revised Draft Permit should be based on Revision 1 of the Hanford Facility Dangerous Waste Permit Application, as this submittal supersedes Revision 0. • TSD units to be closed under interim status should not be included in a final status permit; if they are included, they should be located in a separate section of the Permit and clearly delineated as not subject to conditions applicable to final status TSD units
	Applicable Evaluation Criteria: 1. Regulatory authority 2. Appropriate level of control 4. Consistency with the FFACO 5. Management efficiency and cost effectiveness
Impact of Proceeding with 8/20/93 Draft Permit approach:	
• Ambiguity as to how to comply and to enforce activities between TSD units. Approach will result in increased costs for both the permittee and the regulators and detract from permitting and compliance activities that are truly supportive of the protection of human health and the environment.	

Issue 4: PERMITTING APPROACH

- Estimation of the full financial impact of implementing facility-wide plans is difficult because of the ambiguous nature of this requirement. Examples of specific impacts that can be delineated include:
  - Administrative upkeep of ~6 facility-wide plans is estimated to require at least 1 manyear/plan for a total annual cost of ~$600,000; these plans are considered to be redundant with TSD unit-specific plans
  - At least 3 manyears/year are required to support facility-wide inspection requirements, for an annual cost of ~$300,000 (not counting equipment needed to support these inspections with a start-up cost of ~$50,000)
- Permitting approach has questionable legal merit and carries a high probability of being subject to the appeal process

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language:
Low

Issue 5: INCLUSION OF DOCUMENTS

The Draft Permit includes entire documents, including attachments, as enforceable conditions. The inclusion of entire documents and attachments is inappropriate and will lead to ambiguous implementation and enforcement requirements.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
• The Draft Permit incorporates entire documents, including attachments, as enforceable conditions	• Wholesale incorporation of entire documents into the Permit, which in many instances were prepared for reasons entirely outside of the permitting process, is inappropriate • Permit should provide selective inclusion of documentation that was prepared specifically to satisfy regulatory requirements • Waste Water Pilot Plant RD&D Draft Permit, as well as other permits issued in Washington State, should be used as models for the approach • Sufficient time should be allowed to enable RL/Contractors to work with Ecology to excerpt appropriate information from permit application documents to prepare clear, enforceable permit conditions
	Applicable Evaluation Criteria: 1. Regulatory authority 2. Appropriate level of control 5. Management efficiency and cost effectiveness

Issue 5: INCLUSION OF DOCUMENTS

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Inclusion of entire documents causes implementation and enforcement requirements to be ambiguous for both the permittee and regulators. Approach will result in increased costs for both the permittee and the regulators and detract from permitting and compliance activities that are truly supportive of the protection of human health and the environment

- Inclusion of entire documents will increase administration costs due to increased permit modification requirements

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language:
High, if additional time is available

Issue 6: CORRECTIVE ACTION

The Corrective Action section of the Draft Permit includes solid waste management units currently being regulated under an Atomic Energy Act (AEA) license.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
The Corrective Action section of the Draft Permit includes solid waste management units in an area of the Hanford Facility leased by the U.S. Department of Energy to Washington State, and subleased to US Ecology	US Ecology operates an AEA licensed Radioactive Mixed Waste Disposal Facility on leased land. The EPA RCRA Facility Assessment did not identify any releases from the US Ecology facility. Thus, there is not a clear need to include the US Ecology facility in the Corrective Action Permit since a corrective action is not necessary unless there is a demonstrated release Corrective Action requirements under RCRA should not be applied through the RCRA Permit for the Hanford Facility to areas and activities covered by the AEA license issued to US Ecology by the Nuclear Regulatory Commission and the Washington Department of Health (DOH) If additional monitoring is necessary to determine whether there has been a release that poses a threat to human health and the environment, it should be imposed through the Atomic Energy Act license issued to US Ecology and administered by DOH DOE-RL is willing to support the identification of specific monitoring requirements that should be dealt with in the AEA license issued to US Ecology
	Applicable Evaluation Criteria:
	1. Regulatory authority 2. Reflect an appropriate level of control

Issue 6: CORRECTIVE ACTION
Impact of Proceeding with 8/20/93 Draft Permit approach:
• Legality of administering Corrective Action requirements on US Ecology through the RCRA Permit will likely be challenged by US Ecology • Regulatory role of EPA and Ecology, in relation to DOH, is unclear and will likely result in ambiguous implementation and enforcement situations for DOE-RL, US Ecology and the regulators
Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language: Moderate, if additional time and management attention is provided

Issue 7: ONSITE WASTE MOVEMENT

The Draft Permit seeks to subject movements of waste from one Hanford Facility location to another to the manifesting requirements for offsite shipments. The Draft Permit also seeks to impose a percentage requirement for verification sampling.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
• Documentation requirements for offsite shipments are applied to onsite shipments • Shipping paper documentation must accompany all waste transported through or within the 600 Area of the Hanford Facility • At least 5% of the waste containers stored at 616 NRDWSF and 305-B must undergo sampling and analysis	• Onsite waste movement is expressly exempt from the manifesting requirements of federal and state regulations • Shipping paper documentation should only accompany waste transported on roads accessible to the general public • Requirements for waste handling at the 616 NRDWSF and 305-B should be based on revised waste analysis plans currently being prepared to address EPA/Ecology comments dated 6/14/93 • Process knowledge is a fully compliant method to designate waste received at onsite TSD units per WAC 173-303-300(2)
	Applicable Evaluation Criteria: 1. Regulatory authority 2. Appropriate level of control 3. Statewide consistency of regulatory requirements 5. Management efficiency and cost effectiveness

Issue 7: ONSITE WASTE MOVEMENT

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Administrative costs will increase to ensure that all documentation and recordkeeping requirements associated with shipping are maintained in accordance with the Permit conditions (e.g., need for determination of proper Department of Transportation shipping name for many small containers moved between Hanford buildings)
- 5% verification costs at 616 NRDWSF and 305-B are estimated to involve, on an annual basis, at least 175 samples for 616 NRDWSF and 75 samples for 305-B. Estimated analytical costs per sample for nonradioactive dangerous waste range from $1,000 to $10,000, for a total annual cost range of from $250,000 to $2,500,000 for 250 samples. Analysis of samples of mixed waste, handled by 305-B, may run as high as $50,000/sample. These estimates do not include the costs for taking samples which could be significant for highly radioactive samples.
- Verification requirements based on a flat percentage approach involve redundant sampling and analysis activities that drive up costs with no increased benefit to human health and the environment
- Sampling requirements increase personnel exposure to dangerous and radioactive substances and add unnecessary demands to an already overtaxed analytical system

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language:
Moderate, if additional time is available to fully develop 616 NRDWSF and 305-B Waste Analysis Plans

Issue 9: RCRA/CERCLA INTEGRATION

Ecology has included a condition requiring a facility-wide closure plan.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
Condition II.J of the Draft Permit requires preparation of a facility-wide closure plan to include, but not be limited to, the following: • Reference to the unit specific closure plans identified in Part III of the Permit • Detailed closure activities, pursuant to WAC 173-303-610 which are not specifically identified in any of the unit specific closure plans in Part III of the Permit • Methodology for ensuring a coordinated effort for all facility wide and unit specific closure activities	The need for a facility-wide closure plan, as drafted, is ambiguous. In 1984, Congress recognized that RCRA TSD provisions for permitting and closure did not address all hazardous waste issues on a facility; therefore, corrective action provisions were provided to address such issues. Section IV of the Draft Permit provides for corrective action in concert with the FFACO. In addition, the Hanford Site has been placed on the National Priority List (NPL) under CERCLA, thereby providing a further, more comprehensive, mechanism for addressing final disposition of the Hanford Site.
	Applicable Evaluation Criteria: 1. Regulatory authority 2. Appropriate level of control 3. Statewide consistency of regulatory requirements 4. Consistency with the FFACO 5. Management efficiency and cost effectiveness

Impact of Proceeding with 8/20/93 Draft Permit approach:

- The facility-wide closure plan is redundant to the provisions of the FFACO and Corrective Action section of the Permit; it will result in ambiguity and increased administrative costs with no clear benefit to the protection of human health and the environment
- Administration of CERCLA actions through the RCRA Permit does not have a regulatory basis and will likely be challenged

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language:
Moderate, if additional time and management attention is provided

Issue 11: JURISDICTION OVER RADIOACTIVE MATERIALS

The Draft Permit attempts to assert control over the radioactive, source, special nuclear, and byproduct material components of mixed waste.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
• In Condition I.E.15, hazardous substances is defined to include radioactive substances • Liberal reference is made to hazardous materials/substances throughout the Draft Permit	• DOE has sole jurisdiction over the source, special nuclear, and byproduct material components of mixed waste under the Atomic Energy Act (AEA) • The FFACO recognizes the distinction between hazardous waste subject to RCRA and radioactive waste subject to the AEA and should be followed
	Applicable Evaluation Criteria: 1. Regulatory authority 4. Consistency with the FFACO 5. Management efficiency and cost effectiveness

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Departure from FFACO, resulting in a significant inconsistency
- Contrary to federal law and could set a precedent for other DOE sites; legality likely to be challenged
- If this condition is used as a precedent to exert increasing control over radioactive materials at the Hanford Site, cost increases are estimated to be substantial, but incalculable, at this time
- Incremental cost increase for administrative requirement related to spill reporting ~3 manyears/year, or ~$300,000/year

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language: Low

Issue 14: RECORDS ACCESS/SITE ACCESS

Additional recordkeeping duties are imposed with no basis of authority, no regulation, and no explanation that justifies inclusion of the conditions. The Draft Permit conflicts with terms of the FFACO and changes the nature of the duty to allow inspection and entry under Ecology's Dangerous Waste Regulations.

Draft Permit (8/20/93)	DOE-RL Response (8/20/93 meeting)
• Permittee is required to record all information referenced in the Permit in the facility-wide operating record within 48 hours after the information becomes available	• Record retention times are not founded in the regulations and inconsistent with requirements of other Ecology permits
• Specified records are required to be maintained at the TSD unit	• Regulations only require that records be maintained on the facility; records system and location should be determined by permittee to ensure most efficient approach
• Only Ecology identification is required to access, copy, inspect, monitor, and sample during operating hours and at all other reasonable times	• The Draft Permit conflicts with terms of the FFACO and changes the nature of the duty to allow inspection and entry under the dangerous waste regulations
	• Permit does not acknowledge safety and security requirements of Atomic Energy Act (AEA) and associated DOE statutory obligations to provide for radiological protection and to protect classified material
	• Ecology RCRA inspectors should not have access to portions of the Hanford Site that are not subject to the Permit
	• Training records are subject to protection under the privacy act of 1974; until a waiver is obtained, this act applies

Issue 14: RECORDS ACCESS/SITE ACCESS

Applicable Evaluation Criteria:

1. Regulatory authority
2. Appropriate level of control
3. Statewide consistency of regulatory requirements
4. Consistency with the FFACO
5. Management efficiency and cost effectiveness

Impact of Proceeding with 8/20/93 Draft Permit approach:

- Increased retention time requirements, greater than those specified in the Dangerous Waste Regulations, will add administrative costs
- Available technology and the existing records system can not ensure entry of information into the facility operating record within 48 hours after the information becomes available; response times can only be met by developing a costly electronic data transfer information management system that is currently not on line
- DOE is under statutory obligation to adhere to the requirements of the AEA and Privacy Act; unnecessary litigation costs will result if this statutory obligation is challenged.

Assessment of the potential to develop a more mutually agreeable Draft Permit approach and/or language:
Low to moderate, if additional time and management involvement are available

Note: This assessment is based on a preliminary review of draft materials and does not waive any parties' rights with regard to commenting on or taking other action in association with issuance of a proposed permit.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COYOTE RAPIDS QUADRANGLE
WASHINGTON
15 MINUTE SERIES (TOPOGRAPHIC)

HANFORD SITE KEY MAP

WAHLUKE SLOPE

SAND DUNES

H A N F O R D W O R K S

(A E C)

100 D&DR

LARGE SODIUM FIRE FACILITY (105-DR)

100 N

100 KE & KW

100 B&C

218-W-3A LOW LEVEL BURIAL GROUND/ RETRIEVABLE STORAGE AREAS

218-W-3AE LOW LEVEL BURIAL GROUND

218-W-6 LOW LEVEL BURIAL GROUND

218-W-5 LOW LEVEL BURIAL GROUND

218-W-2A LOW LEVEL BURIAL GROUND

218-W-4C LOW LEVEL BURIAL GROUND/ RETRIEVABLE STORAGE AREAS

EXISTING NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY (2727-S)

218-E-10B LOW LEVEL BURIAL GROUND

218-E-10 LOW LEVEL BURIAL GROUND

218-E-12B LOW LEVEL BURIAL GROUND

221-T CONTAINMENT SYSTEM TEST FACILITY

E8 BORROW PIT

200 W

200 E

ASHPIT SITE

218-C-9 LOW LEVEL BURIAL GROUND

PROPOSED NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY (616)

Mapped, edited, and published by the Geological Survey
in cooperation with the Army Map Service

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1948 and planetable surveys 1951
Revised from aerial photographs taken 1964
Field checked 1965

Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue
To place on the predicted North American Datum 1983 move the projection lines 19 meters north and 87 meters east

There may be private inholdings within the boundaries of the National or State reservations shown on this map

SCALE 1:62500

NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROAD CLASSIFICATION
Light duty
Unimproved dirt
State Route

FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

COYOTE RAPIDS, WASH.
N4630—W11930/15
1965
DMA 2077 II—SERIES V791

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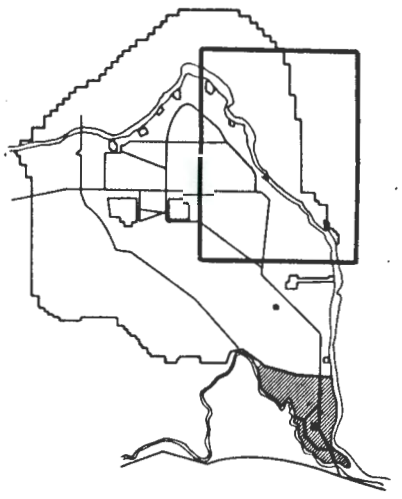
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

HANFORD QUADRANGLE
WASHINGTON
15 MINUTE SERIES (TOPOGRAPHIC)

HANFORD SITE KEY MAP



183-H SOLAR EVAPORATION BASIN

100 H

100 F

NONRADIOACTIVE DANGEROUS WASTE LANDFILL

Mapped, edited, and published by the Geological Survey in cooperation with the Army Map Service

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1948 and planetable surveys 1951
Revised from aerial photographs taken 1964
Field checked 1965

Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

SCALE 1:62500

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

HANFORD, WASH.
N4630—W11915/15

1965

AMS 2177 III—SERIES V791

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WA 8916?
8-17-93
3b

DATE:

U.S. Department of Energy
Richland Field Office
P. O. Box 550, Mail Stop A4-52
Richland, Washington 99352

TO: Dan Duncan EPA Region X
FAX # 206-553-0957

FROM: Bob Cassinos

MESSAGE: Re: Draft corrective action language
Dan Jack Waite and I worked on this markup. Feel free to call either of us if you have a question
Bob Cassinos

cc J. Waite

Number of Pages: ____ including cover sheet

Facsimile Number: (509) 376-4590
Confirmation Number: (509) 376-7374

Legal Department

9413286-0952

MASTER 8/30

Insert 1

Insert, New definitions

n. "RCRA PAST PRACTICE (RPP) UNIT" SHALL MEAN ANY WASTE MANAGEMENT UNIT, WITH EXCEPTION OF REGULATED (i.e. TSD) UNITS, AS DEFINED BY THE ~~FFACO~~, the INVESTIGATION OF WHICH WILL be ADDRESSED IN the FFACO FOR Corrective ACTION UNDER RCRA. The term WASTE MANAGEMENT UNIT INCLUDES ALL SWMU's PLUS OTHER NON-SWMU's (e.g. ONE-TIME releases).

9413286.0653

A.2.c. Notification of Newly Identified Solid Waste Management Units within those AREAS OF the facility covered by the FFACO will be IN ACCORDANCE WITH Section 3.0 of the FFACO Action Plan.

n' "~~RPP~~ RPP Operable Unit" SHALL MEAN A grouping OF RPPs AND Selected ~~REGULATED~~ SWMU's FOR purpose OF conducting INVESTIGATIONS AND SUBSEQUENT Corrective ACTIONS or INTERIM MEASURES.

~~"RPA"~~

WA 8967 3b
6.25.93

Department of Energy
Richland Field Office
P.O. Box 550
Richland, Washington 99352

3C

93-RPS-213

JUN 25 1993

Ms. Dana Rasmussen
Regional Administrator
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Ms. Mary Riveland, Director
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Dear Ms. Rasmussen and Ms. Riveland:

HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION

The U.S. Department of Energy, Richland Operations Office (RL) (owner/operator), and its contractors (co-operators), the Westinghouse Hanford Company (WHC) and the Pacific Northwest Laboratory (PNL), hereby submit, with this letter, the "Hanford Facility Dangerous Waste Permit Application, General Information" (Document DOE/RL-91-28, Rev. 1 [Enclosure]). This document supersedes the document entitled, "Hanford Facility Dangerous Waste Permit Application" (Document DOE/RL-91-28, Rev. 0) submitted to the U.S. Environmental Protection Agency (EPA) and the State of Washington Department of Ecology (Ecology) on October 3, 1991. Consistent with Revision 0, the scope of Revision 1 covers only those treatment, storage, and/or disposal (TSD) units for which final status is sought.

The "Hanford Facility Dangerous Waste Permit Application" is a single application organized into a General Information Portion (this document, DOE/RL-91-28, Rev. 1) and a TSD Unit-Specific Portion, which includes documentation for individual TSD units. In satisfaction of the Hanford Federal Facility Agreement and Consent Order (FFACO) Milestone M-20 schedule, Part B permit application documentation has been submitted for several Hanford Facility TSD units. Upon written notification of completeness from EPA and Ecology, one or more of these final, certified documents along with Document DOE/RL-91-28, Rev. 1 constitute a complete Dangerous Waste Permit Application meeting all requirements of the FFACO, 40 CFR 270.1(c)(4), and WAC 173-303-806.

This "Hanford Facility Dangerous Waste Permit Application, General Information" (DOE/RL-91-28, Rev. 1) submittal contains information current as of March 15, 1993. This document revision also contains information consistent with the "Hanford Site Comments on the Draft Permit for the Treatment, Storage, and Disposal of Dangerous Waste for the Hanford Facility" (Hanford Site Comments) which were submitted to Ecology and EPA on March 16, 1992. As noted in these Hanford Site Comments, we consider that the intent of the FFACO is that the initial Hanford Facility Permit be issued for one or more individual TSD units for which the application is complete, while all other TSD units on the Hanford Facility would continue to be regulated under interim status requirements. Activities and areas outside of TSD units would not be subject to coverage. This approach is consistent with that expressed in correspondence transmitted to Ecology and EPA on August 28, 1990, September 18, 1991, October 3, 1991, and March 12, 1992.

Once the initial "Hanford Facility Dangerous Waste Permit" is issued, the following process will be used. As final, certified TSD unit-specific documents are developed, and completeness notifications are made by EPA and Ecology, additional unit-specific permit conditions will be incorporated into the "Hanford Facility Dangerous Waste Permit" through the permit modification process.

Currently, RL is considering the need to pursue acquiring separate EPA/State identification (ID) numbers for generating and/or TSD activities that are conducted on land that is not contiguous with the Hanford Facility. Any changes that may be related to separate ID numbers are not reflected in Document DOE/RL-91-28, Rev. 1. If this approach is pursued, the necessary notifications for separate EPA/State ID numbers will be submitted per WAC-173-303-060. Subsequent Hanford Facility Dangerous Waste Permit Application revisions will reflect this change, if implemented.

RL, WHC, and PNL remain fully supportive of the timely issuance of a permit that is consistent with the regulatory provisions and the agreement of the parties to the FFACO, and will continue to work with you in achieving that goal. Should you have further questions regarding the contents of this letter or the enclosure, please contact Mr. J. E. Rasmussen of RL on (509) 376-5441, Mr. H. E. McGuire of WHC on (509) 376-1400, or Dr. T. D. Chikalla of PNL on (509) 376-2239.

Sincerely,

John D. Wagoner, Manager
Richland Operations Office

T. M. Anderson, President
Westinghouse Hanford Company

W. R. Wiley, Director
Pacific Northwest Laboratory

Enclosure

cc: D. Butler, Ecology, w/o encl.
R. Carosino, RL, w/o encl.
G. Chou, EM-322, w/o encl.
C. Clark, RL, w/o encl.
M. Crosland, EM-5, w/o encl.
D. Duncan, EPA, w/encl.
G. Hofer, EPA, w/encl.
T. Michelena, Ecology, w/encl.
D. Nylander, Ecology, w/encl.
S. Price, WHC, w/o encl.
D. Ruge, GC-11, w/o encl.
J. Schumann, EM-5, w/o encl.
D. Sherwood, EPA, w/encl.
C. Sikorski, EPA, w/encl.
R. Stanley, Ecology, w/encl.
H. Tilden, PNL, w/o encl.
S. Woodbury, EH-22, w/o encl.

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APPENDIX 2B

HANFORD FACILITY LEGAL DESCRIPTION

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HANFORD FACILITY LEGAL DESCRIPTION

The following legal description describes the overall facility boundaries of the DOE-RL controlled Hanford Site. Individual TSD units use only a very small portion of the Hanford Site. Additional descriptive information on the individual TSD units is contained in the Unit-Specific Portion of this permit application:

The Hanford Site being a tract of land located in Benton County, WA, the aforesaid tract being more particularly described as follows:

Commencing at the point of intersection of the E.-W. centerline of sec. 14, T.10N., R.28E. Willamette Meridian, with the western navigation line of the Columbia River;

Thence northerly 200 feet along said line of navigation to the TRUE POINT OF BEGINNING;

Thence W. to a point on the W. right-of-way line of George Washington Way, which line is the boundary of the city of Richland;

Thence southerly 100 feet or less, along said right-of-way line of George Washington Way to a point on the N. right-of-way line of Horn Rapids Road, an unplatted road;

Thence W. along the N. right-of-way line of Horn Rapids Road approximately 1/2 mile to the E. right-of-way line of Stevens Drive, an unplatted road;

Thence S. along said E. right-of-way line to a point on the N. right-of-way line of Spengler Street, a platted street;

Thence W. 145 feet to the W. right-of-way line of Stevens Drive;

Thence S. to a point 30 feet N. of the S. line of sec. 27, T.10N., R.28 E.W.M.;

Thence W. along a line 30 feet N. of, and parallel with, the S. line of sec. 27 to the E. line of the S.W. 1/4 of the S.E. 1/4 of said section;

Thence N. along the E. line of the S.W. 1/4 of the S.E. 1/4 of sec. 27 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of said sec. 27;

Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the W. line of the E. 1/2 of sec. 27;

Thence N. along the W. line of the E. 1/2 of sec. 27, and of the E. 1/2 of sec. 22 and the E. 1/2 of sec. 14 to the N. right-of-way line of Horn Rapids Road;

Thence westerly and northwesterly along the N. right-of-way line of Horn Rapids Road 26,000 feet more or less to the line's intersection with the N. right-of-way line of State Highway 240, in the N.E. 1/4 of sec. 11, T.10N., R.27E.W.M.;

Thence northwesterly along said N. right-of-way line of the highway, 75 feet N. of and parallel with the centerline of said highway to a point in sec. 3, T.10N., R.27E.W.M., which point is on the eastward extension of the N. right-of-way line of a county road from Horn Rapids to Benton City;

Thence along the northerly and westerly right-of-way line of said road, 75 feet northerly and westerly of, and parallel with, the center line of said road to a point on the E. line of sec. 8, T.10N., R.27E.W.M.;

Thence N. to the E. quarter corner of said section;

HANFORD FACILITY LEGAL DESCRIPTION (cont)

Thence W. to the S.W. corner of the E. 1/2 of the N.E. 1/4 of sec. 12, T.10N., R.26E.W.M.;
Thence N. to the N. line of said sec. 12;
Thence W. to the N.E. corner of the N.W. 1/4 of the N.W. 1/4 of the N.W. 1/4 of sec. 11, T.10N., R.26E.W.M.;
Thence S. 660 feet;
Thence W. 660 feet to the E. line of sec. 10, T.10N., R.26E.W.M.;
Thence S. to the S.E. quarter corner of said sec. 10;
Thence W. along the E.-W. centerline of sec. 10 to the W. line of said section;
Thence N. along the W. section line to the S.E. corner of sec. 4, T.10N., R.26E.W.M.;
Thence W. along the S. line of sec. 4 and sec. 5 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of sec. 5;
Thence N. to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of sec. 5;
Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;
Thence N. to the S.E. corner of the N. 1/2 of the N.W. 1/4;
Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of sec. 5;
Thence N. to the S.E. corner of sec. 31, T.11N., R.26E.W.M.;
Thence W. along the S. line of the E. 1/2 of the S.E. 1/4 of sec. 31 to the E. line of said E. 1/2 of the S.E. 1/4 of sec. 31;
Thence N. along the W. line of the E. 1/2 of the S.E. 1/4 to the S.E. corner of the S.W. 1/4 of the N.E. 1/4 of sec. 31;
Thence W. along the S. line of the S.W. 1/4 of the N.E. 1/4 to the S.W. corner of the S.W. 1/4 of the N.E. 1/4;
Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 to the S.E. corner of the N. 1/2 of the N.W. 1/4 of said sec. 31;
Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of said sec. 31;
Thence N. along the W. line of sec. 31 to the S.E. corner of sec. 25, T.11N., R.25E.W.M.;
Thence W. along the S. line of sec. 25 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of said sec. 25;
Thence N. along the W. line of the S.E. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4;
Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;
Thence N. along the W. line of the N.W. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of sec. 25;
Thence W. along the S. line of the N.W. 1/4 of sec. 25 to the W. line of sec 25;
Thence N. along the W. line of sec. 25 and the W. line of sec. 24 to the N. line of the S. 1/2 of the S. 1/2 of sec. 23;
Thence W. along the N. line of the S. 1/2 of the S. 1/2 of sec. 23 and the N. line of the S. 1/2 of the S. 1/2 of sec. 22 and the N. line of the S. 1/2 of the S. 1/2 of sec. 21 to the E. line of sec. 20;

HANFORD FACILITY LEGAL DESCRIPTION (cont)

Thence S. to the S.E. corner of sec. 20;
Thence W. along the S. line of sec. 20 and the S. line of sec. 19 to the S.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence N. to the N.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence W. to the W. line of sec. 19, all being in T.11N., R.25E.W.M.;
Thence continuing W. to the S.W. corner of the N.E. 1/4 of the S.E. 1/4 of sec. 24, T.11N., R.24E.W.M.;
Thence N. to the N.W. corner of said N.E. 1/4 of the S.E. 1/4 of sec. 24;
Thence W. to the S.W. corner of the S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence N. to the N.W. corner of said S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence W. to the W. line of sec. 24;
Thence N. to the N.W. corner of sec. 24;
Thence W. to the S.E. quarter corner of sec. 14;
Thence N. to the N.W. quarter corner of sec. 14;
Thence W. along the N. line of sec. 14 to the N.W. corner of sec. 14;
Thence N. along the W. line of sec. 11 and sec. 2 to the N.W. corner of sec. 2, all being in T.11N., R.24E.W.M., and continuing N. along the W. lines of secs., 35, 26, 23, 14, 11, and 2, all being in T.12N., R.24E.W.M.;
Thence continuing N. along the W. lines of secs. 35 and 26 in T.13N., R.24E.W.M., to the N.W. corner of sec. 26;
Thence W. along the S. line of sec. 22 to the S.E. quarter corner of sec. 22;
Thence N. along the N.-S. centerline of sec. 22 to the N.E. quarter corner of sec. 22;
Thence W. along the S. line of sec. 15 to the S.W. corner of sec. 15;
Thence N. along the W. line of sec. 15 to the S.W. corner of the N. 1/2 of the N.W. 1/4 of sec. 15;
Thence E. along the S. line of the N. 1/2 of the N.W. 1/4 of sec. 15 to the S.W. corner of the N.W. 1/4 of the N.E. 1/4 of sec. 15;
Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 of sec. 15 and continuing N. along the centerline of sec. 10 to the W. navigation line of the Columbia River, following said navigation line easterly, northerly, and southerly to a point directly W. of the S. line of Tract 4 of Ringold Tracts according to the plat filed in the records of Franklin County.
Thence southerly along the said W. line of navigation to the TRUE POINT OF BEGINNING.

EXCEPTING FROM THE ABOVE-DESCRIBED LAND THE FOLLOWING PARCELS, EXCLUDING that portion of the Hanford Railroad and any Hanford Site access roads which may traverse these parcels.:

PARCEL A) The N. 1/2 of the N.W. 1/4, and that portion of the N.W. 1/4 of the N.E. 1/4 in sec. 14, T.13N., R.24E.W.M. in the ownership and jurisdiction of the BONNEVILLE POWER ADMINISTRATION.

PARCEL B) Sec. 1, T.11N., R.26E.W.M. in the ownership under quitclaim deed, of the STATE OF WASHINGTON.

PARCEL C) A tract of land leased to the STATE OF WASHINGTON lying in sections 7, 8, and 9, T.12N., R.26E.W.M., containing 1,000 acres more or less, more particularly described as follows: That part of the S. 1/2 of said sec. 7 bounded on the W. and N. by the following described line: BEGINNING at a

HANFORD FACILITY LEGAL DESCRIPTION (cont)

point on the S. line of said sec. 7, which point is S. 88° 44' 47" W. 4,515.30 feet from the S.E. corner of the sec., and at coordinates N. 438,868.46 and E. 2,222,800.00 on the Washington State Grid System, South Zone; thence N. 1,781.54 feet; thence E. 2,200.00 feet; thence N. 907.19 feet more or less to the N. line of said S. 1/2 of the sec.; thence N. 88° 38' 43" E. along said line 2,275.48 feet more or less to the E. quarter corner of said sec. 7. The S. 1/2 of sec. 8. The S. 1/2, and the S. 1/2 of the N. 1/2 of sec. 9, EXCEPT that portion lying easterly of the following described line: BEGINNING at a point on the E. line of said sec. 9, which point is N. 0° 53' 09" W. 3,071.71 feet from the S.E. corner of the sec., and at coordinates N. 442,268.92 and E. 2,237,790.19 on the Washington State Grid System, South Zone; thence northwesterly along a 1,055.37 foot radius curve to the right an arc distance of 1,064.64 feet (the chord of said arc bears N. 30° 21' 08" W. 1,020.05 feet) to a point on the N. line of the S. 1/2 of the N. 1/2 of said sec. 9, said point being at coordinates N. 443,149.16 and E. 2,237,274.74 on the Washington State Grid System, South Zone.

Three tracts of land leased to the WASHINGTON PUBLIC POWER SUPPLY SYSTEM more particularly described as follows:

PARCEL D) a tract of land (for the Hanford Generating Plant), commencing at the S.E. corner of sec. 28, T.14N., R.26E.W.M., said point having Washington State Coordinates, South Zone, of N. 486,994.01, and E. 2,236,672.11; thence N. 72° 02' 15" W. 3,483.15 feet, thence N. 67° 11' 41" W. 1,810 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, which point is the TRUE POINT OF BEGINNING: thence S. 67° 11' 41" E. 1,810 feet more or less to a point, having Washington State Coordinates, South Zone, of N. 488,068.19 and E. 2,233,358.73, thence N. 22° 48' 19" E. a distance of 1,595 feet to a point, having Washington State Coordinates, South Zone, of N. 489,538.48 and E. 2,233,976.96, thence N. 67° 11' 41" W. 1,108 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, thence southwesterly along the said line of ordinary high water to the TRUE POINT OF BEGINNING, containing 53.42 acres more or less; THIS PARCEL AMENDED BY DELETING THE FOLLOWING: Beginning at the S.E. corner of the leased parcel, which point is at coordinates N. 488,068.19 and E. 2,233,358.73 on the Washington State Coordinate, South Zone; thence N. 22° 48' 19" E. 1,060 feet; thence N. 67° 11' 41" W. 200 feet; thence S. 22° 48' 19" W. 1,060 feet; thence S. 67° 11' 41" E. 200 feet to the point of beginning; containing 4.85 acres, more or less;

PARCEL E) a tract of land (for WNP Site 2), beginning at the S.W. corner of sec. 11, T.11N., R.28E.W.M., said corner having Washington State coordinates, South Zone, of N. 408,335.30 and E. 2,307,653.50, thence N. 0° 41' 08" E. 8,065.28 feet to the TRUE POINT OF BEGINNING; thence W. 11,153.57 feet; thence S. 01° 01' 23" E. 3,000.48 feet; thence S. 88° 53' 54" W. 5,200.96 feet; thence N. 0° 31' 41" W. 3,690.15 feet; thence E. 1,430.00 feet; thence N. 1,865.69 feet; thence N. 87° 46' 08" E. 3,703.83 feet; thence S. 01° 01' 23" E. 1,600.25 feet; thence E. 11,189.29 feet; thence N. 01° 01' 23" E. 1,800.29 feet; thence N. 89° 07' 55" E. 3,300.38 feet to the line of Navigation of the W. bank of the Columbia River, thence southerly along said line of Navigation to a point that bears N. 89° 15' 21" E. from the TRUE POINT

HANFORD FACILITY LEGAL DESCRIPTION (cont)

OF BEGINNING; thence S. 89° 15' 21" W. 3,850.32 feet more or less to the TRUE POINT OF BEGINNING.

PARCEL F) A tract of land (for WNP Sites 1 and 4) lying in Section 4 of Township 11 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 65°-17'-03" West 12113.14 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 413,400.00 and East 2,296,650.00); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01°-01'-23" East 3000.48 feet to a point; thence West 5280.00 feet more or less to the TRUE POINT OF BEGINNING, containing 363.69 acres more or less; and

A parcel of land lying in Sections 3 and 4 of Township 11 North, Range 28 East, and Sections 33 and 34 of Township 12 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 50°-42'-00" West 14,311.63 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 417,400.00 and East 2,296,578.57); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5,280.00 feet to a point; thence South 01°-01'-23" East 1200.19 feet to a point; thence East 5,973.57 feet to a point; thence South 1°-01'-23" West 1800.29 feet to a point; thence West 11,189.29 feet more or less to the TRUE POINT OF BEGINNING, containing 609.15 acres more or less.

PARCEL G) The parcels on the Hanford Site used but not owned by the Bonneville Power Administration including the Ashe Substation, the Hanford Substation, the Benton Switch Substation, and the White Bluffs Substation.

ASHE SUBSTATION. A parcel of land in the W. 1/2 S.E. 1/4, the S.E. 1/2 N.W. 1/4 and the S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument set at the intersection of the north-south and east-west base lines for the Ashe Substation Site in the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian. This monument is located N.26°49'15"E., 1503.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence N.52°10'10"E., 1200.0 feet to the true point of beginning. Thence S.37°49'50"E., 400.0 feet; thence S.52°10'10"W., 1100.0 feet; thence S.37°49'50"E., 1287.7 feet to a point on the south line of Section 32; thence S.87°46'12"W., along said south line of Section 32, a distance of 984.0 feet; thence N.37°49'50"W., 2014.8 feet; thence N.52°10'10"E., 1900.0 feet; thence S.37°49"50"E., 900.0 feet to the true point of beginning; containing 75.09 acres, more or less.

HANFORD FACILITY LEGAL DESCRIPTION (cont)

ASHE SS SOUTH CORRIDOR, PARCEL 1. A portion of Government Lot 3 of Section 5, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, said point being N.25°56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31°24'10"E., 553.5 feet; thence S.1°50'00"E., 1029.6 feet to a point on the north line of Section 5, Township 11 North, Range 28 East, Willamette Meridian, the true point of beginning for this description. Thence N.87°46'12"E., along said north line of Section 5, a distance of 75 feet; thence S.1°50'00"E., 1299.7 feet; thence S.88°10'00"W., 281.5 feet; thence N.1°50'00"W., 1297.6 feet to a point on said north line; thence N.87°46'12"E., along said north line, a distance of 206.5 feet to the true point of beginning.

ASHE SS SOUTH CORRIDOR, PARCEL 2. All that portion of the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, that lies southerly and easterly of the Ashe Substation Site and westerly of a line 75 feet easterly from and parallel with the survey line for the Bonneville Poser Administration WPPSS No. 2 Powerhouse-Ashe 500 kV line No. 2. The survey line is described, with reference to the Washington Coordinate System - South Zone, as follows:

Beginning at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, at a survey Station 97+84.0, said point being N.25°56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31°24'10"E., 553.5 feet to station 92+30.5; thence S.1°50'00"E., 1029.6 feet to a point on the south line of Section 32, said point being N.87°46'12"E., 1072.1 feet from said brass disc.

ASHE-SS-AR-1. A portion of Lot 3 S.1/2 N.W. 1/4, and N.W. 1/4 S.W. 1/4 of Section 5, the E. 1/2 S.E. 1/4 and S.W. 1/4 S.E. 1/4 of Section 6, the N.W. 1/4 N.E. 1/4 and E. 1/2 N.W. 1/4 of Section 7, Township 11 North, Range 28 East, Willamette Meridian, Benton County. Washington.

HANFORD SUBSTATION SITE. Lot 1 of Block 8, Lots 13 and 14 of Block 9, and Lot 8 of Block 10 of Hanford, according to the recorded plat thereof, and that part of Thirteenth Street lying between the northeasterly line of Tract A of Hanford, according to the recorded plat thereof and the Columbia River, and that part of Dunham Street lying southeasterly of a line connecting the northwesterly lines of Lot 8 of Block 10 and Lot 13 of Block 9 of Hanford, according to the recorded plat thereof, all in Section 25, Township 13 North, Range 27 East, Willamette Meridian Benton County, Washington, containing 2.7 acres, more or less. Subject to easement to Pacific Power & Light Company for power line and access purposes.

BENTON SWITCH SUBSTATION. A parcel of land in the N.W. 1/4 of Section 11, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, described with reference to the Washington Coordinate System - South Zone, as follows:

HANFORD FACILITY LEGAL DESCRIPTION (cont)

Beginning at the northwest corner of said parcel, being S.54°50'E., 1804.0 feet more or less from the northwest corner of said Section 11; thence N.49°13'45"E., 550.0 feet to the northeast corner, evidenced by a brass cap; thence S.40°46'15"E., 500.0 feet to the southeast corner, evidenced by a brass cap; thence S.49°13'45"W., 550.0 feet to the southwest corner, evidenced by a brass cap; thence N.40°46'15"W., 500.0 feet to the point of beginning. The described parcel contains 6.31 acres, of which 2.75 acres lie within the boundaries of the existing Benton Switching Station.

WHITE BLUFFS SUBSTATION. A parcel of land in Government Lots 3 and 4 and the E. 1/2 S.W. 1/4 of Section 7, Township 10 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument in said Government Lot 4 at the intersection of the east-west and north-south base lines for the White Bluffs Substation Site, said monument being N.36°45'35"E., 1623.7 feet from the southwest corner of Section 7. This corner is evidenced by a rock mound. Thence N.72°55'20"W., along the east-west base line, a distance of 500 feet to the true point of beginning. Thence N.17°04'40"E., 400 feet; thence S.72°55'20"E., 900 feet; thence S.17°04'40"W., 1060 feet, more or less, to a point 40 feet north of the centerline of Horn Rapids Road; thence N.72°55'20"W., 900 feet., thence N.17°04'40"E., 660 feet, more or less, to the true point of beginning, containing 21.90 acres, more or less.

For purposes of application of Part IV Corrective Action of the Hanford Facility Permit only, the Hanford Facility also includes PARCELS C, D, E, F, and G of the lands identified as Excepted from the ABOVE-DESCRIBED LAND, in the foregoing legal description.

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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

January 10, 1991

DRAFT PERMIT: TREATMENT STORAGE DISPOSAL OF DANGEROUS WASTE

COMMUNICATIONS TIME LINE

January 6

Schedule meeting locations.

Coordinate delivery of draft permit, fact sheet and attachments to information repositories and administrative record.

Develop list of interested parties scheduled to receive Draft Permit, fact sheet and public notice.

January 8

Finalize Draft Permit Communications Plan and Time Line.

Coordinate public notice, advertisement placement and news release details.

Draft public notice, print and radio broadcast advertisements and news release.

January 9

Finalize public notice, print and radio broadcast advertisements and news release.

January 10

Send public notice to layout.

Send public notice to copy center.

Coordinate radio broadcast advertisements.

Coordinate news release distribution.

Send announcements, envelopes and mailing labels to mailing center.

Send announcement to newspapers.

January 14	Distribute final copies of public notice, Draft Permit and fact sheet to repositories and identified interested parties.
	Advertisement appears in newspapers and is broadcasted on radio.
	Distribute news release.
	Distribute public notice.
January 15	Advertisement appears in newspapers and is broadcasted on radio.
	Determine format for Responsiveness Summary.
January 20	Coordinate development of maps and visual guides.
	Begin preparing Responsiveness Summary.
January 22	Draft meeting agenda, workshop presentation and media advisory.
January 29	Finalize meeting agenda, workshop presentation and media advisory.
February 3	Coordinate media interviews.
February 5	Distribute media advisory.
February 10	Finalize map and visual guides.
February 14-18	Advertisement appears in newspaper and is broadcasted on radio, Tri-Cities.*
February 14	Conduct meeting preview.
February 15-19	Advertisement appears in newspaper, Spokane.*
February 16-20	Advertisement appears in newspaper, Seattle.*
February 18	Conduct media interviews--Tri-Cities, WA.
	Conduct workshop/hearing.
February 19	Conduct media interviews--Spokane, WA.
	Conduct workshop/hearing.
February 20	Conduct media interviews--Seattle, WA.
	Conduct workshop/hearing.

February	21	Coordinate Responsiveness Summary.
March	1	End of public comment period.
March	9	Draft news release.
March	11	Finalize Responsiveness Summary.
March	12	Coordinate copying of Responsiveness Summary.
March	16	Distribute news release.
		Distribute Responsiveness Summary.
		Coordinate information recording into Record of Decision.

* Under consideration

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

January 10, 1992

DRAFT PERMIT: TREATMENT STORAGE DISPOSAL OF DANGEROUS WASTE

COMMUNICATIONS PLAN

According to Washington Administrative Code, public involvement activities regarding the Dangerous Waste Regulations Draft Permit are defined as providing a 45 day public comment period, mailing public notices, coordinating print and radio broadcast advertisements, distributing a news release, conducting a public meeting, conducting public hearing(s) upon written request, and developing a response to comments.

Washington State Department of Ecology proposes the following components to involve and educate the public about the Site Wide Permit for Hanford.

- Public comment period, January 15-March 1
  - The four repositories defined in the Hanford Federal Facility Agreement and Consent Order will have the Draft Permit, Fact Sheet available for public comment for 45 days.
  - Repositories:

    U.S. Department of Energy-Richland Operations
    Richland, WA

    University of Washington--Suzzalo Library
    Seattle, WA

    Crosby Library
    Gonzaga University
    Spokane, WA

    Portland State University Library
    Portland, OR

- Public notices
  - Write public notice announcing public comment period, public workshops, and hearings.
  - Distribute public notices, fact sheets and draft permits to identified interested parties.
  - Distribute public notices to Hanford Cleanup Agreement mailing list participants.

- Print and Radio Broadcast Advertisements

  - Write print and radio broadcast advertisements announcing public comment period, public workshops, and hearings.

  - Coordinate print and radio advertisement scheduling.

- News release

  Write and distribute news release explaining permit and public review process.

  Write and distribute media advisory announcing the issuance of Draft Permit.

- Public Workshops/Hearings

  - Arrange, coordinate and conduct workshops/hearings to educate the public and provide them with an opportunity to become involved in the Draft Permit process.

  - Schedule for workshops/hearings

    February 18, 6:30-9:00 p.m.
    Pasco Red Lion Inn
    Pasco, WA

    February 19, 6:30-9:00 p.m.
    Cavanaugh's in the Park
    Spokane, WA

    February 20, 6:30-9:00 p.m.
    Stouffer-Madison Hotel
    Seattle, WA

- Responsiveness Summary

  - Determine format for coordinated and effective Responsiveness Summary.

  - Begin preparing Responsiveness Summary at initiation of public comment period.

  - Prepare and distribute Responsiveness Summary.

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

January 10, 1991

DRAFT PERMIT: TREATMENT STORAGE DISPOSAL OF DANGEROUS WASTE

COMMUNICATIONS TIME LINE

January 6	Schedule meeting locations.
	Coordinate delivery of draft permit, fact sheet and attachments to information repositories and administrative record.
	Develop list of interested parties scheduled to receive Draft Permit, fact sheet and public notice.
January 8	Finalize Draft Permit Communications Plan and Time Line.
	Coordinate public notice, advertisement placement and news release details.
	Draft public notice, print and radio broadcast advertisements and news release.
January 9	Finalize public notice, print and radio broadcast advertisements and news release.
January 10	Send public notice to layout.
	Send public notice to copy center.
	Coordinate radio broadcast advertisements.
	Coordinate news release distribution.
	Send announcements, envelopes and mailing labels to mailing center.
	Send announcement to newspapers.

January 14	Distribute final copies of public notice, Draft Permit and fact sheet to repositories and identified interested parties.
	Advertisement appears in newspapers and is broadcasted on radio.
	Distribute news release.
	Distribute public notice.
January 15	Advertisement appears in newspapers and is broadcasted on radio.
	Determine format for Responsiveness Summary.
January 20	Coordinate development of maps and visual guides.
	Begin preparing Responsiveness Summary.
January 22	Draft meeting agenda, workshop presentation and media advisory.
January 29	Finalize meeting agenda, workshop presentation and media advisory.
February 3	Coordinate media interviews.
February 5	Distribute media advisory.
February 10	Finalize map and visual guides.
February 14-18	Advertisement appears in newspaper and is broadcasted on radio, Tri-Cities.*
February 14	Conduct meeting preview.
February 15-19	Advertisement appears in newspaper, Spokane.*
February 16-20	Advertisement appears in newspaper, Seattle.*
February 18	Conduct media interviews--Tri-Cities, WA.
	Conduct workshop/hearing.
February 19	Conduct media interviews--Spokane, WA.
	Conduct workshop/hearing.
February 20	Conduct media interviews--Seattle, WA.
	Conduct workshop/hearing.

February	21	Coordinate Responsiveness Summary.
March	1	End of public comment period.
March	9	Draft news release.
March	11	Finalize Responsiveness Summary.
March	12	Coordinate copying of Responsiveness Summary.
March	16	Distribute news release.
		Distribute Responsiveness Summary.
		Coordinate information recording into Record of Decision.

* Under consideration

January 14, 1992

HANFORD SITEWIDE DRAFT PERMIT

DRAFT PERMIT RECIPIENTS

First run recipients of draft permit, public notice, fact sheet and attachments

William R. Wiley, Director* Battelle, Pacific Northwest Laboratories P.O. Box 999 999 Battelle Boulevard Richland, WA 99352	D. NYLANDER HAND DELIVER 1/15
Phil Hamrick, Acting Manager* U.S. Department of Energy P.O. Box 550 825 Jadwin Avenue Richland, WA 99352	D. NYLANDER HAND DELIVER 1/15
Carrie Sikorski, Chief RCRA Permit Section* U.S. Environmental Protection Agency, Region 10 1200 Sixth Avenue--MS-HW 106 Seattle, WA 98101 (206) 553-2851	A. BEERS HAND DELIVER 1/15
Paul Day, Hanford Project Manager U.S. Environmental Protection Agency, Region 10-RL 712 Swift Boulevard, Suite 5 Richland, WA 99352	FIRST CLASS MAIL 1/16
Master Copy to File* Hanford Section Washington State Department of Ecology	M. GETCHELL HAND DELIVER 1/15
Toby Michelena, Permitting and Compliance Unit Supervisor Washington State Department of Ecology	HAND DELIVER 1/16
Dave Nylander, Kennewick Office Manager Washington State Department of Ecology, Kennewick Office 7601 W. Clearwater, Suite #102 Richland, WA 99336	INTER-OFFICE MAIL 1/16

Micci Smith, Librarian
Nuclear and Mixed Waste Management Library
Washington State Department of Ecology

HAND DELIVER
1/16

Brian Sprouse, Administrative
Records Specialist (3 copies)*
Westinghouse Hanford Company
P.O. Box 1970, H4-22
Richland, WA 99352

D. NYLANDER HAND DELIVER
1/15

Hanford Federal Facility Agreement and Consent Order Information Repositories

U.S. Department of Energy-Richland Operations
Richland, WA

SPROUSE--1/15

Eleanor Chase
Suzzalo Library
University of Washington
Seattle, WA
(206) 543-4664

A. BEERS HAND DELIVER
1/15

Crosby Library
Gonzaga University
Spokane, WA

SPROUSE--1/15

Bob Lockerby
Portland State University Library
Portland, OR
(503) 725-4709

P. STASCH HAND DELIVER
1/15

Administrative Record

SPROUSE--1/15

Environmental Data Management Center
Westinghouse Hanford Company
P.O. Box 1970--H4-22
Richland, WA 99352

SPROUSE--1/15

U.S. Environmental Protection Agency, Region 10
712 Swift Boulevard, Suite 5
Richland, WA 99352

SPROUSE--1/15

Nuclear and Mixed Waste Management Library
Washington State Department of Ecology

SPROUSE--1/15

Thomas M. Anderson, President*
Westinghouse Hanford Company
P.O. Box 1970
450 Hills Street
Richland, WA 99352

D. NYLANDER HAND DELIVER
1/15

One Extra

First run recipients of public notice, draft permit and fact sheet

Brad Dillon, General Council
American Ecology Corp.
9200 Shelbyville Road, Suite 300
Louisville, KY 40257-0246

FIRST CLASS MAIL
1/16

Sandi Strawn, Chair
Benton County Commissioners
P.O. Box 1970
Prosser, WA 99350

FIRST CLASS MAIL
1/16

Mark W. Hermeston, Environmental Coordinator*
Bonneville Power Administration,
Snake River Area
101 Poplar
Walla Walla, WA 99362-2827

Kennewick Office, Hand Deliver
1/15

Craig Buchanan, Mayor
City of Richland
P.O. Box 190
Richland, WA 99352

FIRST CLASS MAIL
1/16

Joseph King, City Manager
City of Richland
P.O. Box 190
Richland, WA 99352

FIRST CLASS MAIL
1/16

Warren Bishop, Chair
Nuclear Waste Advisory Council

HAND DELIVER
1/16

David Stewart-Smith, _____
Oregon Department of Energy
625 Marion Street N.E.
Salem, OR 97301

FIRST CLASS MAIL
1/16

Dan Silver Governor's Office State of Washington Mail Stop AQ 44 400 Insurance Building Olympia, WA 98504	FIRST CLASS MAIL 1/16
_____, Executive Director Tri-Cities Industrial Economic Development Council (TRIDEC) (NEEDS VERIFICATION)	FIRST CLASS MAIL 1/16
Barry Bede, Regional Manager, Government Affairs* US Ecology, Inc. 509 E. 12th, Suite 14 Olympia, WA 98501	M. GETCHELL HAND DELIVER 1/15
William A. Kiel, Regulatory Liason* Washington Public Power Supply System 3000 George Washington Way P.O. Box 968, MD 280 Richland, WA 99352	D. NYLANDER HAND DELIVER 1/15
Mary Getchell, Public Involvement Coordinator Washington State Department of Ecology	HAND DELIVER 1/16
Tim Nord, Hanford Project Manager (14 copies) Washington State Department of Ecology	HAND DELIVER 1/16
Terry Strong, Director, Radiation Protection* Washington State Department of Health Mail Stop LE-13 Olympia, WA 98504	M. GETCHELL HAND DELIVER 1/15
Russell Jim, Manager Yakima Indian Nation Nuclear Waste Program 1390 Medicine Valley Road White Swan, WA 98952	FIRST CLASS MAIL 1/16

<u>Second run recipient of public notice, draft permit and fact sheet</u>

Mary Getchell (100 copies) Washington State Department of Ecology Copies for public workshops/hearings	HAND DELIVER 1/24

* MUST RECEIVE COPY JANUARY 15, 1992. Ten Total

Total Copies of first run of draft permit, fact sheet and attachments: 18

Total Copies of first run of draft permit, and fact sheet: 25

TOTAL COPIES OF DRAFT PERMIT AND FACT SHEET 45

Total Copies of second run of draft permit and fact sheet: 100

Public notice to be distributed with each of the above noted packages. Public notice is being copied separately, copying will be completed January 13.

Copy Schedule

January 14, 10:00 a.m.	Copy first runs
January 15, 8:00 a.m.	Copy ten (balance: 35) draft permit and fact sheet and draft permit
January 16-23	Copy second run
January 24	Receive second run

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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PUBLIC COMMENT REQUESTED ON SITEWIDE DRAFT PERMIT FOR HANFORD CLEANUP
PUBLIC NOTICE

Your comments and questions about the sitewide draft permit for Hanford Cleanup are requested. Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first Dangerous Waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed, according to the state's Hazardous Waste Management Acts, federal Resource Conservation and Recovery Act, and the federal Hazardous and Solid Waste Amendments of 1984. State of Washington is authorized to implement the base RCRA program, including management standards for dangerous waste treatment, storage and disposal facilities. Washington is not yet authorized to implement the corrective action provisions of RCRA, therefore EPA is issuing the corrective action portion of this RCRA permit.

The 45 day public comment period begins January 15 and ends March 1. Copies of the draft permit, attachments, fact sheet, and application are located at four public information repositories.

U.S. Department of Energy-Richland Operation, Public Reading Room
Federal Building Room 157, 825 Jadwin Avenue, Richland
(509) 376-8583

Suzzalo Library, University of Washington
Mailstop FM-25 - Government Publications, Seattle
(206) 543-4664

Crosby Library, Gonzaga University
E. 502 Boone, Spokane
(509) 328-4220

Portland State University Library
Corner of Harrison and Park, Portland
(503) 464-4617

Public workshops/hearings are scheduled for you to comment and ask questions about the permit. During the workshops, you will have an opportunity to exchange information with Ecology representatives who wrote the draft permit. During the hearing portion of the evening, your comments will be entered into the public Record of Decision.

6

Tuesday, February 18, 6:30-9:00 p.m.
Pasco Red Lion Inn
2525 N. 20th
Pasco, WA

Wednesday, February 19, 6:30-9:00 p.m.
Cavanaugh's Inn at the Park
W. 303 North River Drive
Spokane, WA

Thursday, February 20, 6:30-9:00 p.m.
Stouffer-Madison Hotel
515 Madison Street
Seattle, WA

Also, Portland-area residents will have an opportunity to talk about the permit, at the upcoming Hanford Cleanup Agreement Quarterly Meeting.

Thursday, February 6, 6:30-9:00 p.m.
Red Lion Inn at the Quay, 100 Columbia Street
Vancouver, WA

All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15. A Responsiveness Summary responding to public comments is planned to be issued March 16.

This permit will be an overriding document which will set forth the conditions (according to state and federal laws) for managing hazardous and mixed waste management activities on Hanford, the site of our nation's former nuclear defense production facility. For nearly 50 years nuclear waste was produced and stored at the 560 square mile site, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.

The permit will be modified in segments to account for Hanford's wide range of hazardous and mixed waste activities and the schedules set forth in the Hanford Cleanup Agreement. The first units to be permitted include the Hanford Waste Vitrification Plant, 616 Hazardous Waste Storage Facility and the 183-H Solar Evaporation Basins.

The Hanford Waste Vitrification Plant will transform high-level nuclear waste, which is currently stored in Hanford's 177 underground storage tanks, into glass-like logs. Construction of the $1.6 billion dollar plant is scheduled to begin in April 1992, with operations to begin in December 1999.

The issuing of this document is significant because all 59 of the remaining treatment, storage and disposal units will be issued subordinate permits under this sitewide permit. These subordinate permits are scheduled to be issued from now until at least the year 2000.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

Draft public notice: print advertisement in Tri-City Herald

PUBLIC COMMENT REQUESTED ON SITEWIDE DRAFT PERMIT FOR HANFORD CLEANUP

For nearly 50 years nuclear and hazardous waste was produced and stored at the 560 square mile former nuclear defense production facility, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.

The Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first dangerous waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed, according to the state's Hazardous Waste Management Acts, federal Resource Conservation and Recovery Act (RCRA), and the federal Hazardous and Solid Waste Amendments of 1984.

State of Washington is authorized to implement the base RCRA program, including management standards for dangerous waste treatment, storage and disposal facilities. Washington is not yet authorized to implement the corrective action provisions of RCRA, therefore EPA is issuing the corrective action portion of this RCRA permit.

The issuing of this document is significant because all 59 of the remaining treatment, storage and disposal units will be issued subordinate permits under this sitewide permit. These subordinate permits are scheduled to be issued from now until at least the year 2000. The first facilities to be permitted include the Hanford Waste Vitrification Plant, 616 Hazardous Waste Storage Facility and the 183-H Solar Evaporation Basins.

The 45 day public comment period begins January 15 and ends March 1. Documents may be reviewed at U.S. Department of Energy-Richland Operations, Public Reading Room, Federal Building Room 157, 825 Jadwin Avenue, Richland, (509) 376-8583.

A public meeting is scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Thursday, February 6, at Red Lion Inn at the Quay, 100 Columbia Street, Vancouver, WA.

Public workshops/hearings are scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Tuesday, February 18, at Pasco Red Lion Inn, 2525 N. 20th, Pasco; from 6:30 to 9 p.m., on Wednesday, February 19, at Cavanaugh's Inn at the Park, W. 303 North River Drive, Spokane; and from 6:30 to 9 p.m. on Thursday, February 20, Stouffer-Madison Hotel, 515 Madison Street, Seattle.

All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

Draft public notice: print advertisement in Vancouver Columbian

PUBLIC COMMENT REQUESTED ON SITEWIDE DRAFT PERMIT FOR HANFORD CLEANUP

For nearly 50 years nuclear and hazardous waste was produced and stored at the 560 square mile former nuclear defense production facility, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.Your comments and questions about the sitewide draft permit for Hanford Cleanup are requested.

The Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first dangerous waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

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The 45 day public comment period begins January 15 and ends March 1. Documents may be reviewed at Portland State University Library, Corner of Harrison and Park, Portland, (503) 464-4617.

A public meeting is scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Thursday, February 6, at Red Lion Inn at the Quay, 100 Columbia Street, Vancouver, WA.

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All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

Draft public notice: print advertisement in The Seattle Times and Seattle Post-Intelligencer

PUBLIC COMMENT REQUESTED ON SITEWIDE DRAFT PERMIT FOR HANFORD CLEANUP

For nearly 50 years nuclear and hazardous waste was produced and stored at the 560 square mile former nuclear defense production facility, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.

The Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first dangerous waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed, according to the state's Hazardous Waste Management Acts, federal Resource Conservation and Recovery Act, and the federal Hazardous and Solid Waste Amendments of 1984.

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The issuing of this document is significant because all 59 of the remaining treatment, storage and disposal units will be issued as subordinate permits under this sitewide permit. These subordinate permits are scheduled to be issued from now until at least the year 2000. The first facilities to be permitted include the Hanford Waste Vitrification Plant, 616 Hazardous Waste Storage Facility and the 183-H Solar Evaporation Basins.

The 45 day public comment period begins January 15 and ends March 1. Documents may be reviewed at Suzzalo Library, University of Washington, Seattle (206) 543-4664.

A public meeting is scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Thursday, February 6, at Red Lion Inn at the Quay, 100 Columbia Street, Vancouver, WA.

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All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

Draft public notice: print advertisement in The Spokesman Review/Chronicle

PUBLIC COMMENT REQUESTED ON SITEWIDE DRAFT PERMIT FOR HANFORD CLEANUP

For nearly 50 years nuclear and hazardous waste was produced and stored at the 560 square mile former nuclear defense production facility, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.

The Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first dangerous waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed, according to the state's Hazardous Waste Management Acts, federal Resource Conservation and Recovery Act, and the federal Hazardous and Solid Waste Amendments of 1984.

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The 45 day public comment period begins January 15 and ends March 1. Documents may be reviewed at Crosby Library, Gonzaga University, E. 502 Boone, Spokane, (509) 328-4220.

A public meeting is scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Thursday, February 6, at Red Lion Inn at the Quay, 100 Columbia Street, Vancouver, WA.

Public workshops/hearings are scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Tuesday, February 18, at Pasco Red Lion Inn, 2525 N. 20th, Pasco; from 6:30 to 9 p.m., on Wednesday, February 19, at Cavanaugh's Inn at the Park, W. 303 North River Drive, Spokane; and from 6:30 to 9 p.m. on Thursday, February 20, Stouffer-Madison Hotel, 515 Madison Street, Seattle.

All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

Public Comment Requested on Sitewide Draft Permit for Hanford Cleanup

For nearly 50 years nuclear and hazardous waste was produced and stored at the 560 square mile former nuclear defense production facility, located in southeastern Washington. Today, managing and treating that nuclear waste is the primary activity at Hanford.

The Washington State Department of Ecology (P.O. Box 47600, Olympia, WA 98504-7600) and U.S. Environmental Protection Agency, Region 10 (1220 Sixth Avenue, HW-112, Seattle, WA 98101) are in the process of issuing the first dangerous waste permit to U.S. Department of Energy (P.O. Box 550, Richland, WA 99352), Westinghouse Hanford Company (P.O. Box 1970, Richland, WA 99352), and Battelle-Pacific Northwest Laboratory, (P.O. Box 999, Richland, WA 99352).

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed, according to the state's Hazardous Waste Management Acts, federal Resource Conservation and Recovery Act (RCRA), and the federal Hazardous and Solid Waste Amendments of 1984.

State of Washington is authorized to implement the base RCRA program, including management standards for dangerous waste treatment, storage and disposal facilities. Washington is not yet authorized to implement the corrective action provisions of RCRA, therefore EPA is issuing the corrective action portion of this RCRA permit.

The issuing of this document is significant because all 59 of the remaining treatment, storage and disposal units will be issued subordinate permits under this sitewide permit. These subordinate permits are scheduled to be issued from now until at least the year 2000. The first facilities to be permitted include the Hanford Waste Vitrification Plant, 616 Hazardous Waste Storage Facility and the 183-H Solar Evaporation Basins.

The 45 day public comment period begins January 15 and ends March 1. Documents may be reviewed at U.S. Department of Energy-Richland Operations, Public Reading Room, Federal Building Room 157, 825 Jadwin Avenue, Richland, (509) 376-8583.

A public workshop/hearing is scheduled for you to comment and ask questions about the permit from 6:30 to 9 p.m., on Tuesday, February 18, at Pasco Red Lion Inn, 2525 N. 20th, Pasco.

All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15.

To submit written comments or for further information regarding the permit, please contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47651, Olympia, WA 98504-7651 (206) 459-6862.

ECOLOGY

Tri-City Herald 1/15/92

Public notice: radio advertisement on KONA-AM

The Washington State Department of Ecology wants your comments about the sitewide draft permit for Hanford Cleanup. Ecology is in the process of issuing the first dangerous waste permit to U.S. Department of Energy, Westinghouse Hanford Company, and Battelle-Pacific Northwest Laboratory.

The Treatment, Storage and Disposal of Dangerous Waste permit will be the overriding document that regulates how Hanford's hazardous and mixed-wastes are managed according to state and federal laws.

The first facilities to be permitted include the Hanford Waste Vitrification Plant, 616 Hazardous Waste Storage Facility and the 183-H Solar Evaporation Basins.

A 45 day public comment period begins January 15th and ends March 1st. Documents may be reviewed at Energy's Public Reading Room, in the Federal Building in Richland.

A public workshop and hearing is scheduled for you to comment and ask questions about the permit on Tuesday, February 18th, at 6:30 in the evening. The meeting will be conducted at the Pasco Red Lion Inn.

All public comments will be considered in making the final decision on the permit, which is scheduled to be issued March 15th.

:60

"SEPA DETERMINATION: HANFORD SITEWIDE
DRAFT PERMIT, 183 HANFORD WASTE VITRIFICATION PLANT"

(State Officials)

ARCHAEOLOGY & HISTORIC PRESERVATION OFFICE
Dr. Robert G Whitlam or Mr. Leonard Garfield
111 West 21st Avenue SW
Mail Stop KL-11
Olympia, WA 98504-5411
(206)753-4405 SCAN 234-4405
(206)586-0250 FAX

ECOLOGY, DEPARTMENT OF
Ms Barbara Ritchie
Environmental Review Section
Mail Stop PV-11
PO Box 47703
Olympia, WA 98504-7703
(206)459-6025 SCAN 585-6025
(206)493-2967 FAX

FISHERIES, DEPARTMENT OF
Mr. Don Haring
115 General Administration Bldg
Mail Stop AX-11
Olympia, WA 98504-0611
(206)753-2984 SCAN 234-2984
(206)586-8884 FAX

HEALTH, DEPARTMENT OF
Mr. John Laubach
Thurston Airdustrial Center
Mail Stop LD-11
Olympia, WA 98504
(206)753-3473 SCAN 234-3473
(206)586-5529 FAX

TRANSPORTATION, DEPARTMENT OF
Mr. Bernie Chapin
Transportation Bldg
Mail Stop KF-01
Olympia, WA 98504-5201
(206)753-0355 SCAN 234-0355
(206)586-8613

WILDLIFE, DEPARMENT OF
Mr. Gordon Ziliges
600 Capitol Way N
Mail Stop GJ-11
Olympia, WA 98501-1091
(206)753-3318 SCAN 234-3318
(206)586-0248 FAX

(County Officials)

BENTON COUNTY
Mr. Terry Marden, Planning Dept.
P.O. Box 910
Prosser, WA 99350-0910
(509)786-5612
(509)664-5246 FAX

FRANKLIN COUNTY
Mr. David Richey, Planning Dept.
1016 N 4th Avenue
Pasco, WA 99301
(509)545-3521 SCAN 726-3521
(509)545-2130 FAX

WALLA WALLA COUNTY
Mr Jim Beard, Planning Dept.
310 W Poplar, Suite 117
Walla Walla, WA 99362
(509)527-3285 SCAN 629-4458
(509)527-3214 FAX

(City Officials)

KENNEWICK, CITY OF
Mr. William C kennedy, Director
Planning & Community Development
P.O. Box 6108
Kennewick, WA 99366
(509)586-4181 SCAN 232-000
(509)582-9138 FAX

PASCO, CITY OF
Mr. David McDonald,Director
Community Development
P.O. Box 293
Pasco, WA 99301
(509)545-3441 SCAN 726-3441
(509)545-3403 FAX

RICHLAND, CITY OF
Mr. Herb Everett
Planning Supervisor
P.O. Box 190
Richland, WA 99352
(509)943-9161 SCAN 526-2328
(509)943-5666 FAX

(Air Pollution Control Authorities)

TRI-COUNTY AIR POLLUTION CONTROL AUTHORITY
BENTON, FRANKLIN, & WALLA WALLA Counties
Mr. Phil Cooke
650 George Washington Way
Richland, WA 99352
(509)946-4489 SCAN 526-2354
no FAX

AIR PROGRAM - HEADQUARTERS
Mr. Joe Williams, Program Manager
Mail Stop PV-11
P.O. Box 47600
Olympia, WA 98504-7600
(206)459-6256 SCAN 585-8148
(206)438-8148 FAX

CENTRAL REGIONAL OFFICE
Air Program
3601 W Washington Street
Yakima, WA 98903-1164
(509)575-2485 SCAN 558-2486
(509)575-2809 FAX

William R Wiley, Director
Battelle, Pacific Northwest Laboratories
P.O. Box 999
999 Battelle Boulevard
Richland, WA 99352

Phil Hamrick, Acting Manager
U.S. Department of Energy
P.O. Box 550
825 Jadwin Avenue
Richland, WA 99352

Carrie Sikorski, Chief
RCRA Permit Section
U.S. EPA, Region 10
1200 Sixth Avenue
Mail Stop HW-106
Seattle, WA 98101

Paul Day
Hanford Project Manager
U.S. EPA, Region 10-RL
712 Swift Boulevard, Suite 5
Richland, WA 99352

Dave Nylander
Kennewick Office Manager
Washington State Dept of Ecology
7602 W Clearwater, Suite #102
Richland, WA 99336

Thomas M Anderson, President
Westinghouse Hanford Company
P.O. Box 1970
450 Hills Street
Richland, WA 99352

Brad Dillion, General Council
American Ecology Corp
9200 Shelbyville Road, Suite 300
Louisville, KY 40257-0246

Mark W Hermeston
Environmental Coordinator
Bonneville Power Administration
Snake River Area
101 Poplar
Walla Walla, WA 99362-2827

Warren A Bishop
Nuclear Waste Advisory Council
P.O. Box 47600
Olympia, WA 98504-7600

David Steward-Smith
Oregon Department of Energy
625 Marion Street NE
Salem, OR 97301

Barry Bede, Regional Manager
Government Affairs
US Ecology, Inc.
509 E. 12th, Suite 14
Olympia, WA 98501

William A Kiel, Regulatory Liason
Washington Public Power Supply System
3000 George Washington Way
P.O. Box 968, MD 280
Richland, WA 99352

Dave Jansen
Hanford Project Manager
Washington State Dept of Ecology
P.O. Box 47600
Olympia, WA 98504-7600

Terry Strong, Director
Radiation Protection
Washington State Dept of Health
Mail Stop LE-13
Olympia, WA 98504

Russell Jim, Manager
Yakima Indian Nation Nuclear Waste Progra
1390 Medicine Valley Road
White Swan, WA 98952

PUBLIC NOTICES OF DETERMINATION
UNDER THE STATE ENVIRONMENTAL POLICY ACT

Your comments and questions about State Environmental Policy Act determinations regarding Hanford are requested. The Washington State Department of Ecology is issuing determinations of non-significance (a written decision by the responsible official that a proposal is not likely to have a significant adverse environmental impact and will not require an Environmental Impact Statement) under the State Environmental Policy Act Rules (Chapter 197-11 WAC) for the following projects proposed by the U.S. Department of Energy: 1) the permitting of hazardous waste management activities at the Hanford Facility, and 2) closure of the 183-H Solar Evaporation Basins in the 100-H area of the Hanford Facility. After review of completed environmental checklists and other information on file with the agency, Ecology has determined these proposals will not have a probable significant adverse impact on the environment.

Ecology is also issuing a determination of significance (written decision by the responsible official that a proposal is likely to have a significant adverse environmental impact and will require an EIS) with adoption of existing environmental documents and an addendum for construction and operation of the Hanford Waste Vitrification Plant proposed by Energy. The vitrification plant is proposed for construction in the 200 East area of the Hanford Facility for the purpose of transforming high level nuclear waste into glass-like logs.

The public comment period ends February 21. Copies of the determinations may be reviewed at the following locations: Administrative Record Public Access Room, 345 Hills Street, Richland, WA (hours: 9:00 a.m-12:00 p.m. and 1:00-3:30 p.m.), Department of Ecology Nuclear and Mixed Waste Management Program Library, 99 South Scund Center, Lacey, WA (hours: 8:00 a.m.-12:00 p.m. and 1:00-4:00 p.m.); and U.S. Environmental Protection, Agency Region 10, Superfund Record Center, 1200 6th Avenue, Seattle, WA (hours: 8:30 a.m-4:30 p.m.).

Public workshops/hearings are scheduled for you to comment and ask questions about the determinations: 6:30-9:00 p.m., Tuesday, February 18, Pasco Red Lion Inn, 2525 N. 20th, Pasco; 6:30-9:00 p.m., Wednesday, February 19, Cavanaugh's Inn at the Park, W. 303 North River Drive Spokane; and 6:30-9:00 p.m., Thursday, February 20, Stouffer-Madison Hotel, 515 Madison Street, Seattle, WA.

Also, Portland-area residents will have an opportunity to talk about the determinations, at the upcoming Hanford Cleanup Agreement Quarterly Meeting scheduled from 6:30 to 9:00 p.m., on Thursday, February 6, at Red Lion Inn at the Quay, 100 Columbia Street, Vancouver, WA.

For further information regarding the State Environmental Policy Act determinations contact Dave Jansen, Department of Ecology, Nuclear and Mixed Waste Management Program, P.O. Box 47600, Olympia, Washington 98504-7600.

M E D I A A D V I S O R Y

February 14, 1992

Contact: Jerry Gilliland
(206) 459-6674

PUBLIC HEARINGS SCHEDULED ON PROPOSED
HANFORD FACILITY WIDE PERMIT

OLYMPIA -- The public is invited to attend public workshops/hearings on the proposed Hanford Facility Wide Hazardous Waste Permit. A series of public workshops/hearings are slated to begin next week throughout Washington State.

PASCO	6:30-9:00 p.m., Tuesday, February 18 Pasco Red Lion Inn
SPOKANE	6:30-9:00 p.m., Wednesday, February 19 Cavanaugh's in the Park
SEATTLE	6:30-9:00 p.m., Thursday, February 20 Stouffer-Madison Hotel

The Hanford Permit is currently out for public comment. The public comment period began January 15 and is scheduled to end March 1. The permit is planned to be issued March 15.

The Washington State Department of Ecology is issuing the draft permit to manage the treatment, storage and disposal of dangerous wastes at Hanford, the site of our nation's largest former nuclear weapons materials production facility.

"To our knowledge, this would be the largest Treatment, Storage and Disposal of Dangerous Waste Permit ever to be issued in the nation," said Narda Pierce, Ecology assistant director for waste management. "This permit is significant because all of Hanford's treatment, storage and disposal units will eventually be managed under it."

-MORE-

The draft permit is based on state and federal dangerous waste laws. It will be the primary document directed at regulating Hanford's hazardous and mixed wastes today and in the future.

"The draft permit is projected to be issued as a shell permit--or an umbrella permit--focused at regulating Hanford's 62 treatment, storage and disposal units," said Pierce.

Final operating conditions are being issued for three treatment, storage and disposal units: the Hanford Waste Vitrification Plant, 616 Non Radioactive Dangerous Waste Storage Facility and the 183-H Solar Evaporation Basins.

The vitrification plant permit will give Energy the authorization to proceed with initial site preparation and construction activities of the $1.6 billion plant. The Hanford Waste Vitrification Plant will transform high-level nuclear waste into glass. The wastes are currently stored in Hanford's 177 underground storage tanks. Plant construction is slated to begin in April 1992, with plant operations to begin in December 1999.

During the workshops, the public will have an opportunity to exchange information with Ecology representatives who wrote the draft permit. During the hearing portion of the evening, comments will be entered into the public record of decision.

All public comments will be considered in making the final decision on the permit.

For more information or copies of the draft permit, contact Mary Getchell, Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600, 800-_____.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

February 13, 1992

HANFORD FACILITY WIDE DRAFT PERMIT

PUBLIC WORKSHOPS/HEARINGS

6:30-9:00 p.m., Tuesday, February 18
Pasco Red Lion Inn
Pasco

6:30-9:00 p.m., Wednesday, February 19
Cavanaugh's in the Park
Spokane

6:30-9:00 p.m., February 20
Stouffer-Madison Hotel
Seattle

FORMAT

6:30-6:35 p.m.	Welcome	Getchell--2/18, 2/20 Gilliland--2/19
6:35-6:55 p.m.	Draft Permit Overview	Michelena
6:55-7:45 p.m.	Workshop--Q & A	Michelena and Permitting Staff
7:45-9:00 p.m.	Conduct Hearing	Getchell--2/18, 2/20 Gilliland--2/19

PARTICIPANTS

Mary Getchell	Give workshop introduction--2/18, 2/20 Conduct hearing--2/18, 2/20
Jerry Gilliland	Give workshop introduction--2/19 Conduct hearing--2/19

John Grantham	Participate in workshop--Q & A
Scott McKinney	Participate in workshop--Q & A
Toby Michelena	Give Draft Permit presentation Participate in workshop--Q & A
Paul Stasch	Participate in workshop--Q & A
Joe Stohr	Management/advisory support--2/18
Joe Witzcak	Participate in workshop--Q & A

Each night all participants should arrive at meeting location by 6:00 p.m.

February 13, 1992

TO: Jerry Gilliland

FROM: Mary Getchell

SUBJECT: HANFORD FACILITY-WIDE DRAFT PERMIT ADVERTISEMENTS

Jerry, following is a draft Hanford Facility-Wide Draft Permit advertisement. I am proposing to run this ad (changing for appropriate dates and locations) according to the following schedule.

Tri-City Herald
February 16 and February 18

Spokesman-Review/Chronicle
February 16 and February 19

Seattle Times/Seattle Post-Intelligencer
February 16

Seattle-Times
February 20

Seattle-Post-Intelligencer
February 20

Also, the preferred size for this ad is 6 X 6 1/2".

When the ads are placed, please ask Arthur to request a per ad and total advertisement cost estimate. I would appreciate receiving the cost estimates, following the ad placements.

Please let me know your thoughts on this proposed schedule.

Thank you.

cc: Toby Michelena
Joe Stohr

THE DEPARTMENT OF ECOLOGY WANTS YOUR COMMENTS ON THE
HANFORD FACILITY-WIDE DRAFT PERMIT

The Washington State Department of Ecology is asking for public comments on the Hanford Facility-Wide Draft Permit. You can give your comments at a workshop/hearing this week.

6:30-9:00 p.m., Tuesday, February 18
Pasco Red Lion Inn
Pasco

The permit is planned to be the largest treatment, storage and disposal of dangerous waste permit ever to be issued in the nation. The permit is considered large because it regulates the largest number of treatment, storage and disposal units and it will regulate the greatest amounts of dangerous wastes in the nation. The permit will be the primary document directed at regulating Hanford's hazardous and mixed wastes today and in the future.

During the workshops, you can talk with Ecology representatives who developed the Facility-Wide Draft Permit. During the hearing portion of the evening, comments will be entered into the public record of decision. All public comments will be considered in making the final decision on the permit.

The Draft Permit public comment period began January 15 and will end March 1. The Facility-Wide Permit is slated to be issued March 15.

For further information contact Mary Getchell, Washington State Department of Ecology, P.O. Box 47600, Olympia, WA 98504-7600, 1-800-_____.

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[redacted] WA 8960 7
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APPENDIX C

STATE LEASEHOLD LEASE
AND RICHLAND FACILITY SUBLEASE

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RESERVING to the Government and its assignees an easement for underground and overhead telephone lines on a tract of land 15 feet wide, being 7-1/2 feet on each side of the following described center line:

> BEGINNING at a point on the East line of said Section 9, which point is North 0° 53' 09" West 1095.0 feet from the Southeast corner of said section; thence North 49° 19' 00" West 644.44 feet; thence North 0° 12' 33" West 2142.82 feet to the northerly property line of the Leased Premises."

The parties also agree that subparagraphs (a) through (g) of Article 20 on pages 17, 18, and 19 shall be deleted in their entirety and the following substituted therefor:

"(a) The State will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The State will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The State agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Equal Opportunity article.

"(b) The State will, in all solicitations or advertisements for employees placed by or on behalf of it, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

"(c) The State will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the State's commitments under this Equal Opportunity article, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

"(d) The State will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

"(e) The State will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

"(f) In the event of the State's noncompliance with the Equal Opportunity article of this Lease or with any of the said rules, regulations, or orders, this Lease may be canceled in whole or in part and the State may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor or as otherwise provided by law.

"(g) The State will include the provisions of paragraphs (a) through (g) in every sublease, license, subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each sublessee, subcontractor or vendor. The State will take such action with respect to any sublease, license, subcontract or purchase order as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the State becomes involved in, or is threatened with, litigation with a sublessee, subcontractor or vendor as a result of such direction by the Commission, the State may request the United States to enter into such litigation to protect the interests of the United States."

In addition to the foregoing, the parties agree that the words "materials and" shall be added between the words "radioactive" and "wastes" in line 13 of Article 9 on page 11 and that a new subparagraph (e) shall be added to Article 28 on page 22 as follows:

"(e) The right to use, maintain and repair, to the extent necessary for the Commission, roads which were on the leased land on the effective date of this Lease, provided such use, maintenance and repair will not unreasonably interfere with any of the Lessee's operations."

IN WITNESS WHEREOF, the parties have executed this Second Amendment in several counterparts on the 19th day of August, 1970.

UNITED STATES OF AMERICA
UNITED STATES ATOMIC ENERGY COMMISSION

By _____
Manager, Richland Operations Office

STATE OF WASHINGTON

By _____
Governor

By _____
Director, Department of Commerce
and Economic Development

ATTEST

_____
Secretary of State

Approved as to Form Only
6 day of July 1970
SLADE GORTON
Attorney General
By _____
Assistant Attorney General

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(FOR LESSEE)

STATE OF WASHINGTON)
) ss.
COUNTY OF THURSTON)

On this 19th day of August, 1970, before me personally appeared Daniel B. Ward, to me known to be Director, of the Department of Commerce and Economic Development of the State of Washington, that executed the within and foregoing instrument entitled: "SECOND AMENDMENT TO 'LEASE BETWEEN THE UNITED STATES OF AMERICA, REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON', EXECUTED SEPTEMBER 10, 1964", and acknowledged said instrument to be the free and voluntary act and deed of said State, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument, and that the seal affixed is the seal of said State.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

NOTARY PUBLIC IN AND FOR THE STATE OF WASHINGTON, residing at Olympia.

94286.0702

(FOR LESSOR)

STATE OF WASHINGTON)
) ss.
COUNTY OF BENTON)

On this 7 day of July, 1970, before me personally appeared D. D. Williams, to me known to be an authorized representative of the United States Atomic Energy Commission, an instrumentality of the United States, that executed the within and foregoing instrument entitled: "SECOND AMENDMENT TO 'LEASE BETWEEN THE UNITED STATES OF AMERICA, REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON', EXECUTED SEPTEMBER 10, 1964", and acknowledged said instrument to be the free and voluntary act and deed of said Commission, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

J. Edward McEnaney
NOTARY PUBLIC IN AND FOR THE
STATE OF WASHINGTON, Residing at
Richland.

UNITED STATES
ATOMIC ENERGY COMMISSION
RICHLAND OPERATIONS OFFICE
P. O. BOX 550
RICHLAND, WASHINGTON 99352

IN REPLY REFER TO:
A:NGF

November 29, 1965

Department of Commerce and Economic Development
General Administration Building
Olympia, Washington 98502

Attention: Judson Wonderly, Acting Director

Subject: ACCESS TO LEASED SITE - HANFORD RESERVATION

Gentlemen:

Enclosed is an easement quitclaim deed for a road giving access to the 1,000 acre industrial parcel leased from the Atomic Energy Commission by the State.

The access road is to be constructed by California Nuclear, Inc., but it has been mutually agreed that the title in the easement should be in the State, since the road is available for access to the State's entire tract, as well as to the 100 acres subleased to California Nuclear.

The deed has been drawn up with the assistance of Mr. Lloyd W. Peterson, Assistant Attorney General.

When this deed is placed of record in Benton County, we ask that you inform us of the date, Volume, Page and Auditor's File Number of the recording.

Very truly yours,

N. G. Fuller, Director
Property Division

Enclosure:
Easement Deed

AT(45-1)-1979

EASEMENT QUITCLAIM DEED

The UNITED STATES OF AMERICA, Grantor, acting by and through the UNITED STATES ATOMIC ENERGY COMMISSION (hereinafter called the "Commission"), hereby conveys and quitclaims to the STATE OF WASHINGTON, Grantee, an easement for the construction, maintenance and repair of a road and the right of ingress and egress thereon by the Grantee and its permittees to and from certain property under lease to the Grantee. Said road shall be on, over and across a tract of land in Benton County, Washington, described as follows:

A tract of land in the Northwest Quarter of Section 10, Township 12 North, Range 26 EWM, said tract being 40 feet wide, being 20 feet on each side of the following described center line:

> Beginning at a point on the West line of said Section 10, which point lies North 00° 53' 09" West 2800 feet from the Southwest corner of said section; thence North 89° 55' 31" East a distance of 1400 feet to a point of curve; thence along a curve to the left, said curve having a radius of 150 feet, an arc distance of 235.62 feet to a point of tangency; thence North 00° 04' 29" West 35.3 feet to a point of terminus.

This conveyance is made subject to the following terms and conditions:

1. Construction, maintenance and repair of the road shall be accomplished without cost to the Grantor and shall be subject to such standards as the Commission may from time to time prescribe.

2. Any property of the Grantor damaged or destroyed by the Grantee incident to construction, maintenance, repair or use of the road shall be promptly repaired or replaced by the Grantee to the satisfaction of the Grantor or in lieu of such repair or replacement, the Grantee shall, if required by the Grantor, pay to the Grantor money in an amount sufficient to compensate for the loss sustained by the Grantor by reason of damage to or destruction

of property of the Grantor.

3. The Grantor, its contractors and assignees may cross or otherwise use the right of way herein granted with pipelines, ditches, electric transmission and distribution lines, communication lines and operating roads and railroads.

4. To the extent the Commission may deem it necessary for the protection of health and safety of its employees or personnel, its contractors, the Grantee, the Grantee's sublessees, or the public, the Commission may, but shall not be obligated to, close the road for which this easement has been granted or cause it to be evacuated, or both; Provided, that the Commission shall give such advance notice of the closure or evacuation as the circumstances permit. The Commission's determination that said action or actions are necessary shall be conclusive, and the Grantor, the Commission and its officers, employees or authorized representatives shall not be liable for any damage or loss caused by such action or actions.

5. This easement may be terminated by the Grantor upon One Hundred Twenty (120) days written notice to the Grantee.

6. All or any part of this easement may be annulled and forfeited by the Grantor for failure to comply with the terms and conditions of this grant, or for nonuse for a period of two consecutive years, or for abandonment of the rights herein granted.

IN WITNESS WHEREOF, the Grantor, acting by and through the United States Atomic Energy Commission, has caused this easement quitclaim deed to be executed by the Manager, Richland Operations Office of the Atomic Energy Commission this 24th day of Nov, 1965.

UNITED STATES OF AMERICA
UNITED STATES ATOMIC ENERGY COMMISSION

By D. G. Williams
D. G. Williams, Manager
Richland Operations Office

STATE OF WASHINGTON)
) ss
COUNTY OF BENTON)

On this 24TH day of November, 1965, before me personally appeared D. G. Williams to me known to be the authorized representative of the Atomic Energy Commission that has executed the within and foregoing instrument, and acknowledged said instrument to be a free and voluntary act and deed of the United States of America, acting through the Atomic Energy Commission, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

A. Edmond McConnell
Notary Public in and for the State of Washington, residing at Richland, Benton County.

FIRST AMENDMENT TO "LEASE BETWEEN THE UNITED STATES OF AMERICA REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON," EXECUTED SEPTEMBER 10, 1964

By mutual agreement of the parties, the following shall be added to Recital 5 at page 2 of the Lease:

"The obligations undertaken by the State pursuant to this Lease will be administered in accordance with authority provided by Chapter 10, Laws of 1965, State of Washington."

IN WITNESS WHEREOF, the parties have executed this First Amendment in several counterparts.

THE UNITED STATES OF AMERICA
UNITED STATES ATOMIC ENERGY COMMISSION

By _____
Manager, Richland Operations Office

STATE OF WASHINGTON

By _____
Governor

By _____
Acting Director, Department of Commerce and Economic Development

ATTEST:

_____
ASSISTANT Secretary of State

Approved as to Form Only
24th day of June 1965
[illegible]
Attorney General

By _____

STATE OF WASHINGTON)
County of Benton) ss.
)

On this 28TH day of June, 1965, before me personally appeared J. E. Travis, to me known to be an authorized representative of the United States Atomic Energy Commission, an instrumentality of the United States, that executed the within and foregoing instrument entitled: "FIRST AMENDMENT TO 'LEASE BETWEEN THE UNITED STATES OF AMERICA REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON,' EXECUTED SEPTEMBER 10, 1964," and acknowledged said instrument to be the free and voluntary act and deed of said Commission, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

A. Edward McEneaney
NOTARY PUBLIC in and for the State of Washington, residing at Richland.

STATE OF WASHINGTON)
) ss.
County of [redacted])

On this [redacted] day of June, 19[redacted], before me personally appeared [redacted], to me known to be Acting Director of the Department of Commerce and Economic Development, of the State of Washington, that executed the within and foregoing instrument entitled: "FIRST AMENDMENT TO 'LEASE BETWEEN THE UNITED STATES OF AMERICA REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON,' EXECUTED SEPTEMBER 10, 1964," and acknowledged said instrument to be the free and voluntary act and deed of said State, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the seal of said State.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

Robert H. Doran

NOTARY PUBLIC in and for the State of Washington, residing at Olympia, Washington.

FIRST AMENDMENT TO "LEASE BETWEEN THE UNITED STATES OF AMERICA REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON," EXECUTED SEPTEMBER 10, 1964

By mutual agreement of the parties, the following shall be added to Recital 5 at page 2 of the Lease:

"The obligations undertaken by the State pursuant to this Lease will be administered in accordance with authority provided by Chapter 10, Laws of 1965, State of Washington."

IN WITNESS WHEREOF, the parties have executed this First Amendment in several counterparts.

THE UNITED STATES OF AMERICA
UNITED STATES ATOMIC ENERGY COMMISSION

By _____
Manager, Richland Operations Office

STATE OF WASHINGTON

By _____
Governor

By _____
Acting Director, Department of Commerce and Economic Development

ATTEST:

_____
ASSISTANT Secretary of State

Approved as to Form Only
24th day of June 1965
JOHN J. O'CONNELL
Attorney General
By Floyd W. Peterson

STATE OF WASHINGTON)
County of Benton) ss.

On this 28TH day of June, 1965, before me personally appeared J. E. Travis, to me known to be an authorized representative of the United States Atomic Energy Commission, an instrumentality of the United States, that executed the within and foregoing instrument entitled: "FIRST AMENDMENT TO 'LEASE BETWEEN THE UNITED STATES OF AMERICA REPRESENTED BY THE UNITED STATES ATOMIC ENERGY COMMISSION AND THE STATE OF WASHINGTON,' EXECUTED SEPTEMBER 10, 1964," and acknowledged said instrument to be the free and voluntary act and deed of said Commission, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my official seal the day and year first above written.

J. Edward McCreary
NOTARY PUBLIC in and for the State of Washington, residing at Richland.

INDENTURE OF LEASE

This Indenture of Lease is entered into this 10th day of September, 1964, between the UNITED STATES OF AMERICA, Lessor, (sometimes hereinafter called the "Government"), represented herein by the UNITED STATES ATOMIC ENERY COMMISSION (hereinafter called the "Commission"), and the STATE OF WASHINGTON, Lessee (sometimes hereinafter called the "State").

RECITALS

1. The Government, by and through the Commission, has undertaken a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public.

2. The Commission has determined that this program would be implemented and its purposes and objectives furthered by making available for State or private use 1000 acres of land lying within the boundaries of the Hanford Works near Richland, Washington, for the purpose of encouraging the location of nuclear-related industry thereon.

3. The State has instituted a program to encourage widespread participation in the development and utilization of sources of ionizing radiation and other forms of nuclear energy for peaceful purposes to the maximum extent consistent with the health and safety of the public.

4. The State has determined that a lease from the Government of the 1000 acres of available land within the Hanford Works area would contribute to the attainment of the purposes and objectives of the State's program.

5. The State is authorized by law to enter into this Lease with the Government

for the said 1000 acres and proposes to make the tracts available, in whole or in part, by sublease or other suitable arrangement, to State or private organizations for the establishment of nuclear-related industry in the area.

6. The State agrees to exercise its best efforts to use the annual rental income received by it from the Leased Premises, as hereinafter defined, which is in excess of the annual rental to be paid by the State to the Commission under this Lease, for the development of the leased land and nuclear-related industries in the Tri-Cities area.

7. The Commission is authorized to enter into this Lease with the State pursuant to authority contained in the Atomic Energy Act of 1954, as amended.

INSTRUMENT OF LEASE

1. Conveyance of Interest in Land

The Government, Lessor, for and in consideration of the rents, covenants, conditions, warranties, and agreements herein contained as assumed by the State, Lessee, does hereby demise and lease to the State real property of the Government (hereinafter called the "Leased Premises") situated in the County of Benton, State of Washington, and within the Federally owned area known as the Hanford Works, United States Atomic Energy Commission, all as more particularly described in Article 2 hereof.

2. Description of Leasehold

(a) A tract of land lying in Sections 7, 8 and 9, Township 12 North, Range 26 East W.M., containing 1000 acres more or less, more particularly described as follows:

That part of the South half of said Section 7 bounded on the West and North by the following described line:

BEGINNING at a point on the South line of said Section 7, which point is South 88° 44' 47" West 4515.30 feet from the Southeast corner of the Section, and at coordinates North 438,868.46 and East 2,222,800.00 on the Washington State Grid System (South Zone); thence North 1781.54 feet; thence East 2200.00 feet; thence North 907 feet more or less to the North line of said South half of the section; thence N 88° 44' 47" East along said line 2230 feet more or less to the East quarter corner of said Section 7.

The South half of Section 8.

The South half, and the South half of the North half of Section 9, EXCEPT that portion lying easterly of the following described line:

BEGINNING at a point on the East line of said Section 8, which point is North 0° 55' 43" West 3073.14 feet from the Southeast corner of the section, and at coordinates North 442,270.30 and East 2,237,787.87 on the Washington State Grid System (South Zone); thence Northwesterly along a 1055.37 foot radius curve to the right an arc distance of 1064.00 feet (the chord of said arc bears North 30° 13' 20" West 1019.48 feet) to a point on the North line of the South half of the North half of said Section 9, said point being at coordinates North 443,151.21 and East 2,237,274.71 on the Washington State Grid System (South Zone).

RESERVING to the Government an easement for underground and overhead telephone lines on a tract of land 15 feet wide, being 7-1/2 feet on each side of the following described center line:

> BEGINNING at a point on the East line of said Section 9, which point is North 0° 55' 43" West 806.17 feet from the Southeast corner of said section; thence North 49° 27' 15" West 576.40 feet; thence North 0° 02' 45" West 2775.53 feet to the North line of the Leased Premises.

(b) (1) Together with and as a part of this Lease, the State, its Sublessees, its Licensees, or any others authorized or permitted by it, in any manner to use or occupy the Leased Premises (hereinafter collectively called "Sublessees") shall have the right of ingress and egress to and from the Leased Premises, over and above the Government-owned roads, streets and, only for as long as they are operated by the Commission or its Contractors, the railways, located within the boundaries of the Hanford Works, subject to such security limitations and conditions, and also subject to such other conditions (including the payment by the State and its Sublessees of a reasonable use charge if the costs of maintaining or repairing said roads, streets and railways are significantly increased because of the State's or its Sublessees' use thereof) and other regulations as the Commission may require or issue from time to time. The right of the State and its Sublessees to the use of said roads, streets, and railways shall not be exclusive but shall be of equal standing with others authorized by the Commission to use and other authorized personnel using such roads, streets, and railways. The State or its Sublessees may construct, connect and maintain spur tracks at locations to be mutually agreed upon by the parties hereto to serve the Leased Premises. The State or its Sublessees may construct and maintain in the vicinity of the Leased Premises such additional roads over Government-owned land as may be required subject to obtaining prior

written approval of the Commission and further subject to terms and conditions, including standards for construction and maintenance as the Commission may prescribe.

(2) To the extent that it does not interfere with the use of the Leased Premises for the purpose and scope of this Lease as provided in Article 3 hereof, the Commission at its own expense may, but shall not be obligated to, relocate, close, vacate, alter, widen, extend, grade, improve, repair, maintain, and regulate the use of the said roads, streets and railways, and may, at any time or times, provide alternate ingress and egress ways to the Leased Premises over specific roads, streets or railways of the Commission within the Hanford Works area.

(3) To the extent deemed necessary for the protection of the health and safety of the employees or personnel of the Commission, its Contractors, the State, its Sublessees, or the public, the Commission may, but shall not be obligated to, close all routes of ingress and egress to and from the Leased Premises, or cause the Leased Premises to be evacuated, or both; provided, that the Commission shall give such advance notice of the closure or evacuation as circumstances permit. The Commission's determination that the action(s) described in the preceding sentence is necessary shall be conclusive and the Government, the Commission, their officers, employees, or authorized representatives shall not be liable for any damage or loss caused by such action(s).

3. Purpose and Scope of Lease

It is understood by the parties hereto that the Commission's operations conducted at the Hanford Works involve the production and utilization of atomic

energy and further, that such operations are essential to the common defense and security of the United States. Therefore, the State covenants that only those facilities and activities which are compatible with the Commission's operations and programs and which are nuclear related will be permitted on the Leased Premises; and that such facilities and activities will be so maintained and conducted as not to hamper, interfere with, or endanger the Commission's operations and programs. The State covenants that to secure these objectives it will not occupy nor use, nor permit or authorize (voluntarily, by operation of law, or otherwise) the occupancy or use of the Leased Premises, in whole or in part, without the prior written approval of the Commission, which approval shall not be unreasonably withheld, nor will it subsequently substantially enlarge, change, alter or modify its facilities or activities or the operation thereof, nor permit or authorize a Sublessee or others to substantially enlarge, change, alter or modify their facilities or activities or the operation thereof, without the prior written approval of the Commission, which approval shall not be unreasonably withheld. For the purpose of obtaining Commission approval of either a new facility or activity or subsequent enlargement, change, alteration or modification of a facility or activity or the operation thereof, the State shall submit to the Commission at its office in Richland, Washington, such information and documentation, including without limitation, plans, designs and proposed methods of operation, as the Commission may request, to insure that such facility, activity or subsequent enlargement, change, alteration or modification thereof, is compatible with the Commission's operations and programs, is nuclear related, and will not hamper, interfere with, or endanger the Commission's operations and programs. If the Commission approves a facility or activity or enlargement, change, alteration or modification of a facility or activity or operation thereof, it may impose such conditions and restrictions as are necessary to insure

that the purposes of this Article 3 are accomplished. The requirements of this Article 3 in no way affect the need for obtaining any license which is required, or which may hereafter be required by any applicable law or regulation, and the terms and conditions of any such license are in addition to, and are in no way affected by the requirements of this Article 3.

4. Term of Lease

The term of the Lease shall be ninety-nine (99) years commencing at midnight on September 10, 1964, and ending at midnight on September 9, 2063, unless sooner terminated in accordance with the terms hereof.

5. Payment of Rent

The State shall pay to the Commission as rent for the Leased Premises, easements, licenses, privileges and rights obtained under this instrument, the sum of $600 for each annual period during the term hereof. The first annual payment shall be due and payable upon execution of this Lease; succeeding annual payments shall be payable annually in advance, on or before each anniversary date hereof. All payments shall be made in lawful money of the United States, at the office of the Commission in Richland, Washington, or elsewhere, as designated from time to time by the Commission, without notice or demand therefor from the Commission.

6. Access to Leased Premises by Commission

The Commission, or any person authorized by it, shall at all times have access to the Leased Premises for all reasonable purposes, including without limitation, the following:

(a) For the protection of the health and safety of the employees or other personnel of the Commission, its Contractors, the State, its Sublessees, or the

public; and

(b) For taking readings or samples from, or for servicing, maintaining, repairing or replacing the Commission's environmental monitoring devices, other similar instruments, or ground water monitoring wells located on the Leased Premises; and

(c) For inspecting the premises and determining if the State and its Sublessees are complying with the obligations imposed by this Lease.

7. Termination, Assignment of Subleases

(a) This Lease is made subject to the condition that in the event the State or its Sublessees use the Leased Premises or any part thereof in a manner not in substantial compliance with the covenants and purposes provided herein, or violate any of the terms and conditions hereof, or fail to comply with any applicable laws, regulations and ordinances of the United States and the State, territory, and political subdivision in which the Leased Premises are located, and such misuse, violation, or noncompliance continues for sixty (60) days after written notice thereof has been given by the Commission to the State, the Commission upon the expiration of said sixty (60) days, or at any time thereafter, may, at its option; (1) by giving the State fifteen (15) days' written notice, terminate this Lease, and this Lease shall expire upon the date specified in such notice and after the expiration hereof and the one hundred and twenty (120) day period provided for in Article 8 (d), if the State has fulfilled all its obligations under this Lease, the State shall have no further responsibilities concerning the Leased Premises; or (2) by giving the State appropriate instructions under the authority of this subparagraph, require the State to terminate the sublease, license or other instrument permitting or authorizing an offending

Sublessee's occupancy or use of the Leased Premises or any part thereof; and the State shall within fifteen (15) days after receipt of said instructions or within such other time as may be specified by the Commission (which shall not be less than fifteen (15) days) terminate said sublease, license or other instrument.

(b) In the event this Lease is terminated in accordance with Article 7(a)(1) hereof prior to the term provided for in Article 4 hereof, the State shall assign to the Government and the Government shall accept, all subleases, licenses or other instruments authorizing or permitting occupancy or use of the Leased Premises or any part thereof, the terms and conditions of which have been approved by the Commission prior to such assignment.

8. Ownership, Removal or Disposition of Property

(a) The State or its Sublessees shall, on or before the expiration of the term of this Lease in accordance with Article 4 hereof, quietly and peaceably vacate and remove from the premises all personal property, goods and effects of the State or its Sublessees, not affixed to the land, and return possession of the premises to the Government; provided, that in the event the State or its Sublessees fail to so remove said personal property, such property shall become the property of the Government without liability of any kind.

(b) All alterations, additions or improvements to the Leased Premises made by the State or its Sublessees shall be and remain the property of the State or its Sublessees during the term of this Lease, irrespective of the manner in which they may be attached to the land. Upon the expiration of the term of this Lease in accordance with Article 4 hereof, the title to all alterations,

additions and improvements upon the Leased Premises shall vest in the Government and shall, without cost to the Government, thereupon become and be the property of the Government free of all encumbrances.

(c) Upon the termination of this Lease in accordance with Article 7(a)(1) hereof, prior to the expiration of the term provided for in Article 4 hereof, the ownership, removal or disposition of all personal property and of all alterations, additions and improvements belonging to the State's Sublessees shall thereafter be governed solely by the terms and conditions of each respective sublease, license or other instrument assigned by the State to the Government.

(d) Upon the termination of this Lease in accordance with Article 7(a)(1) hereof, prior to the expiration of the term provided for in Article 4 hereof, the Government may, at its option, take title to and possession of all alterations, additions and improvements to the Leased Premises that are owned by the State; however, the State shall have the right to occupy the premises for a period of one hundred twenty (120) days, or such longer period as the Commission may agree to, following the termination of the Lease for the purpose of removing, and to remove, at its own expense, all its personal property and all alterations, additions and improvements which do not become the property of the Government hereunder. If the Government elects to take title and possession, it shall so notify the State in writing prior to the termination or expiration of this Lease and such alterations, additions or improvements shall thereupon become and be the property of the Government, free of all encumbrances, without cost to the Government. In the event the State fails to remove any of its property from the Leased Premises as permitted by this Article 8(d), such property shall become the property of the Government without

liability of any kind.

9. Decontamination of Leased Premises

Upon the expiration or termination of this Lease, in whole or in part, as provided in Articles 4, 7, or 10, the Leased Premises and all personal property, alterations, additions, and improvements remaining thereon and not removed (if removal is permitted under Article 8 hereof), shall be returned to the Government with radioactive contamination reduced to a level satisfactory to the Commission. The State shall, at its own expense and to the extent directed to do so by the Commission, take or cause to be taken all necessary measures to effect such decontamination to the Commission's satisfaction, or at the option of the Commission, the Commission, its Contractors or other representatives may undertake such decontamination and the State shall reimburse the Commission for the costs actually incurred therefor. The provisions of this Article 9 shall not apply to any land or facilities, including without limitation land used as a burial site for radioactive wastes, over which the State may agree to assume perpetual care under an appropriate agreement with the Commission.

10. Recapture by Commission; Surrender by the State

(a) At the expiration of ten years from the effective date of this Lease, or at any time thereafter the Commission may, by giving the State sixty (60) days' written notice and without liability of any kind, recapture the Leased Premises or any part thereof which is not occupied, utilized, subleased or otherwise made use of; or for which the State has no definite plans for development; or which is not reasonably required, in the opinion of the Commission, as a protective buffer zone around subleased or other occupied or utilized portions of the Leased Premises. Thereafter the recaptured

premises will not be subject to the provisions of this Lease, and the rent required under Article 5 hereof shall be reduced proportionately or as mutually agreed to by the parties hereto.

(b) At the expiration of three years from the effective date of this Lease, or at any time thereafter, the State may, by giving the Commission sixty (60) days written notice, surrender the Leased Premises or any part thereof which is not occupied, utilized, subleased, or otherwise made use of; or which is not reasonably required, in the opinion of the Commission, as a protective buffer zone around subleased or other occupied or utilized portions of the Leased Premises; provided, however, that unless otherwise agreed to by the Commission, the State may not surrender the Leased Premises or any part thereof in connection with which the State has not fulfilled all its obligations as provided in this Lease. Thereafter the State shall have no further responsibilities concerning the surrendered premises and the rent required under Article 5 shall be reduced proportionately or as mutually agreed to by the parties hereto.

11. Permits

The State and its Sublessees shall procure all necessary permits or licenses and abide by all applicable laws, regulations and ordinances of the United States and of the State, territory, and political subdivision in which the Leased Premises are located.

12. Prohibition Against Assignment

The State shall not assign this Lease in whole or in part; provided, however, that this Article 12 shall not apply to subleases, licenses or other instrument authorizing or permitting occupancy or use of the Leased Premises or part thereof.

13. Subleases and Encumbrances

(a) The State covenants:

(1) That it will sublease or otherwise authorize or permit others to occupy or use the Leased Premises, in whole or in part, by written instrument only, and then only in accordance with Article 3 and this Article 13(a)(1) hereof, and that there shall be included in every sublease, license or other instrument authorizing or permitting occupancy or use of the Leased Premises or part thereof, provisions which shall give effect to, and render enforceable the applicable requirements of this Lease. No sublease, license or other instrument shall become effective unless and until it is approved by the Commission.

(2) That it will not do or permit any act by its Sublessees, by way of pledge, hypothecation or sufferance of lien, voluntarily or by operation of law, which would in any way encumber any title or interest of the Government in and to the Leased Premises or any part thereof.

(b) In the event the State takes or permits any action referred to in paragraphs (a)(1) and (a)(2) above with respect to any part of the Leased Premises whether with or without the Commission's written consent or approval, the State shall remain responsible to the Commission for such part of the premises, the use thereof, and all other obligations hereunder, as if such subletting or other action had not been taken or permitted, unless specifically relieved of such responsibility in writing by the Commission.

14. Warranty of Quiet Enjoyment

The Commission agrees that, conditioned upon the State's performing the agreements herein contained on its part, and subject to Articles 2 and 6 hereof, it shall, and may at all times during the term hereby granted, peacefully and quietly have, hold and enjoy the premises, without any manner of let, suit, trouble or hindrance of or from all persons claiming or to claim by, through, or under the Government.

15. Protection Against Claims and Losses

(a) The Government, the Commission, contractors of the Commission, and the officers, employees or representatives of any of them shall not be liable for and the State shall indemnify and save them and each of them free and harmless from any and all liability, loss, damage, or costs (including attorney's fees) incurred in or arising out of any claim, suit, action or other legal proceedings brought against any of them by third parties for injury to or death of persons or injury to or destruction of property caused by or arising out of: (1) the State's conduct of business on or the use of the Leased Premises, or any operations which are necessary or incidental thereto; (2) the State's erection or removal of any equipment, building or part thereof or the making of any repairs, replacements, alterations, additions, or improvements to the Leased Premises, or (3) any default or negligence in the performance of any covenant or obligation of the State hereunder; provided, that the foregoing shall not apply to any injury, destruction or death as may be caused by the negligence or default of the Commission, contractors of the Commission, and the officers, employees or representatives of any of them.

(b) The Government, the Commission, contractors of the Commission, and the officers, employees or representatives of any of them shall not be liable for and the State shall require its Sublessees to, and the Sublessees shall, indemnify and save them and each of them free and harmless from any and all liability, loss, damage, or costs (including attorney's fees) incurred in or arising out of any claim, suit, action or other legal proceedings brought against any of them by third parties for injury to or death of persons or injury to or destruction of property caused by or arising out of: (1) the Sublessees' conduct of business on or use of the Leased Premises, or any operations which are necessary or incidental thereto; (2) the Sublessees' erection or removal of any equipment, building or part thereof

or the making of any repairs, replacements, alterations, additions, or improvements to the Leased Premises, or (3) any default or negligence in the performance of any covenant or obligation of the Sublessees hereunder; provided, that the foregoing shall not apply to any injury, destruction or death as may be caused by the negligence or default of the Commission, contractors of the Commission, and the officers, employees or representatives of any of them.

(c) Unless otherwise agreed to, the State shall require each of its Sublessees to, and the Sublessees shall, maintain or cause to be maintained, insurance in such minimum amounts as required by the Commission from time to time in writing for purposes of providing protection against the claims specified in Article 15(b) hereof, whether such activities be those of the Sublessees, or any of their contractors, or the officers, employees or agents of the Sublessees or contractors. If requested to do so by the Commission, the State shall require each of its Sublessees to, and the Sublessees shall, name the Government as a co-insured in any insurance policies obtained in compliance herewith. Copies of all insurance policies shall be filed with the Commission, and the Commission shall be given ten (10) days' advance notice by mail of changes in or cancellation of any such insurance.

16. Nonwaiver of Nuclear Hazards Indemnity Protection

Notwithstanding any other provision of this Lease, nothing contained herein shall be construed to be a waiver on the part of the State and its Sublessees of any financial protection or indemnity which might be afforded them under an applicable nuclear hazards indemnity agreement executed under the provisions of Section 170 of the Atomic Energy Act of 1954, as amended, or other contractual authority of the Commission.

17. Taxes and Assessments

The State shall pay or cause to be paid and shall hold harmless the Commission from the payment of all legally imposed taxes, assessments and similar charges which may be levied by any duly constituted authority of the State, County or other political subdivision of the State upon the leasehold estate or leasehold estates created hereunder, the Leased Premises and all buildings or other improvements now or hereafter upon the Leased Premises.

18. Definitions

As used in this Lease:

(a) The term "Contracting Officer" means the person executing this Lease on behalf of the Government and including his successors or any duly authorized representative of any such person.

(b) The term "Commission" means the United States Atomic Energy Commission or any duly authorized representative or successor thereof, including the Contracting Officer except for the purpose of deciding an appeal under the article entitled "Disputes".

19. Disputes

(a) Except as otherwise provided in this Lease, any dispute concerning a question of fact arising under this Lease which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the State. The decision of the Contracting Officer shall be final and conclusive unless within 30 days from the date of receipt of such copy, the State mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Commission. The decision of the Commission or its duly authorized representative for the determination of such appeals

shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this article, the State shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contracting Officer's decision shall be controlling.

(b) This "Disputes" article does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above; provided, that nothing in this Lease shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

20. Nondiscrimination in Employment

During the performance of this Lease, the State agrees as follows:

(a) The State will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The State will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The State agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Nondiscrimination article.

(b) The State will, in all solicitations or advertisements for employees placed

by or on behalf of it, state that all qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

(c) The State will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the State's commitments under this Nondiscrimination article, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The State will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

(e) The State will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Committee for purposes of investigation to ascertain compliance with such rules, regulations and orders.

(f) In the event of the State's noncompliance with the Nondiscrimination article of this Lease or with any of the said rules, regulations, or orders, this Lease may be canceled in whole or in part and the State may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity or as otherwise provided by law.

(g) The State will include the provisions of paragraphs (a) through (g) in every sublease, license, subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March 6, 1961, as amended, so that such provisions will be binding upon each Sublessee, subcontractor or vendor. The State will take such action with respect to any sublease, license, subcontract or purchase order as the Commission may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the State becomes involved in, or is threatened with, litigation with a Sublessee, subcontractor or vendor as a result of such direction by the Commission, the State may request the United States to enter into such litigation to protect the interests of the United States.

21. Officials Not to Benefit

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this Lease, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Lease if made with a corporation for its general benefit.

22. Covenant Against Contingent Fees

The State warrants that no person or selling agency has been employed or retained to solicit or secure this Lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the State for the purpose of securing business.

23. Convict Labor

In connection with the performance of work under this Lease, the State agrees not

to employ any person undergoing sentence of imprisonment at hard labor.

24. Examination of Records

(a) The State agrees that the Commission and the Comptroller General of the United States or any of their duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers and records of the State involving transactions related to this Lease until the expiration of three years after final payment under this Lease unless the Commission authorizes their prior disposition.

(b) Nothing in this Lease shall be deemed to preclude an audit by the General Accounting Office of any transaction under this Lease.

25. No Waiver by the Commission

It is hereby covenanted and agreed that no failure by the Commission to insist upon the strict performance of any covenant, agreement, term, provision, condition or limitation of this Lease or to exercise any right, power or remedy consequent upon a breach thereof, and no acceptance of full or partial rent during the continuance of any such breach, shall constitute a waiver of any of the Commission's rights hereunder or of any such breach of such covenant, agreement, term, provision, condition or limitation. No covenant, agreement, term, provision, condition or limitation of this Lease to be performed or complied with by Lessee, and no breach thereof, shall be waived, altered, or modified except by a written instrument executed by the Commission. No waiver of any breach shall affect or alter this Lease, but each and every covenant, agreement, term, provision, condition and limitation of this Lease shall continue in full force and effect with respect to any other then existing or subsequent breach thereof.

26. Covenants and Conditions

All of the terms and provisions of this Lease to be performed or complied with by Lessee shall be deemed and construed to be "covenants" and "conditions" as though words specifically expressing or importing covenants and conditions were used in each separate term and provision hereof, and the same shall be construed as covenants running with the land.

27. Condition of Leased Land

Lessee has inspected and is fully familiar with the physical condition of the leased land. The Commission has made no representations, warranties, or undertakings as to such condition, or that the leased land is free and clear of all contamination and hidden hazards, or as to the fitness or availability of the leased land for any particular use.

28. Additional Reserved Rights of the Commission

The Commission reserves from the land leased hereunder the following rights in addition to the rights otherwise provided for in this Lease;

(a) The right to construct on the leased land and to maintain, repair and replace utility lines as may be necessary to provide electricity, heat, water, steam, power, protective, gas, telephone and other communication services, and all other public or private utility services, to the extent necessary for the Commission, provided that such lines will not unreasonably interfere with any of Lessee's operations; and

(b) The right to construct on the leased land and to maintain, repair and re-

place drainage facilities including sanitary sewers, storm sewers, and other piping and conduits to the extent necessary for the Commission; and

(c) The right to place on the leased land, to use, repair and maintain monitoring facilities, and fire control and alarm facilities, to the extent necessary for the Commission; and

(d) The right to construct on the leased land and to maintain, repair, and replace access roads and railroad facilities to the extent necessary for the Commission, provided that such roads and facilities will not unreasonably interfere with any of the Lessee's operations.

29. Notices

All notices, demands, requests, consents, approvals and other communications which may or are required to be given by either party to the other under this Lease shall be in writing, and shall be deemed to have been sufficiently given for all purposes hereunder when delivered or mailed by first-class registered or certified mail, postage prepaid.

(a) If to the State, to the Director, Department of Commerce and Economic Development, General Administration Building, Olympia, Washington, or at such other address as Lessee shall have furnished to the Commission in writing.

(b) If to the Government or the Commission, at P. O. Box 550, Richland, Washington, 99352, or such other address as the Commission shall have furnished to the State in writing.

30. Headings

The headings in this Lease are for purposes of reference and convenience only and shall not limit or otherwise define the meaning hereof.

IN WITNESS WHEREOF the parties hereto have executed this Lease in several counterparts.

THE UNITED STATES OF AMERICA
UNITED STATES ATOMIC ENERGY COMMISSION

By _____
Manager, Richland Operations Office

STATE OF WASHINGTON

ATTEST:

By _____
Governor

_____
ASSISTANT Secretary of State

By _____
Director, Department of Commerce
and Economic Development

(Seal)

Approved as to Form Only
10th day of Sept. 1964
JOHN J. O'CONNELL
Attorney General
By _____
Assistant Attorney General

(FOR LESSEE)

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this 10th day of September, 1964, before me personally appeared Robert E. Rose, to me known to be Director, Department of Commerce & Economic Development of the State of Washington, that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said State, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument and that the seal affixed is the seal of said State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Judson Woodard

NOTARY PUBLIC in and for the State of Washington, residing at Olympia.

9413286.0736

(FOR LESSOR)

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this 10th day of September, 1964, before me personally appeared J. E. Travis, to me known to be an authorized representative of the United States Atomic Energy Commission, an instrumentality of the United States, that executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said Commission, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Judson Woodard

NOTARY PUBLIC in and for the
State of Washington, residing at
Tumwater.

S U B L E A S E

Between

THE STATE OF WASHINGTON

Represented By

DEPARTMENT OF COMMERCE AND ECONOMIC DEVELOPMENT

and

NUCLEAR ENGINEERING COMPANY

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This sublease, dated the 26th day of February, 1976, and entered into pursuant to chapter 10, Laws of 1965, is between the State of Washington, acting through the Department of Commerce and Economic Development, sublessor (hereinafter called the "State"), and Nuclear Engineering Company, a corporation chartered under the laws of the State of California, and licensed to do business in Washington, sublessee (hereinafter called the "Company").

Recitals

1. The State, by and through the Department of Commerce and Economic Development, is determined to bring the peaceful benefits of nuclear energy to the State of Washington.

2. To achieve this goal, the State believes that nuclear industrial development should be encouraged.

3. The State has determined that for nuclear industrial development to proceed in Washington, it is necessary that a private nuclear waste disposal company locate in the Richland area.

4. In pursuance of these aims, the State has leased from the Atomic Energy Commission, an agency of the United States Government, hereinafter called the "Commission", one thousand acres of land lying within the boundaries of the Hanford Works near Richland, Washington, and proposes to extend its sublease of one hundred acres to the Company in accordance with the provisions of Article III of an original agreement of sublease between the State and California Nuclear, Inc., the predecessor in interest of the Company, dated July 29, 1965, and pursuant to extensions of such sublease agreed to by the parties to and including February 29, 1976.

ARTICLE I

The Premises

The State, in consideration of the rents, covenants, conditions, warranties, and agreements herein assumed by the Company, hereby subleases to the Company that certain real property situated in the County of Benton, State of Washington, within an area owned by the

United States and known as the Hanford Works, more particularly described as follows:

> One hundred (100) acres of land, more or less, in the east half of Section 9, Township 12 North, Range 26 EWM, Benton County, Washington, more particularly described as follows: Beginning at the Southeast corner of said Section 9; thence North 0° 53' 09" West along the East line of Section 9 a distance of 2942 feet; thence South 88° 50' 56" West 1480 feet; thence South 0° 53' 09" East 2942 feet to the South line of said Section; thence North 88° 50' 56" East along said South line of the Section 1480 feet to the point of beginning.

ARTICLE II

Relationship Between the Parties

1. The Company acknowledges that it has been furnished with a true and correct copy of the lease between the Commission and the State, dated September 10, 1964, and the First Amendment thereto, which amendment was executed June 24, 1965, covering the one thousand acres at the Hanford Works, to be held and administered by the State, which instrument is hereinafter referred to as the "Prime Lease."

2. The Company agrees to assume, so far as the premises sublet are concerned, all of the obligations and responsibilities which the State has assumed toward the Commission or its successor in interest by the Prime Lease; and the Company acknowledges its complete awareness of the considerations involving the national defense and security set forth in the Prime Lease, which will, or may, affect the Company's operations upon the subleased premises.

3. The State and the Company agree that in the event there is a conflict between the terms of this sublease and the terms of the Prime Lease, the latter shall be controlling; and that nothing herein shall be deemed to affect any right or rights that the Commission or its successor in interest has under the Prime Lease.

4. The Company understands that the State is promoting nuclear industrial and research activities in the Hanford area which are essential to the growth and prosperity of the State of Washington; and the Company therefore agrees that its facilities and activities will be maintained and conducted so as not to interfere with or endanger the State's operations and programs.

5. The State agrees that with respect to the subleased premises the Company shall enjoy the benefits of the Prime Lease applicable thereto.

6. The State agrees to use its good offices and to represent the Company in presenting matters to the Commission or its successor in interest involving the Company's duties and obligations to the Commission under the Prime Lease.

7. The parties hereto recognize that the undertakings of both the State and the Company constitute, in may respects, pioneer projects of state government and private enterprise in the field of nuclear industry; and that changes and adjustments in the Prime Lease are to be expected. The State covenants that it will pass on to the Company by way of supplemental agreements, the benefits of any liberalizations of the Prime Lease and relaxations of federal control which may occur with the passage of time.

8. The Company agrees that it shall not, without the State's prior written approval, assign this sublease or any interest thereunder, except that the same may be pledged as collateral for a business loan and except that the same may be assigned for performance by a wholly owned subsidiary of the Company organized under the laws of the State of Washington.

9. The Company agrees that it shall not, without the State's prior written approval, sublet the premises or any part thereof, or permit the use of the premises by any party other than the Company except that the premises may be sublet to, or used by,

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a wholly owned subsidiary of the Company organized under the laws of the State of Washington.

ARTICLE III

Term of This Sublease - Option to Renew

1. The term of this sublease shall be fifteen years commencing at midnight on July 29, 1975, unless sooner terminated in accordance with the terms of this sublease.

2. The Company shall have the option to extend the term of this sublease for one additional period of fifteen years at rental rates to be agreed upon by the parties. In the event the parties hereto fail to agree as to rental rates, said rates shall be determined by arbitration in the following manner: Each of the parties shall name one arbiter; and two persons thus designated shall appoint a third, the said three persons to constitute a board of arbitration whose decision shall be final and conclusive upon the parties.

3. In the event the Company desires to exercise said option, it shall give notice thereof in writing to the State not less than six months prior to the expiration of the original term.

ARTICLE IV

Payment of Rent

The Company shall pay to the State as rent for the premises and related rights obtained under this sublease the sum of Sixty Dollars ($60.00) for each annual period during the fifteen-year term of this sublease. The first annual payment shall be due and payable upon renewal of this sublease; succeeding payments shall be payable annually within ten days after each anniversary date hereof.

In addition the Company agrees to pay as supplemental rent such annual sum, determined after the fact by the Department of Commerce and Economic Development and confirmed by the State Auditor, in accordance with the procedures established by the Department of Commerce and Economic Development and approved by the State Auditor, as will fairly and adequately reimburse the State for unforeseen

direct costs and costs of administering this sublease which are properly and directly allocable to said sublease. Such costs shall include those expenses incurred by the State in considering those matters brought before it by the Company for approval, as provided in Articles V and XX herein. Supplemental rent so assessed for the previous year shall be paid at the same time the annual rent for the next succeeding year is paid, except that the supplemental rent for the last year of the term shall be estimated by the parties and paid in advance. It is agreed by the Company that costs of administration of the sublease shall include but not be limited to transportation costs, per diem expenses as authorized by law for department personnel, and telephone expenses, but shall not include salaries, secretarial services or supplies, except where the State may undertake to use its good offices on behalf of the Company in accordance with Article II-6 and Article XXII. All rental payments shall be made in lawful money of the United States, at the office of the State Department of Commerce and Economic Development, Olympia, Washington, or as otherwise designated in writing by the State.

ARTICLE V

Use of Premises

The Company covenants and agrees that it will use the subleased premises for the condensation and reduction of radioactive materials and wastes, the storage and burial of both solid and processed liquid materials and wastes, the treatment of hazardous and toxic materials, decontamination work generally and activities associated with or incidental to all the foregoing, but for no other purpose except with the prior written approval of the State.

The Company covenants and agrees that it will use the premises in a manner consistent with the terms of the license or licenses issued to the Company by the Commission or its successor in interest or other appropriate state or federal agency authorizing the activities mentioned in this article.

The Company shall have the primary right to utilize the subleased premises on its own account; but will offer its facilities and services to others on a nonexclusionary basis and shall make every reasonable effort to provide its services to others on an "availability" basis, i.e., subject to prior bookings.

The Company shall publish and maintain a schedule of rates and charges for its facilities and services which shall be nondiscriminatory and competitive, a copy of which shall be furnished to the State and to any other person requesting the same.

ARTICLE VI

Access Rights of State

The State, or any person authorized by it, shall at all times have access to the subleased premises for all reasonable purposes, including, without limitation, the following:

1. For the protection of the health and safety of the public or of the employees, other personnel, or contractors of the State; and

2. For taking readings or samples from, or for servicing, maintaining, repairing, or replacing the State's environmental monitoring devices, other similar instruments, or ground water monitoring wells located on the leased premises; and

3. For inspecting the premises and determining if the Company is complying with the obligations imposed by this sublease.

ARTICLE VII

Perpetual Maintenance Fund

The Company understands that the storage and burial of radioactive materials and waste requires perpetual surveillance and maintenance, and, so long as it occupies the premises, the Company will undertake all surveillance and maintenance required by all applicable laws, regulations or licensing for the protection of the public health and safety. The Company further understands that if for any reason at any time the Company should default or fail to comply with the terms of its license, or for any reason withdraw from the premises, the State would be required to assume surveillance and maintenance obligations and pay surveillance and

maintenance costs.

The Company is also aware that the State has entered into a "Perpetual Care Agreement" with the United States Government represented by the United States Atomic Energy Commission, in compliance with Article 9 of the Prime Lease, requiring the State to make certain deposits annually into the State Perpetual Maintenance Fund, to insure perpetual surveillance and maintenance, and that it is the State's intention and purpose to collect sufficient fees from the Company to satisfy and finance all of the State's obligations pursuant to the "Perpetual Care Agreement."

Therefore, the Company covenants and agrees to pay to the State eight cents ($.08) for each cubic foot of radioactive materials and waste buried or stored, provided that during the period July 29, 1975, through December 31, 1975, payment shall be at the rate of ($.05) for each cubic foot of such materials and waste. The Company further agrees to pay annually on January 1 of each year, beginning January 1, 1976, for fifty thousand cubic feet of burial or storage. Such amounts shall be applied as a credit against the Company's obligations hereunder, provided, however, that if the Company is required to cease operation of the site through no fault of its own the prepayment obligation shall cease and all amounts not credited against waste received shall be returned to the Company. Otherwise the prepayment made for the calendar year in which the activities were terminated shall accrue to the State.

In the event the Director of the Department of Commerce and Economic Development shall independently determine that additional Perpetual Maintenance Fund fees are required, the Department shall give reasonable notice to the Company of such determination and shall afford the Company an opportunity to be heard. Upon failure of the Company and the State to agree on an increased amount, the issue shall be decided under Article XXIII herein entitled "Disputes Between the Parties."

In the event the Director shall make such determination

concerning additional fees as a result of a request made by the United States of the State of Washington for the deposit of additional amounts pursuant to the Perpetual Care Agreement dated July 29, 1965, between the State of Washington and the United States, the Department shall give reasonable notice to the Company of such determination and shall not oppose a request by the Company to participate in proceedings between the State and the United States under Article 10 of such Perpetual Care Agreement or Article 19 of the lease between the United States of America and the State of Washington dated September 10, 1964. In the event the Company is precluded from such participation, the State shall use its best efforts to represent the Company's position on such proposed fee increase and to present such facts and circumstances on behalf of the Company as it may reasonably request.

All payments to the State shall be made in lawful money of the United States at the office of the State Department of Commerce and Economic Development or as otherwise designated in writing by the State without notice or demand by the State.

ARTICLE VIII

State Inspection of Company Records

The Company agrees that in order for the State to determine the proper payments of the Company into the Perpetual Maintenance Fund, and in order for the State to acquire economic data necessary to the promotion of nuclear industry, the Department of Commerce and Economic Development and the Auditor of the State or any of their duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers, accounts, and records of the Company involving operations on the subleased premises. Said right shall continue for three years after the termination of this sublease and any option, if exercised.

ARTICLE IX

Termination of Sublease

The Company agrees that it shall not, without the State's prior written consent, violate any of the terms or conditions of this sublease, or violate the terms of authorizing licenses issued by the Commission or other appropriate authority, or use any part of the subleased premises in a manner not in substantial compliance with the covenants and purposes of this sublease, or fail to comply with any applicable laws, regulations and ordinances of the United States and the state, territory, or political subdivision in which the subleased premises are located. If such substantial violation, misuse or noncompliance repeatedly occurs, the State may, at its sole option, have the right upon giving the Company sixty days' written notice, to terminate this sublease and reenter and take possession of the premises: PROVIDED, HOWEVER, That if such violation, misuse or noncompliance involves a nuclear incident as defined in the U. S. Atomic Energy Act of 1954, as amended, the State may immediately terminate this sublease and reenter and take possession of the premises.

ARTICLE X

The Company's Withdrawal from Premises

1. The Company agrees that it shall, either before or within forty working days after the expiration or termination of the sublease, remove from the premises at its own expense, all of its personal property not affixed to the land: PROVIDED, That if the Company fails to so remove its personal property, the State may, at its option, take title to such property without liability of any kind.

2. All improvements on the subleased premises made by the Company shall remain the property of the Company during the term of this sublease no matter how they are attached to the land. Upon the termination for default of this sublease the State may, at its option (and after giving written notice to the Company), take title to all improvements on the subleased premises without cost and free of all encumbrances. The Company agrees to remove, at its own expense and within forty working days after the termination for default of this sublease, all those improvements which the State does not

elect to take title to.

3. Upon the expiration or termination of this sublease, the subleased premises and all personal property, alterations, additions, and improvements remaining thereon and not removed (if removal is permitted under the above sections of this article), shall be returned to the State with radioactive contamination resulting from the Company's activities reduced to a level satisfactory to the State. The Company shall, at its own expense and to the extent directed to do so by the State, take or cause to be taken all necessary measures to effect such decontamination to the State's satisfaction, or at the option of the State, the State, its contractors or other representatives may undertake such decontamination and the Company shall reimburse the State for the costs actually incurred therefor. The provisions of this article shall not apply to the decontamination of any land used as a burial or storage site for radioactive materials and wastes where appropriate payments to the State's Perpetual Maintenance Fund in accordance with Article VII have been made.

ARTICLE XI

Permits and Licenses

The Company shall procure all necessary permits or licenses and abide by all applicable laws, regulations and ordinances of the United States and of the state, territory, and political subdivision in which the subleased premises are located.

ARTICLE XII

Protection Against Claims and Losses

1. The Company shall indemnify and save harmless the State, the United States of America, the Commission or its successor in interest, contractors of the Commission or its successor in interest, and the officers, employees and representatives of any of them, from any and all liability, loss, damage or costs (including attorney's fees) incurred in or arising out of any claim, suit, action or other legal proceedings brought against any of them by third parties for injury to or death of persons or injury to or destruction of property caused by or arising out of: (1) the

Company's conduct of business on or use of the subleased premises, or any operations which are necessary or incidental thereto; (2) the Company's erection or removal of any equipment, building or part thereof or the making of any repairs, alterations, additions or improvements upon the subleased premises; or (3) any default or negligence in the performance of any covenant or obligation of the Company hereunder: PROVIDED, That the foregoing shall not apply to any injury, destruction or death as may be caused by the negligence or fault of the State, Commission, contractors of the Commission, or the officers, employees or representatives of any of them.

2. The Company shall cause to be maintained insurance in the amount of $1,000,000 or in such other amount as may be required by the State or the Commission (or its successor in interest) by notice to the Company in writing for purposes of providing protection against the claims specified above, whether such activities be those of the Company, or any of its contractors, or the officers, employees, agents or subsidiaries of the Company. If the State or Commission (or its successor in interest) shall so request, the Company shall name the federal and/or the state government in any insurance policies obtained in compliance herewith. Copies of all insurance policies shall be filed with the State and the Commission (or its successor in interest) and the insurance contracts shall provide that the State and the Commission (or its successor in interest) shall be given ten days' advance notice by mail of changes in or cancellation of any such insurance.

3. Notwithstanding any other provisions of this sublease, nothing contained herein shall be construed to be a waiver on the part of the Company of any financial protection or indemnity which might be afforded it under an applicable nuclear hazards indemnity agreement executed either under provisions of future state legislation or under the provisions of § 170 of the Atomic Energy Act of 1954, as amended, or other contractual authority of the State or Commission (or its successor in interest).

4. The Company and the State agree that all the provisions contained in this article are subject to renegotiation at the option of either party at one-year intervals from the extension of the sublease. If the parties fail to agree during any such renegotiations, the insurance provisions shall be determined by arbitration in each instance in the following manner: Each of the parties shall name one arbiter and the two persons thus designated shall appoint a third, the said three persons to constitute a board of arbitration whose decision shall be final and conclusive upon the parties.

ARTICLE XIII

Casualty Destruction of Premises

In the event the premises are destroyed, damaged or made unusable by fire, flood, earthquake or other casualty, the State shall not be under obligation, unless it consents, to restore or repair the premises in any way.

ARTICLE XIV

Taxes, Maintenance Costs

The Company agrees to pay all legally-imposed taxes, assessments and similar charges which may be levied by the duly constituted authority of the State, or any political subdivision of the State upon the subleased premises and upon any improvements now or hereafter upon the subleased premises.

ARTICLE XV

Nondiscrimination in Employment

Among the obligations and responsibilities which the Company has assumed toward the Commission by the Prime Lease, and which the Company assumes under Article II, Paragraph 2, toward the State, so far as the premises sublet are concerned, are the following nondiscrimination provisions:

1. The Company will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Company will take affirmative action to insure that applicants are employed, and that employees are treated during employment

without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Company agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Nondiscrimination article.

2. The Company will, in all solicitations or advertisements for employees placed by or on behalf of it, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

3. The Company will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Commission, advising the said labor union or workers' representative of the Company's commitments under this Nondiscrimination article, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The Company will comply with all provisions of Executive Order No. 10925 of March 6, 1961, as amended, and of the rules, regulations and relevant orders of the President's Committee on Equal Employment Opportunity created thereby.

5. The Company will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, as amended, and by the rules regulations, and orders of the said Committee, or pursuant thereto, and will permit access to its books, records, and accounts by the Commission and the Committee for purposes of investigation to ascertain compliance with such rules, regulations and orders.

6. In the event of the Company's noncompliance with the Nondiscrimination article of this sublease or with any of the said rules, regulations, or orders, this sublease may be canceled in whole or in part and the Company may be declared ineligible for further federal government contracts in accordance with procedures authorized in

Executive Order No. 10925 of March 6, 1961, as amended, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity or as otherwise provided by law.

7. The Company will include the provisions of the foregoing paragraphs 1 through 5 in every sublease, license, subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order No. 10925 of March, 1961, as amended, so that such provisions will be binding upon each sublessee, subcontractor or vendor. The Company will take such action with respect to any sublease, license, subcontract or purchase order as the Commission or the State may direct as a means of enforcing such provisions, including sanctions for noncompliance: PROVIDED, HOWEVER, That in the event the Company becomes involved in, or is threatened with, litigation with a sublessee, subcontractor or vendor as a result of such direction by the Commission or the State, the Company may request the United States or the State to enter into such litigation to protect their own interests.

The Company agrees that in addition to the above nondiscrimination provisions, the Company will comply with all provisions of the State laws against discrimination (chapter 49.60 RCW, as it now exists or may be amended) and the rules, regulations and relevant orders of the Washington State Board Against Discrimination.

ARTICLE XVI

No Benefits for Officials

No member of Congress or the state legislature, or federal or state government official shall be admitted to any share or part of this sublease, or to any benefit which may arise therefrom.

ARTICLE XVII

No Contingent Fees

The Company warrants that no person or selling agency has been

employed or retained to solicit or secure this sublease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee.

ARTICLE XVIII

No Waiver by the State

The Company agrees that the State's failure to insist upon the strict performance of any provision of this sublease or to exercise any right based upon a breach thereof, or the acceptance by the State of any rent during such breach, shall not waive any of the State's rights under this sublease.

ARTICLE XIX

Condition of Subleased Lands

The Company warrants that it has inspected and is fully familiar with the physical condition of the subleased lands. It is further understood that the State has made no representations, warranties or undertakings as to such condition, or as to the fitness or availability of the subleased land for any particular use, or that the subleased land is free and clear of all contamination and hidden hazards.

ARTICLE XX

Altering Premises

The Company agrees that it will not make any substantial enlargement or substantially change its facilities or operations without the prior written approval of the State. For the purpose of obtaining State approval of either a new facility or operation or enlargement or change of a facility or activity or the operation thereof, the Company shall give to the State such information as the State may request to insure that such facility, operation, enlargement or change is compatible with the State's operations and programs, and will not interfere with, or endanger the same. If the State approves an enlargement or change of a facility, it may impose conditions and restrictions necessary to carry out the purposes of this article. This article's requirements in no way affect the need for obtaining any license now or hereafter required by any applicable

law or regulation, either federal or state, or the terms and conditions of any such license.

ARTICLE XXI

Additional Reserved Rights of the Commission or its Successor in Interest

The Commission and its successor in interest has reserved from those lands subleased to the Company the following rights in addition to the rights otherwise provided for in this sublease:

1. The right to construct on the subleased land and to maintain, repair and replace utility lines as may be necessary to provide electricity, heat, water, steam, power, protective, gas, telephone and other communication services, to the extent necessary for the Commission, provided that such lines will not unreasonably interfere with any of the Company's operations;

2. The right to construct on the subleased land and to maintain, repair and replace drainage facilities, including sanitary sewers, storm sewers, and other piping and conduits to the extent necessary for the Commission;

3. The right to place monitoring facilities, fire control and alarm facilities on the subleased land to the extent necessary for the Commission, and to use, repair and maintain the same; and

4. The right to construct access roads and railway facilities on the subleased land to the extent necessary for the Commission, and to maintain, replace and repair the same provided such roads and facilities will not unreasonably interfere with any of the Company's operations.

ARTICLE XXII

Disputes with the Commission or its Successor in Interest

The Company recognizes that under Article 19 of the Prime Lease, the State is obligated to exhaust its remedies under federal administrative disputes procedures, and that the rights of the Company as sublessee, derived through the State, are subject to the same obligation. In the event of a dispute with the Commission (or any other agency of the federal government then having jurisdiction)

in which the Company has an interest, the State agrees to present the Company's claim in good faith and with reasonable diligence, and shall not oppose the intervention by the Company as may be permitted under federal or state law, or by the action of any such federal agency, for the purposes of representing its own interests in all such controversies. The Company agrees to accept the outcome of such controversy without recourse against the State for the manner in which the State shall have presented the Company's claim, provided, however, that the Company shall not be bound by this Article from pursuing any other administrative remedy authorized by statute, regulation or law.

In the event that the Company is the real party in interest in any such claim, it will reimburse the State for its reasonable costs in presenting the case; and if the State, or others, are likewise interested therein, the Company will pay its fair share of the expenses.

ARTICLE XXIII

Disputes Between the Parties

1. Except as otherwise provided in this sublease, any dispute between the Company and the State concerning a question of fact under this sublease which is not disposed of by agreement, shall be decided by the Director of the Department of Commerce and Economic Development, or his successor, or his designee, after a hearing at which the Company shall be afforded an opportunity to be heard and represented by counsel and to offer evidence in support of its position. The Director shall render his decision in writing and mail or otherwise furnish a copy to the Company. The decision of the Director shall be final and conclusive unless the Company brings an appeal pursuant to the provisions of the Administrative Procedures Act, Title 34 of the Laws of Washington. Pending final decision of an appeal thereunder, the Director's decision shall be controlling.

2. This article does not preclude consideration of law questions in connection with decisions provided for in paragraph 1 above: PROVIDED, That nothing in this sublease shall be construed

as making final the decision of any administrative official, representative or board on a question of law.

ARTICLE XXIV

Notices

All notices, demands, requests, consents, approvals, and other communications which may or are required to be given by either party to the other under this sublease shall be in writing and shall be deemed to have been sufficiently given for all purposes when delivered or mailed by first class registered or certified mail, postage prepaid.

1. Notice to the State: To the Director, Department of Commerce and Economic Development, General Administration Building, Olympia, Washington 98504 or at such other address as the State shall have furnished to the Company in writing.

2. Notice to the Company: Nuclear Engineering Company, Box 156, San Ramon, California, or at such other address as the Company shall have furnished to the State in writing.

IN WITNESS WHEREOF, the parties hereto have executed this sublease.

STATE OF WASHINGTON

By _____
Director, Department of
Commerce and Economic Development

NUCLEAR ENGINEERING COMPANY

By _____
President

Approved as to form only this 26th day of January, 1976.

SLADE GORTON
Attorney General

By _____
Leland T. Johnson
Assistant Attorney General

STATE OF KENTUCKY)
: ss.
County of Jefferson)

On this 5th day of March, 1976, before me personally appeared James N. Neel, to me known to be President, Nuclear Engineering Company, P. O. Box 7246, Louisville, Kentucky 40207, and executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purpose therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

L. A. McNulty

NOTARY PUBLIC in and for the State of Kentucky, residing at Louisville

My Commission expires February 5, 1977.

(FOR SUBLESSEE)

STATE OF CALIFORNIA)
: ss.
County of Contra Costa)

On this _____ day of _____, 1976, before me personally appeared G. Stanley Williamson, to me known to be General Manager, Nuclear Engineering Company, Box 156, San Ramon, California, and executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said corporation, for the uses and purpose therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

_____
NOTARY PUBLIC in and for the State of California, residing at _____

(SUBLESSOR)

STATE OF WASHINGTON)
: ss.
County of Thurston)

On this 26 day of February, 1976, before me personally appeared John S. Larsen, to me known to be Director, Department of Commerce and Economic Development of the State of Washington, and executed the within and foregoing instrument, and acknowledged said instrument to be the free and voluntary act and deed of said State, for the uses and purposes therein mentioned, and on oath stated that he was authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

Hattie B. Taylor
NOTARY PUBLIC in and for the State of Washington, residing at Olympia.

FIRST AMENDMENT TO "SUBLEASE BETWEEN THE STATE OF WASHINGTON AND CALIFORNIA NUCLEAR, INC. (lease assigned to Nuclear Engineering Company on the 16th of April 1968)" EXECUTED JULY 29, 1965

By mutual agreement of the parties, the sublease shall be amended as follows:

A. ARTICLE V

(1) Page 6, first paragraph, first sentence, second and third lines:

After the words "the condensation and reduction of radioactive" insert the words "materials and".

(2) Page 7, first line:

After the words "processed liquid" insert the words "materials and".

B. ARTICLE VII

(1) Page 8 first sentence, first and second lines:

After the words "burial of radioactive" insert the words "materials and".

(2) Page 9, second paragraph, third sentence, third line:

After the words "of radioactive" insert the words "materials and".

C. ARTICLE X

(1) Page 13, first line:

After the words "site for radioactive" insert the words "materials and".

IN WITNESS WHEREOF, the parties have executed this First Amendment in several counterparts.

STATE OF WASHINGTON

By: Daniel B. Ward
Daniel B. Ward
Director, Department of Commerce
and Economic Development

NUCLEAR ENGINEERING COMPANY

By: James L. Harvey
James L. Harvey
President

Approved:

This 27th day of March 1970

The United States of America
United States Atomic Energy Commission

By:

Approved as to form only this 29th day of December, 1969

SLADE GORTON
Attorney General

By:
Charles F. Murphy
Assistant Attorney General

Amendments to Sublease

Between

The State of Washington

Represented by

Department of Commerce and Economic Development

and

Nuclear Engineering Company, Inc.

The agreement and amendment to sublease, dated January 11, 1980 is made between the State of Washington, acting through the Department of Commerce and Economic Development, sublease (hereinafter called the "State") and Nuclear Engineering Company, Inc. a California corporation, licensed to do business in this State of Washington sublease (hereinafter called the "Company").

Recitals

1. The parties hereto have entered into a sublease and subsequent extension thereof dated July 29, 1965 and February 26, 1976, respectively, a copy of which is attached hereto as Exhibit "A", affecting land leased by the State lying within the boundaries of the Hanford Works near Richland, Washington.

2. The parties desire to enter into a new agreement modifying

or supplementing the provisions of the sublease.

In consideration of the mutual covenants contained herein, the parties agree that the following Articles of the sublease be amended to read as follows:

ARTICLE IV

Payment of Rent

The Company shall pay to the State as rent for the premises and related rights obtained under this sublease the sum of Six Thousand Dollars ($6,000) for each annual period during the fifteen-year term of this sublease. The first annual payment shall be due and payable upon renewal of this sublease; succeeding payments shall be payable annually within ten (10) days after each anniversary date hereof.

In addition, the Company agrees to pay as supplemental rent such annual sum, determined after the fact by the Department of Commerce and Economic Development and approved by the State Auditor, as will fairly and adequately reimburse the State for unforeseen direct costs and costs of administering this sublease which are properly and directly allocable to said sublease. Such costs shall include those expenses incurred by the State in considering those matters brought before it by the Company for approval as provided in Articles V and XX herein. Supplemental rent so assessed for the previous year shall be paid at the same time

the annual rent for the next succeeding year is paid, except that the supplemental rent for the last year of the term shall be estimated by the parties and paid in advance. It is agreed by the Company that costs of administration of the sublease shall include but not be limited to transportation costs, per diem expenses, but shall not include salaries, secretarial services, or supplies, except where the State may undertake to use its good offices on behalf of the Company in accordance with Article II-6 and Article XXII. All rental payments shall be made in lawful money of the United States, at the office of the State Department of Commerce and Economic Development, Olympia, Washington, or as otherwise designated in writing by the State.

ARTICLE VII

Perpetual Maintenance Fund

The Company understands that the storage and burial of radioactive materials and waste requires perpetual surveillance and maintenance, and, so long as it occupies the premises, the Company will undertake all surveillance and maintenance required by all applicable laws, regulations or licensing for the protection of the public health and safety. The Company further understands that if for any reason at any time the Company should default or fail to comply with the terms of its license, or for any reason withdraw from the premises, the State would be required to assume surveillance and maintenance obligations and pay surveillance and maintenance costs.

The Company is also aware that the State has entered into a "Perpetual Care Agreement" with the United States Government represented by the United States Atomic Energy Commission, in compliance with Article 9 of the Prime Lease, requiring the State to make certain deposits annually into the State Perpetual Maintenance Fund, to insure perpetual surveillance and maintenance, and that it is the State's intention and purpose to collect sufficient fees from the Company to satisfy and finance all of the State's obligations pursuant to the "Perpetual Care Agreement."

Therefore, the Company covenants and agrees to pay to the State twenty-five cents ($.25) for each cubic foot of radioactive materials and waste buried or stored after March 1, 1980. The current payment made by Company for Perpetual Care and Maintenance shall continue to be paid until March 1, 1980. The Perpetual Care and Maintenance rate of $.25 per cubic foot shall be increased 10 percent on the first anniversary date of this Amendment to the sublease. The Company further agrees to pay annually on January 1 of each year, beginning on a proprated basis, on March 1, 1980, for one hundred thousand cubic feet of burial or storage. Such amounts shall be applied as a credit against the Company's obligations hereunder, provided, however, that if the Company is required to cease operations of the site, the prepayment obligation shall cease. The prepayment made for the calendar year in which the activities were terminated shall be prorated between the parties. In the event that the Company

does not store or bury one hundred thousand cubic feet of waste during a calendar year, the Company shall be entitled to a credit against the next year's obligation for Perpetual Care Fees.

In the event the Director of the Department of Commerce and Economic Development shall independently determine that additional Perpetual Maintenance Fund fees are required, the Department shall give reasonable notice to the Company of such determination and shall afford the Company an opportunity to be heard. Upon failure of the Company and the State to agree on an increased amount, the issue shall be decided under Article XXIII herein entitled "Disputes Between the Parties."

In the event the Director shall make such determination concerning additional fees as a result of a request made by the United States and the State of Washington for the deposit of additional amounts pursuant to the Perpetual Care Agreement dated July 29, 1965, between the State of Washington and the United States, the Department shall give reasonable notice to the Company of such determination and shall not oppose a request by the Company to participate in proceedings between the State and the United States under Article 10 of such Perpetual Care Agreement or Article 19 of the lease between the United States of America and the State of Washington dated September 10, 1964. In the event the Company is precluded from such participation, the State shall use its best efforts to represent the Company's position on such proposed fee increase and to present such facts and circumstances on behalf of the Company as it may reasonably

request.

All payments to the State shall be made in lawful money of the United States at the Office of the State Department of Commerce and Economic Development or as otherwise designated in writing by the State without notice or demand by the State.

All provisions of the sublease are incorporated herein and are hereby modified or supplemented to inform herewith but in all other respects are to be and shall continue in full force.

In witness whereof, the parties hereto have executed this modification of the sublease.

STATE OF WASHINGTON

By _____
Robert Anderson
Director, Department of Commerce
and Economic Development

Subscribed and Sworn to before me this 10th day of January, 1980.

_____
Notary Public

Seal

NUCLEAR ENGINEERING COMPANY, INC.

By _____
James Neel
President

Subscribed and Sworn to before me this 10th day of January, 1980.

_____
Notary Public

Approved as to form only this 15th day of January, 1980.

Slade Gorton
Attorney General
By: _____
Assistant Attorney General

1-14-80

THIRD AMENDMENT TO SUBLEASE
BETWEEN
THE STATE OF WASHINGTON

Represented by
Washington State Energy Office
AND

US ECOLOGY, INC.

This Agreement and Amendment to Sublease, dated January 14, 1982, is made between the State of Washington, acting through the State Energy Office, Sublessor (hereinafter the "State") and US Ecology, Inc., a California corporation, licensed to do business in the State of Washington, Sublessee (hereinafter called the "Company").

RECITALS

1. The parties hereto have entered into a Sublease dated July 29, 1965 and subsequent amendments thereof dated February 26, 1976, and January 11, 1980, copies of which are attached as Exhibit "A", affecting land leased by the State lying within the boundaries of the Hanford Works near Richland, Washington.

2. The State has expressed its intent to substantially increase fees payable for perpetual maintenance as well as to impose a closure fee to assure proper and expeditious closure of the facility at such time as it may become necessary.

Therefore, the parties desire to enter into a new agreement modifying supplementing the provisions of the Sublease.

In partial consideration of the mutual covenants contained herein, the parties agree that Article VII, entitled Perpetual Maintenance Fund, of the Sublease be amended by deleting former Article VII in its entirety and inserting the following Article VII entitled Perpetual Maintenance Fund, in its place, and that a new Article XXV, entitled Closure, be added to the Sublease with both Articles to read as follows:

ARTICLE VII

Perpetual Maintenance Fund

The Company understands that the storage and burial of radioactive materials and wastes requires perpetual surveillance and maintenance, and so long as it occupies the premises, the Company will undertake all surveillance and maintenance required by all applicable laws, regulations or licenses for the protection of the public health and safety. The Company further understands that if at any time the Company should default or fail to comply with the terms of its license, or for any reason withdraw from the premises, the State would be required to assume surveillance and maintenance obligations and pay surveillance and maintenance costs.

The Company is also aware that the State has entered into a "Perpetual Care Agreement" with the United States Government represented by the United States Atomic Energy Commission, in compliance with Article 9 of the Prime Lease, requiring the State to make certain deposits annually into the State Perpetual Maintenance Fund, to ensure perpetual surveillance and maintenance, and that it is the State's intention and purpose to collect sufficient fees from the Company to satisfy and finance all of the State's obligations pursuant to the "Perpetual Care Agreement".

Therefore, the Company covenants and agrees to pay to the State, effective January 15, 1982, One Dollar and Seventy-five Cents ($1.75) for each cubic foot of radioactive materials and waste permanently stored or buried at the commercial low-level radioactive waste disposal facility. The current payment of Twenty-seven and One-half Cents ($.275) made by Company for perpetual care and maintenance shall continue to be paid through January 14, 1982. The payment by the Company of the One Dollar and Seventy-five Cents ($1.75) fee shall continue until either (1) the effective date of the exclusionary provisions of the Northwest Interstate Compact on Low-Level Radioactive Waste Management is formally ratified by the United States Congress, or (2) the balance of the amount collected for perpetual care and maintenance reaches Six Million Dollars ($6,000,000), whichever is earlier, at which time the Office shall immediately adjust the fee, by emergency rule, to reflect the prevailing rates charged at similar sites in the nation. Within two (2) months of such fee adjusment, the parties shall conduct a joint technical study to reevaluate the then existing site conditions as they relate to the adequacy of the perpetual care and maintenance fee. Subsequent to the completion of the aforestated joint study, the State shall adjust the fee as required, the State shall make such adjustment by rule adopted pursuant to Chapter 34.04 RCW.

The State and the Company acknowledge and agree that in determining whether the amount of money collected for perpetual care and maintenance has reached the Six Million Dollar ($6,000,000) level, the account total shall be converted to the equivalent value of first quarter 1982 dollars by using the Implicit Price Deflator Index published by the Bureau of Economic Analysis, of the United State Department of Commerce; provided that in computing the value of the Six Million Dollars ($6,000,000.00), the Company shall receive full and total credit for all monies collected by the State from the Company for perpetual care and maintenance since 1965, plus the interest from investment accrued to the account, to the maximum amount allowed by law, earned up to the date that the determination is made that the amount collected for perpetual care and maintenance has reached Six Million Dollars ($6,000,000.00) in equivalent value to first quarter 1982 dollars. The State warrants that it will invest monies collected for perpetual care and maintenance in the same manner as other monies and in accordance with state law.

The One Dollar and Seventy-five Cent ($1.75) perpetual care and maintenance fee shall be paid to the State on a quarterly basis for the quarters ending January 15, April 15, July 15 and October 15, provided, however, that the Company shall have up to forty-five (45) days from the end of each quarter to secure collection of the fees from its customers and subsequently make payment to the State.

In the event the Director of the State Energy Office makes a determination that additional perpetual care and maintenance fees in excess of the One Dollar and Seventy-five Cents ($1.75) set forth herein are necessary as a result of a request made by the United States to the State of Washington for the deposit of additional amounts pursuant to the Perpetual Care Agreement dated July 29, 1965, between the State of Washington and the United States, the Office shall give reasonable notice to the Company of such determination and shall not oppose a request by the Company to participate in proceedings between the State and the United States under Article 10 of such Perpetual Care Agreement or Article 19 of the lease between the United States of America and the State of Washington dated September 10, 1964. In the event the Company is precluded from such participation, the State shall use its best efforts to represent the Company's position on such proposed fee increase and to present such facts and circumstances on behalf of the Company as it may reasonably request. Any adjustments to the fee shall be made by rule adopted pursuant to Chapter 34.04 RCW.

All payments to the State shall be made in lawful money of the United States at the Office of the State Energy Office, Olympia, Washington, or as otherwise designated in writing by the State, without notice of demand by the State. The Office shall maintain a segregated account of perpetual care and maintenance fee payments which are deposited in the Perpetual Maintenance Fund. The company shall identify payments made for perpetual care and maintenance separately from payments made for closure.

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ARTICLE XXV

Closure

In order to assure the proper and expeditious closure of the facility after the cessation of waste disposal activities of the facility, the State shall charge a closure fee to be deposited in the Perpetual Maintenance Fund. The office shall maintain a segregated account of closure fee payments which are deposited in the Perpetual Maintenance Fund. The fees shall be utilized in paying all reasonable costs of closure after the cessation of waste disposal activities required pursuant to the provisions of the facility license and Article X, entitled "The Company's Withdrawal from Premises", of the Sublease dated February 26, 1976.

Therefore, effective January 15, 1982, the Company covenants and agrees to pay the State a closure fee of Twenty-five Cents ($.25) per cubic foot of radioactive materials and waste permanently stored or buried at the low-level radioactive waste facility. The payment of the Company of Twenty-five Cents ($.25) closure fee shall continue until either (1) the effective date of the exclusionary provisions of the Northwest Interstate Compact on Low-Level Radioactive Waste Management is formally ratified by the United States Congress; or (2) the balance of the amount collected for closure reaches One Million Dollars ($1,000,000.00), whichever is earlier, at which time the obligations of the Company for the payment of any closure fees shall be terminated. However, the parties shall conduct a joint technical study to reevaluate the then existing site conditions as they relate to the adequacy of the closure fees. Subsequent to the completion of the aforestated joint study, should the State determine additional closure fees are required, the State shall give reasonable notice to the Company of such determination and shall afford the Company an opportunity to be heard. Upon failure of the Company and the State to agree on an increased amount, the issue shall be decided under Article XXIII, entitled "Disputes Between the Parties", of the Sublease dated February 26, 1976.

The State and the Company acknowledge and agree that in determining whether the amount of money collected for closure has reached the One Million Dollar ($1,000,000.00) level, the account total shall be converted to the equivalent value of first quarter of 1982 dollars by using the Implicit Price Deflator Index published by the Bureau of Economic Analysis of the United States Department of Commerce; provided, however, that in computing the value of the One Million Dollars ($1,000,000.00) the Company shall receive full and total credit for all monies paid by the Company to the State for closure, plus the interest from investment accrued to the account, to the maximum allowed by law, earned up to the date that the determination is made that the amount collected for closure has reached One Million Dollars ($1,000,000.00) in equivalent value to first quarter 1982 dollars. The State warrants that it will invest monies collected for closure in the same manner as other state monies and in accordance with state law.

The Twenty-five Cent ($.25) closure fee shall be paid to the State on a quarterly basis for the quarters ending January 15, April 15, July 15, and October 15, provided, however, that the Company shall have up to forty-five (45) days from the end of each quarter to secure collection of the fees from its customers and subsequently make payment to the State.

In the event that the Company performs closure activities at the facility after the cessation of waste disposal activities, the State warrants that the Company shall be

reimbursed for its costs plus a reasonable profit as shall be agreed to by the parties from those monies collected for closure. The State, subsequent to satisfactory performance of closure by the Company or any other entity acceptable to the parties (provided that the Company shall not unreasonably withhold its approval of a duly qualified entity) shall transfer any unexpended monies from the closure account to the perpetual maintenance account.

By January 30, 1982, the Company shall post a surety bond in the amount of Five Hundred Thousand Dollars ($500,000.00) for a period of one (1) year payable to the State should the Company leave the site without accomplishing the closure conditions of the license. On January 30, 1983, the Company shall post a surety bond for one (1) year in an amount which represents the difference, if any, between Five Hundred Thousand Dollars ($500,000.00) and the present balance of the amount collected for closure, provided, however, that for purposes of this calculation the Company shall receive full and total credit for all monies it has paid to the State for closure plus the interest from investment accrued to the account, to the maximum amount allowed by law.

All payments to the State shall be made in lawful money of the United States at the Office of the State Energy Office, Olympia, Washington, or as otherwise designated in writing by the State, without notice or demand by the State. The Office shall maintain a segregated account of closure fee payments which are deposited in the Perpetual Maintenance Fund. The Company shall identify payments made for closure separately from payments made for Perpetual Care and Maintenance.

All provisions of the Sublease, dated February 26, 1976, are incorporated herein and are hereby deleted, modified or supplemented to conform herewith but in all other respects are to be and shall continue in full force.

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DIV3-10

IN WITNESS WHEREOF, the parties hereto have executed this modification of the Sublease.

State of Washington

By: Richard H. Watson
Richard H. Watson
Acting Director
State Energy Office

Subscribed and Sworn to before me this 23rd day of June, 1982.

Notary Public

US Ecology, Inc.

By: J. J. Stoville
J. J. Stoville, President

Subscribed and Sworn to before me this 6th day of July, 1982.

Notary Public

Approved as to form only this

_____ day of _____, 1982.

Kenneth Eikenberry
Attorney General

By: _____

DIV3-10

APPENDIX D

CALCULATION METHODOLOGY FOR EXPOSURE ASSESSMENT

WA 8916?
No date
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9413286.0776

DRAFT PERMIT
FOR THE TREATMENT, STORAGE AND DISPOSAL
OF DANGEROUS WASTE

Department of Ecology
Nuclear and Mixed Waste Program
P.O. Box 47600
Olympia, Washington 98504-7600
Telephone: (206) 438-7021

Environmental Protection Agency
Region 10
1200 Sixth Avenue, HW-112
Seattle, Washington 98101
Telephone: (206) 553-1236

Issued in accordance with the applicable provisions of the Hazardous Waste Management Act, Chapter 70.105 RCW, and the regulations promulgated thereunder in Chapter 173-303 WAC and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments of 1984 (HSWA), and the regulations promulgated thereunder in Title 40 of the Code of Federal Regulations.

ISSUED TO: U.S. Department of Energy
Field Office, Richland - Hanford Facility
Post Office Box 550
Richland, Washington 99352
Telephone: (509) 376-7395

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352
Telephone: (509) 376-5107

Pacific Northwest Laboratory
P.O. Box 999
Richland, Washington 99352
Telephone: (509) 375-2201

This Permit is effective as of _____ and shall remain in effect until _____, 1997 unless revoked and reissued, or terminated under WAC 173-303-830(3) and (5) or continued in accordance with WAC 173-303-806(7).

ISSUED BY: **WASHINGTON STATE DEPARTMENT OF ECOLOGY** and
U.S. ENVIRONMENTAL PROTECTION AGENCY - REGION X

_____
Roger F. Stanley, Program Manager
Nuclear and Mixed Waste Management
Department of Ecology

Date: _____

_____
Randall F. Smith, Acting Director
Hazardous Waste Division
Environmental Protection Agency

Date: _____

PART IV - CORRECTIVE ACTIONS FOR PAST PRACTICE

IV.A. EFFECT OF PART IV, RCRA PAST PRACTICE ACTIONS

IV.A.1. **Integration With The FFACO**

IV.A.1.a. Except as specifically identified in Part IV, all RCRA Past Practice (RPP) work plan development, for RCRA Past Practice units identified in Appendix C of the FFACO, done pursuant to the FFACO, will not be subject to this section of the Permit until incorporated into this Permit as identified in Permit Condition I.C.3.

IV.A.1.b. Those units designated as CERCLA Past Practice (CPP) units in Appendix C of the FFACO shall not be subject to the provisions of this section of the Permit.

IV.A.2. **Requirements for SWMUs**

Those Solid Waste Management Units on Table IV.1. shall be subject to all provisions of this section of the Permit.

IV.B. STANDARD CONDITIONS

IV.B.1. In accordance with Section 3004(u) of RCRA, as amended by the HSWA of 1984, 40 CFR 264.101, and WAC 173-303-645(12) require that permits issued after November 8, 1984, address corrective action for releases of hazardous wastes and/or hazardous constituents from any solid waste management unit (SWMU) at the facility, regardless of when the waste was placed in the unit.

IV.B.2. In accordance with Section 3004(v) of RCRA, as amended by the HSWA of 1984, 40 CFR 264.101 and WAC 173-303-645(12), the Permittees must implement corrective action beyond the facility property boundary, where necessary to protect human health and the environment, unless the Permittees demonstrate to the satisfaction of the Director and Administrator that, despite the Permittees' best efforts, pursuant to Paragraph 106 of the FFACO, the Permittees were unable to obtain the necessary permission to undertake such actions. The Permittees are not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is

denied. On-site measures to address such releases will be determined on a case-by-case basis.

IV.B.3. Failure to submit the information required in the Corrective Action Schedule of Compliance, or falsification of any submitted information, is grounds for termination of this permit (WAC 173-303-806(12) and 40 CFR 270.43). The Permittees shall ensure that all plans, reports, notifications, and other submissions to the Director and the Administrator required in the Corrective Action Schedule of Compliance are signed and certified in accordance with WAC 173-303-810(13) and 40 CFR 270.11. Five (5) copies of these plans, reports, notifications or other submissions shall be submitted to the Director and two (2) copies to the Administrator and sent by certified mail or hand delivered as specified in Condition I.E.22. of this Permit.

IV.B.4. All plans, reports, studies, and/or schedules required by the conditions of the Corrective Action Schedule of Compliance and those required by the current RCRA Past Practice (RPP) operable unit work schedule contained in Appendix D of the FFACO, shall be, upon approval of the Director and the Administrator, incorporated into the Corrective Action Schedule of Compliance as a permit modification, (Permit Condition I.C.3.) and shall become an enforceable part of this Permit. Any noncompliance with such approved plans, reports, studies, and/or schedules shall be deemed noncompliance with this Permit. Extensions of the due dates for submittals may be granted by the Director and the Administrator, in accordance with the permit modification procedures under WAC 173-303-830(4) and 40 CFR 270.42.

IV.B.5. All raw data, including but not limited to, laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to the Corrective Action Schedule of Compliance shall be maintained at the Facility (or other location approved by the Director and the Administrator) during the term of this Permit, including any reissued Permits.

IV.C. <u>REPORTING REQUIREMENTS</u>

IV.C.1. The Permittees shall submit to the Director and the Administrator quarterly progress reports of all activities (e.g., Access Agreements, SWMU Assessment, Interim Measures, RCRA Facility Investigation, Corrective Measures Study) conducted pursuant to the provisions of the Corrective Action Schedule of Compliance, beginning no later than 90

days after the Permittees are first required to begin implementation of any requirement herein. The quarterly progress reports shall be submitted by the 21st day of the month following the preceding quarter. These reports shall contain:

1. A description of the work completed;

2. Summaries of all findings, including summaries of laboratory data;

3. Summaries of all problems or potential problems encountered during the reporting period and actions taken to rectify problems; and

4. Projected work for the next reporting period.

IV.C.2. Copies of other reports (e.g., inspection reports), drilling logs and laboratory data shall be made available to the Director and the Administrator upon request and shall be maintained in the Facility Operating Record.

IV.D. INTERIM MEASURES

IV.D.1 The Permittees shall implement Interim Measures (IM) as appropriate to mitigate ongoing releases and minimize further releases and/or potential releases to the environment until such time that final Corrective Measures are approved by the Director and the Administrator, and implemented by the Permittees. The IM may be initiated by the Permittees, or required by the Director and the Administrator upon a finding that a release or potential release of hazardous waste and/or hazardous constituents poses a threat to human health or the environment.

IV.D.2. The Permittees shall conduct all IM in accordance with this Permit, applicable laws and regulations, and the approved IM Work Plan.

IV.D.3. The Permittees shall submit the IM Work Plan for approval by the Director and the Administrator within 30 days of written request by the Director and the Administrator for an IM Work Plan, or if the IM is initiated by the Permittees, 30 days prior to initiation of field work (implementation). IM Work Plans shall contain sufficient detail to accurately define the scope, nature, and schedule of work to be performed.

IV.D.4 The IM Work Plan will be approved, modified and approved, or rejected by the Director and the Administrator.

If the Director and the Administrator approve the IM Work Plan, the Permittees shall begin to implement the IM Work Plan in accordance with the approved schedule of implementation following permit modification.

If the Director and the Administrator reject the work plan, the Director and the Administrator shall notify the Permittees in writing of the work plan's deficiencies and specify a due date for submittal of a revised work plan. Rejection of the second submittal of Director or Administrator required work plan may be deemed noncompliance with the terms of this Permit.

IV.D.5. The Permittees shall develop an inspection plan with schedule to ensure the IM Work Plan is implemented as approved and maintenance is conducted as required in a timely fashion.

IV.D.6. The Permittees shall submit plans and specifications for engineered IM for approval by the Director and the Administrator prior to initiation of field work (implementation). Plans and specifications will be approved, modified and approved, or rejected. If the Director or the Administrator reject the plans and specifications, the Director and the Administrator shall notify the Permittees in writing of the deficiencies and specify a due date for submittal of revised plans and specifications. Rejection of the second submittal of the plans and specifications may be deemed noncompliance with the terms of this Permit.

IV.D.7. The Permittees shall submit to the Director and the Administrator a certification of completion of construction of any engineered IM in accordance with accepted plans and specifications by a registered independent professional engineer with the next scheduled quarterly progress report in accordance with Permit Condition IV.E.3.

IV.D.8. Changes to approved plans and specifications shall be approved in accordance with Permit Condition II.M.3. Accepted as-built drawings shall be incorporated into this Permit.

IV.E. INTERIM MEASURES RECORDKEEPING AND REPORTING REQUIREMENTS

IV.E.1. The Permittees shall maintain all inspection logs required under Permit Condition IV.D.4.

IV.E.2. The Permittees shall submit a report on the effectiveness of the implemented IM to the Director and the Administrator within 90 days of completion of the IM.

IV.E.3. The Permittees shall submit to the Director and the Administrator a report summarizing the effectiveness of all IM activities undertaken quarterly, based on the federal fiscal year. The quarterly reports shall be submitted on the 21st day of the month following the preceding quarter. The reports shall include, but not be limited to:

a) summaries of any required progress reports on the construction of engineered Interim Measures or certifications of completion of construction of engineered Interim Measures in accordance with approved plans by a registered independent professional engineer;

b) summaries of required notifications of changes in monitoring and/or operating status;

c) summaries of all maintenance activities;

d) summaries of inspection results;

e) projected work for the next reporting period;

f) summaries of all findings;

g) summaries of all problems or potential problems encountered during the reporting period and actions being taken to rectify those problems.

IV.E.4. The Permittees shall maintain as part of the operating record all the records required under the provisions of this section.

IV.F. <u>NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED SOLID WASTE MANAGEMENT UNIT</u>

IV.F.1. The Permittees shall notify the Director and the Administrator in writing of any newly identified SWMU no later than 15 days after discovery.

IV.F.2. After such notification, the Director or the Administrator may require, in writing, that the Permittees prepare a SWMU Assessment (SA) Plan and a proposed schedule for implementation of the SA Plan for any SWMU discovered subsequent to the issuance of this Permit. The SA Plan shall be submitted within 90 days of the request of the

Director or the Administrator. The SA Plan shall identify whether hazardous waste or constituents thereof have or may be released at the SWMU. The SA Plan shall also include a schedule for completion of the SA for each SWMU discovered after issuance of this Permit.

IV.F.3. After the Permittees submit the SA Plan, the Director and the Administrator shall either approve, modify and approve, or reject the SA Plan in writing.

If the Director and the Administrator approve the SA Plan, the Permittees shall begin to implement the SA Plan in accordance with the approved schedule of implementation following permit modification.

If the Director or the Administrator rejects the SA Plan, the Director or Administrator shall notify the Permittees in writing of the Plan's deficiencies and specify a due date for submittal of a revised Plan. Rejection of the second submittal of the SA Plan may be deemed noncompliance with the terms of this permit.

IV.F.4. The Permittees shall submit a SWMU Assessment (SA) Report to the Director and the Administrator within 90 days of completion of the work specified in the approved SA Plan. The SA Report shall describe all results obtained from the implementation of the approved SA Plan. At a minimum, the SA Report shall provide the following information for each newly identified SWMU:

1. The location of the newly identified SWMU in relation to other previously identified SWMUs;

2. The type and function of the unit;

3. The general dimensions, capacities, and structural description of the unit (supply any available drawings);

4. The period during which the unit was operated;

5. The specifics on all wastes that have been or are being managed at the SWMU, to the extent available; and,

6. The results of any sampling and analysis required for the purpose of determining whether releases of hazardous wastes including hazardous constituents,

have occurred, are occurring, or are likely to occur from the unit.

IV.F.5. Based on the results of this Report, the Director and the Administrator shall determine the need for further investigations at the specific unit covered in the SA Report. If the Director or the Administrator determines that such investigations are needed, the Director or the Administrator shall require the Permittees to investigate the potential for releases from the SWMU or to define the rate and extent of the release, in accordance with Permit Condition IV.H.

IV.G. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED RELEASES AT SWMUS

IV.G.1. The Permittees shall notify the Director and the Administrator, in writing, of any release of hazardous waste, and/or hazardous constituents, within 15 days after discovery. This Permit Condition does not relieve the Permittees from compliance with any other spill or unpermitted release notification requirement contained in this Permit. Such newly identified releases may be from newly identified units, from units for which, based on the findings of the RFA, the Director and the Administrator had previously determined that no further investigation was necessary, or from units investigated as part of the RFI.

IV.G.2. The Director or the Administrator may require further investigation of any newly identified release. A work plan for the investigation of a newly identified release shall be incorporated into the RFI Work Plan under Permit Condition IV.H. if that RFI Work Plan is being actively developed, or developed separately and submitted to the Director and the Administrator within 90 days of receipt of written request of the Director or the Administrator.

IV.H. RCRA FACILITY INVESTIGATION (RFI) WORK PLAN

IV.H.1. Within 90 days after receipt of a written request by the Director or the Administrator for a RCRA RFI Work Plan, the Permittees shall submit a RFI Work Plan to the Director and the Administrator to address those units, releases of hazardous waste and/or hazardous constituents, and media of concern which, based on the results of the RFA, SA Report, or new information, require further investigation.

IV.H.1.a. The RFI Work Plan shall describe the objectives of the investigation and the overall technical and analytical approach to completing all actions necessary to characterize

the nature, direction, rate, movement, and concentration of releases of hazardous waste and/or hazardous constituents from specific units or groups of units, and their actual or potential receptors. The RFI Work Plan shall detail all proposed activities and procedures to be conducted, units to be investigated, the schedule for implementing and completing such investigations, the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.

IV.H.1.b. The RFI Work Plan shall specify quality assurance and data management procedures for sampling and data collection, including formats for documenting and tracking data and other results of investigations, and health and safety procedures.

IV.H.1.c. The RFI Work Plan shall include a detailed schedule of implementation.

IV.H.2. After the Permittees submit the RFI Work Plan, the Director and the Administrator will either approve, modify and approve, or reject the RFI Work Plan in writing.

IV.H.2.a. If the Director and the Administrator approve the RFI Work Plan, the Permittees shall implement the approved RFI Work Plan in accordance with the schedule of implementation following permit modification.

IV.H.2.b. If the Director or the Administrator rejects the RFI Work Plan, the Director or the Administrator shall notify the Permittees in writing of the RFI Work Plan's deficiencies and specify a due date for submittal of a revised RFI Work Plan. Rejection of the second submittal of the RFI Work Plan may be deemed noncompliance with the terms of this Permit.

IV.H.3. The Director and the Administrator shall modify the Corrective Action Schedule of Compliance either according to procedures in Part I.C.3. of this Permit, or according to the permit modification procedures under Ch. 173-303-830(4) and 40 CFR 270.42, to incorporate these units and releases into the RFI Work Plan.

IV.I. <u>INVESTIGATIVE DERIVED WASTE</u>

IV.I.1. All groundwater IDW shall be managed in accordance with Attachment 10.

IV.I.2. All non groundwater IDW shall be containerized upon generation and comply with the provisions of WAC 173-303-630 (2),(4),(5), and (6) upon generation.

IV.I.3. All containers managing IDW shall be clearly marked or labeled with the following phrase, "Investigative Derived Waste - May Contain Hazardous or Radioactive Constituents" upon generation.

IV.I.4. The Permittees shall chemically and physically analyze, in detail, all non groundwater IDW. Inorganic analysis shall be for the "Inorganic Target Analyte List" contained in the USEPA Contract Laboratory Program: Statement of Work for Inorganics Analysis Multi-Media, Multi-Concentration, Document Number ILM02.0. Organic analysis shall be for the "Target Compound List" contained in the USEPA Contract Laboratory Program: Statement of Work for Organics Analysis Multi-Media, Multi-Concentration, Document Number OLM01.0. Additional analysis may be required by the Director. IDW shall be sampled and analyzed in accordance with the following interval:

1) Discrete analysis of the first container of surficial IDW;

2) Continuous composite analysis of vadose zone IDW;

3) Continuous composite analysis of unconfined saturated zone IDW;

4) Continuous composite analysis of confining layer IDW; and,

5) Continuous composite analysis of confined aquifer IDW.

IV.I.5. The Permittees may request that the samples required to be collected in accordance with Permit Condition IV.I.4. have reduced analytical requirements. The request shall demonstrate with reasonable certainty that the analytes requested to be deleted are not present at the site. The request shall be made to the Director in writing. The Permittees shall not reduce the analysis required by Permit Condition IV.I.4. until receipt of written approval from the Director for the reduction.

IV.I.6. Validated analytical results shall be submitted to the Director within 180 days of generation of the IDW.

IV.I.7. No treatment or disposal of IDW may occur before receipt of written approval of the Director following the Director's receipt of validated analytical results.

IV.I.8. All non groundwater IDW shall be managed in a permitted interim status or final status treatment, storage, and disposal unit within 90 days of generation of IDW.

IV.J. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT

IV.J.1. Within 90 days of receipt of validated data from the implementation of the RFI Work Plan, the Permittees shall submit an RFI Final Report and Summary Report. The RFI Final Report shall describe the procedures, methods, and results of all facility investigations of SWMUs and their releases, including information on the type and extent of contamination at the facility, sources and migration pathways, and actual or potential receptors. The RFI Final Report shall present all information gathered under the approved RFI Work Plan. The RFI Final Report must contain adequate information to support further corrective action decisions at the facility. The Summary Report shall describe more briefly the procedures, methods, and results of the RFI.

IV.J.2. After the Permittees submit the RFI Final Report and Summary Report, the Director and the Administrator shall either approve, modify and approve, or reject the reports in writing.

IV.J.2.a. The Permittees shall place the approved Summary Report in the Public Information Repositories identified in the FFACO within 30 days of receipt of approval.

IV.J.2.b. If the Director and the Administrator determine the RFI Final Report and Summary Report do not fully detail the objectives stated under Permit Condition IV.J.1., the Director and the Administrator shall reject the RFI Final Report and Summary Report.

If the Director or the Administrator rejects the reports, the Director or the Administrator shall notify the Permittees in writing of the reports' deficiencies and specify a due date for submittal of a revised RFI Final Report and Summary Report. Rejection of the second submittal of the RFI Final Report and Summary Report may be deemed noncompliance with the terms of this Permit.

IV.K. REMEDIES NOT REQUIRING CORRECTIVE MEASURE STUDY (CMS)

IV.K.1. Notwithstanding the provisions of Permit Condition IV.L., if the Permittees have good cause to believe that the contamination and site-specific conditions present do not warrant a CMS Work Plan, the Permittees may, within 60 days of the Director and Administrator's approval of the RFI Report, submit a proposal for implementing specific corrective measures to the Director and Administrator. The proposal should be a detailed submittal, should convincingly state the rationale for the proposed measure, and should document the effectiveness of the chosen remedial measure in meeting a proposed set of health based levels for hazardous waste and hazardous constituents (see footnote in Permit Condition IV.L.1.).

The Director and Administrator shall review the proposal. In particular, for situations where there is a well defined "low risk", or where a relatively high quality remedy is being advocated by the Permittees, or where there appears to be few, or perhaps a single straightforward remedial option, a formal CMS may not be indicated.

IV.K.2. After the Permittees submit the proposal, the Director and the Administrator will either approve, modify and approve, or reject the proposal in writing.

IV.K.2.a. If the Director and the Administrator approve the proposal, the Permittees shall implement the approved proposal in accordance with the schedule of implementation following permit modification.

IV.K.2.b. If the Director and the Administrator rejects the proposal, the Director and the Administrator shall notify the Permittees in writing of the proposal deficiencies and specify a due date for submittal of a revised proposal. Rejection of the second submittal of the proposal may be deemed noncompliance with the terms of this Permit.

IV.L. CORRECTIVE MEASURES STUDY PLAN

IV.L.1. If the Director and the Administrator have reason to believe that a SWMU has released concentrations of hazardous waste and/or hazardous constituents in excess of a health based level[1], the Director and the Administrator shall require a

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[1]The health-based level for such hazardous waste or hazardous constituents as derived in a manner consistent with EPA guidelines set forth in 51 Federal Register 33992, 34006, 34014, 34028. The health-based level for carcinogens

CMS Plan and shall so notify the Permittees in writing. This notice shall identify the hazardous waste and/or hazardous constituents which have exceeded health based levels as well as those which have been determined to threaten human health or the environment given site-specific exposure conditions. The notification may also specify remedial alternatives to be evaluated by the Permittees during the CMS.

IV.L.2. The Permittees shall submit a CMS Plan to the Director and the Administrator within 90 days of notification of the requirement to conduct a CMS.

IV.L.2.a. The CMS Plan shall provide the following information:

1. A description of the general approach to investigating and evaluating potential remedies;

2. A definition of the overall objectives of the study;

3. The specific plans for evaluating remedies to ensure compliance with remedy standards;

4. The schedules for conducting the CMS; and,

5. The proposed format for the presentation of information.

IV.L.3. After the Permittees submit the CMS Plan, the Director and the Administrator will either approve, modify and approve, or reject the CMS Plan in writing.

IV.L.4. If the Director and the Administrator approve the CMS, the CMS shall be implemented in accordance with the approved schedule of implementation.

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represents a concentration associated with an excess upper bound lifetime risk of 1×10^{-6} due to continuous constant lifetime exposure, and for systemic toxicants represents a concentration to which the human population, exposed to on a daily basis, is not likely to suffer an appreciable risk of deleterious effect during a lifetime. Any list prepared by EPA according to these procedures may be used. Such a list is contained in Chapter 8, RCRA Facility Investigation, Interim Final, May 1989 or "Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities, Proposed Rule," 55 FR 30798-30884, July 27, 1990. Where Department guidelines or health based standards are more stringent then federal health based levels, Department standards shall be substituted for federal standards.

IV.L.4.a. If the Director and the Administrator reject the CMS Plan, the Director and the Administrator shall notify the Permittees in writing of the CMS Plan's deficiencies and specify a due date for submittal of a revised Plan. Rejection of the second submittal may be deemed noncompliance with the term of this Permit.

IV.M. CORRECTIVE MEASURES STUDY FINAL REPORT

IV.M.1. Within 90 days after the completion of the CMS, the Permittees shall submit a CMS Final Report. The CMS Final Report shall summarize the results of the investigations for each remedy studied and of any bench scale or pilot tests conducted. The CMS Report must include an evaluation of each remedial alternative. The CMS Final Report shall present all information gathered during the CMS. The CMS Final Report shall contain adequate information to support the Director and the Administrator in the remedy selection decision making process, described in Permit Condition IV.N.

IV.M.2. If the Director and the Administrator determine that the CMS Final Report does not fully satisfy the information requirements specified under Permit Condition IV.L.2.a., the Director and the Administrator may reject the CMS Final Report.

If the Director and the Administrator reject the CMS Final Report, the Director and the Administrator shall notify the Permittees in writing of deficiencies in the Report and specify a due date for submittal of a revised CMS Final Report. Rejection of the second submittal of the CMS Final Report may be deemed noncompliance with the terms of this Permit.

IV.M.3. As specified under Permit Condition IV.N., based on preliminary results and the CMS Final Report, the Director and the Administrator may require the Permittee to evaluate additional remedies or particular elements of one or more proposed remedies.

IV.N. REMEDY SELECTION/CORRECTIVE MEASURES IMPLEMENTATION

IV.N.1. Based on the results of the CMS Final Report and any further evaluations of additional remedies under this study, the Permittees shall propose a remedy from the remedial alternatives evaluated in the CMS Final Report that will: (1) be protective of human health and the environment; (2) meet the concentration levels of hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment; (3) control the source of

release so as to reduce or eliminate, to the maximum extent practicable, further releases that might pose a threat to human health and the environment; and (4) meet all applicable waste management requirements.

IV.N.2. In selecting the remedy which meets the standards for remedies established under Permit Condition IV.N.1., the Permittees shall consider the following evaluation factors, as appropriate:

IV.N.2.a. Long-term reliability and effectiveness. Any potential remedy shall be assessed for the long-term reliability and effectiveness it affords, along with the degree of certainty that the remedy will prove successful. Factors that shall be considered in this evaluation include:

a. Magnitude of residual risks including amounts and concentrations of waste remaining following implementation of a remedy, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes including hazardous constituents;

b. Chronic health effects;

c. The type and degree of long-term management required, including monitoring and operation and maintenance;

d. Potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal or containment;

e. Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated wastes and residuals; and,

f. Potential need for replacement of the remedy.

IV.N.2.b. Reduction of toxicity, mobility, and volume. A potential remedy shall be assessed as to the degree to which it employs treatment that reduces toxicity, mobility or volume of hazardous wastes and/or hazardous constituents. Factors that shall be considered in such assessments include:

a. The treatment processes the remedy employs and materials it would treat;

b. The amount of hazardous wastes and/or hazardous constituents that would be destroyed or treated;

c. The degree to which the treatment is irreversible; and,

d. The residuals that will remain following treatment, considering the persistence, toxicity, mobility and propensity to bioaccumulate of such hazardous wastes and/or hazardous constituents.

IV.N.2.c. The short-term effectiveness of a potential remedy shall be assessed considering the following:

a. Magnitude of reduction of existing risks;

b. Short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment; and,

c. Time until full protection is achieved.

IV.N.2.d. Implementability. The ease or difficulty of implementing a potential remedy shall be assessed by considering the following types of factors:

a. Degree of difficulty associated with constructing the technology;

b. Expected operational reliability of the technologies;

c. Need to coordinate with and obtain necessary approvals and permits from other agencies;

d. Availability of necessary equipment and specialists; and,

e. Available capacity and location of needed treatment, storage and disposal services.

IV.N.2.e. Cost. The types of costs that may be assessed include the following:

a. Capital costs;

b. Operation and maintenance costs;

c. Net present value of capital and operation and maintenance costs;

d. Potential future remedial action costs;

e. Secondary waste management costs; and,

f. Closure costs for temporary units.

IV.N.3. After the Permittees submit the proposed remedy, the Director and the Administrator shall either approve, modify and approve, or reject the proposed remedy in writing.

If the Director and the Administrator approve the proposed remedy the Permittees shall begin to implement the proposed remedy in accordance with the approved schedule of implementation following permit modification.

If the Director and the Administrator reject the proposed remedy the Director and Administrator shall notify the Permittee in writing of the proposed remedy's deficiencies and specify a due date for submittal of a revised proposed remedy. Rejection of the second submittal of the proposed remedy may be deemed noncompliance with the terms of this Permit.

IV.O. PERMIT MODIFICATION FOR REMEDY

IV.O.1. Following approval of the proposed remedy, the Director and the Administrator shall initiate a major permit modification to this Permit, pursuant to Permit Condition I.C.3. WAC 173-303-830(4) and to 40 CFR 270.42(C).

IV.O.1.a. The modification shall specify the selected remedy and include, at a minimum, the following:

1. Description of all technical features of the remedy that are necessary for achieving the standards for remedies established under Permit Condition IV.N., including length of time for which compliance must be demonstrated at specified points of compliance;

2. All concentration levels of hazardous waste and/or hazardous constituents in each medium that the remedy must achieve to be protective of human health and the environment;

3. All requirements for achieving compliance with these concentrations;

4. All requirements for complying with the standards for management of wastes;

5. Requirements for removal, decontamination, closure, or postclosure of units, equipment, devices or structures that will be used to implement the remedy;

6. A schedule for initiating and completing all major technical features and milestones of the remedy; and,

7. Requirements for submission of reports and other information.

IV.P. FACILITY SOLID WASTE MANAGEMENT UNITS - CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

IV.P.1. **Midway Substation and Community**

IV.P.1.a. All IDW, exhumed dielectric fluid transfer pipeline, exhumed tanks, tank contents, and all other containerized waste shall be removed from the site within 30 days of the effective date of the Permit.

IV.P.1.b. The contents of Landfill M-1 shall be excavated and transported to an interim status or final status treatment, storage, or disposal unit within 30 days of the effective date of the Permit.

IV.P.1.c. The deactivated concrete capacitor pads and all expansion joint material shall be removed and transported to a interim status or final status treatment, storage, or disposal unit within 30 days of the effective date of the Permit.

IV.P.1.d. All drywells within the fenced portion of the substation shall be removed and transported to an interim status or final status treatment, storage, or disposal unit within 120 days of the effective date of the Permit.

IV.P.1.e. Submit a plan within 120 days of the effective date of the Permit, in accordance with Permit Condition IV.H. to demonstrate that the Director and the Administrator approved health based levels have been met.

IV.P.1.f. The Permittees shall submit a plan within 120 days of the effective date of the Permit, to remediate sites (including those sites used as a borrow source) where excavation and removal activities have occurred. This plan shall include a description of all borrow sources, pertinent information on the vegetative cover component on the cap for former

Landfill M-1, and pertinent information on the seed mix including a detailed rationale for its use.

IV.P.1.g. After the Permittees submit the plan required Permit Conditions IV.P.1.e. and IV.P.1.f., the Director and the Administrator shall either approve, modify and approve, or reject the plan in writing.

If the Director and the Administrator approve the plan, the Permittees shall begin to implement the plan in accordance with the approved schedule of implementation following permit modification.

If the Director or the Administrator rejects the plan, the Director or Administrator shall notify the Permittees in writing of the plan's deficiencies and specify a due date for submittal of a revised plan. Rejection of the second submittal of the plan may be deemed noncompliance with the terms of this Permit.

IV.P.2. **Other BPA Lands**

IV.P.2.a. The Permittees shall submit a plan within 365 days of the effective date of the Permit for all other BPA owned, leased, operated, or maintained lands on the Hanford Facility. This plan shall specifically provide for the investigation of the potential of grounding wells to facilitate the transport of contaminants in the environment in accordance with Permit Condition IV.H.

IV.P.3. **North Slope**

IV.P.3.a. The Permittees shall sample the water from the well at Site MIL-PSN 04 within 90 days of the effective date of the Permit and manage the water in accordance with Permit Condition IV.I.1. The Permittees shall analyze the water from the well at Site MIL-PSN 04 for the Target Compound List contained in Permit Condition IV.I.4. The Permittees shall submit analysis in accordance with Permit Condition IV.I.6.

IV.P.3.b. The Permittees shall submit a plan within 270 days of the effective date of the Permit for the CMS of the 2, 4-D Burial Site in accordance with Permit Condition IV.L. The plan shall describe remediation of the site (including those sites used as a borrow source) where excavation and removal activities will occur. This plan shall include a description of all borrow sources, pertinent information on how the cover material will be revegetated, and pertinent

information on the seed mix including a detailed rationale for its use.

IV.P.3.c. The Permittees shall abandon all wells except the well at Site MIL-PSN 04 in accordance with Chapter 173-160 WAC within 270 days of the effective date of the Permit.

IV.P.3.d. The Permittees shall remove all solid waste (including but not limited to trash, scrap metal, lumber, asbestos, and concrete) within 365 days of the effective date of the Permit and dispose of at a municipal or industrial solid waste landfill which meets the Minimal Functional Standards of Chapter 70.95 RCW, or an interim status or final status RCRA treatment, storage, and disposal facility.

IV.P.3.e. The Permittees shall eliminate all physical hazards from drywells, cisterns, and underground structures within 365 days of the effective date of the Permit.

IV.P.3.f. The Permittees shall submit a plan within 270 days of the effective date of the Permit to implement all remaining recommendations not requiredd by Permit Conditions IV.P.3.a. through IV.P.3.e. of the "North Slope Investigation Report" in accordance with Permit Condition IV.D., IV.H, and IV.L. as applicable.

VI.P.4. **US Ecology**

IV.P.4.a. For the low-level radioactive waste disposal site operated by U.S. Ecology, in accordance with Permit Conditions IV.D., IV.H, and/or IV.L, as appropriate, the Permittees shall submit a plan in accordance with Permit Condition IV.H. within 90 days of receipt of written request by the Director and the Administrator.

IV.P.5. **351 Substation**

The Permittees shall submit a plan in accordance with Permit Condition IV.H. within 270 days of the effective date of the Permit to investigate the extent of the uranium yellow cake contamination of the 351 substation.

IV.P.6. **Central Waste Landfill**

The Permittees shall submit a plan in accordance with Permit Condition IV.H., within 270 days of the effective date of this Permit

IV.P.7. **Hanford Site Waste Units Report**

The Permittees shall submit detailed information within 30 days of the effective date of the Permit, in accordance with Permit Condition IV.F.4. for the 244 units identified in the Hanford Site Waste Units Report (January, 1991) that are to be addressed separately from the operable unit investigations of the FFACO and the 600 Area Munitions Burial Ground, northwest of the Yakima Barricade.

Table IV.1.

Midway Substation and Community

Other BPA Lands

North Slope

U.S. Ecology

351 Substation

Central Waste Landfill

Hanford Site Waste Units

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Slip Opinion)

NOTICE: This opinion is subject to formal revision before publication. Readers are requested to notify the Environmental Appeals Board, U.S. Environmental Protection Agency, Washington, D.C. 20460, of any typographical or other formal errors, in order that corrections may be made before publication.

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In the Matter of:	)	
	)	
Allied-Signal, Inc.	)	RCRA Appeal No. 90-27
(Frankford Plant)	)	
	)	
Permit No. PAD 002 312 791	)	
	)	

[Decided July 29, 1993]

ORDER DENYING REVIEW IN PART AND REMANDING IN PART

Before Environmental Appeals Judges Nancy B. Firestone, Ronald L. McCallum, and Edward E. Reich.

ALLIED-SIGNAL, INC. (FRANKFORD PLANT)

RCRA APPEAL NO. 90-27

ORDER DENYING REVIEW IN PART AND REMANDING IN PART

Decided July 29, 1993

Syllabus

The permittee, Allied-Signal, Inc., seeks review of several provisions of a permit issued to it by EPA Region III pursuant to the Hazardous and Solid Waste Amendments (HSWA) of the Resource Conservation and Recovery Act (RCRA). First, the permittee alleges that the permit's dispute resolution provision denies it due process because the provision allows the Region to impose additional requirements without allowing Allied-Signal a meaningful opportunity to challenge such requirements before they are imposed. Second, the permittee contends that the permit condition requiring notification of groundwater contamination to owners and residents of overlying property is unwarranted and unduly burdensome. Third, the permittee asserts that the Region abused its discretion by failing to change language in various permit provisions to reflect the Region's responses to the permittee's comments on the draft permit.

Held: (1) The dispute resolution provision of the permit provides ample opportunity for the permittee to contest any additional new requirements that may be imposed upon it during the course of the corrective action process, including any additional new requirements imposed as a result of the Region's review and approval of the permittee's interim submissions. Therefore, review of this objection to the permit is denied. (Requirements that are imposed by the Region during the corrective action process but which merely restate existing permit requirements are enforceable in accordance with their original terms and implementation of those requirements may not be postponed while the dispute resolution process is underway.) (2) The groundwater notification provision in the permit was adapted from the Agency's Subpart S proposal, see 55 Fed. Reg. 30,798 (July 27, 1990), which includes a notice requirement almost identical to the one at issue here. As a proposed regulation, the Subpart S proposal does not have the force and effect of law. Although the Agency is free to draw upon language in the proposal when writing the terms of an individual permit, the proposal is non-binding and "open to attack in any particular case." See General Motors Corporation, Delco Moraine Division, et al., RCRA Appeal Nos. 90-24, 90-25, at 11, n. 15 (EAB, Nov. 6, 1992); In re Envirosafe Services of Idaho, Inc., RCRA Appeal No. 88-41, at 6 (Adm'r, Apr.

3, 1990) (citing Panhandle Producers and Royalty Owners Ass'n v. Economic Regulator Admin., 822 F.2d 1105, 1110-1111 (D.C. Cir. 1987)); see also Simmons v. ICC, 757 F.2d 296, 300 (D.C. Cir. 1985) ("When an Agency promulgates a policy without the formalities required to make it a valid rule, it must * * * in subsequent adjudications, 'be prepared to support the policy just as if the policy statement had never been issued.'" (citation omitted)). In this case, the Environmental Appeals Board is not persuaded that the Region has performed a sufficiently thorough permit-specific analysis as to why this particular notice requirement is appropriate. See In re Sandoz Pharmaceuticals Corporation, RCRA Appeal No. 91-14, at 11 (EAB, July 9, 1992) ("Sandoz is correct that corrective action requirements should be tailored to site-specific conditions at the facility."), citing In re American Cyanamid Company, RCRA Appeal No. 89-8, at 7 (Adm'r, Aug. 5, 1991) ("EPA guidance documents emphasize the importance of tailoring RCRA corrective action requirements to site-specific conditions in order to avoid imposing unnecessary or inappropriate burdens upon the permittee."). Therefore, the Board is remanding the permit to the Region for further consideration, as specified in the decision. (3) For the reasons stated in the decision, the concerns expressed by the permittee over proposed permit conditions and other matters which the permittee believes the Region agreed to, but did not, change in the final permit are either unfounded or, based on clarifications of interpretation by the Region, no longer merit further consideration. Therefore, review of these concerns is not warranted.

Tailoring

Before Environmental Appeals Judges Nancy B. Firestone, Ronald L. McCallum and Edward E. Reich.

Opinion of the Board by Judge McCallum:

Allied-Signal, Inc. has petitioned for review of a permit issued by U.S. EPA Region III on September 28, 1990, pursuant to the Resource Conservation and Recovery Act of 1976 ("RCRA") as amended by the Hazardous and Solid Waste Amendments of 1984 ("HSWA"), 42 U.S.C §6901 *et seq*. Among other things, the permit establishes corrective action requirements for Allied-Signal's Frankford Plant, a phenol and acetone production facility located in Philadelphia, Pennsylvania. [1]

Under the rules that govern this proceeding, a RCRA permit ordinarily will not be reviewed unless it is based on a clearly erroneous

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[1] The entire RCRA permit issued to Allied-Signal consists of the portion issued by Region III, which addresses the HSWA requirements, and the portion issued by the Commonwealth of Pennsylvania, which addresses that portion of RCRA for which Pennsylvania is authorized pursuant to RCRA §3006(b).

finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review. *See* 40 C.F.R. §124.19. The preamble to §124.19 states that "this power of review should be only sparingly exercised," and that "most permit conditions should be finally determined at the Regional level * * *." 45 Fed. Reg. 33,412 (May 19, 1980). The burden of demonstrating that review is warranted is on the petitioner. *See In re Beazer East, Inc. and Koppers Industries, Inc.*, RCRA Appeal No. 91-25, at 3 (EAB, Mar. 18, 1993).

Allied Signal maintains that review of this permit is warranted on three grounds. First, Allied-Signal alleges that the permit's dispute resolution provision allows the Region to impose additional requirements without allowing Allied-Signal a meaningful opportunity to challenge such requirements before they are imposed, and therefore denies Allied-Signal due process. Second, Allied-Signal contends that the permit condition requiring notification of groundwater contamination to owners and residents of overlying property is unwarranted and unduly burdensome. Third, Allied-Signal asserts that the Region abused its discretion by failing to change language in various permit provisions to reflect the Region's responses to Allied-Signal's comments on the draft permit. For the reasons stated below, we conclude that the second ground for review raises legitimate concerns about the notification provision of the permit such that the permit should be remanded to the Region for further action. With respect to the remaining two grounds for review, we are not persuaded that they have any merit and, therefore, review is denied under §124.19.

A. *Dispute Resolution Provision*

Over the course of the corrective action process, Allied-Signal's permit requires it to submit various interim submissions to the Region for approval. For example, the permit requires Allied-Signal to submit a RCRA Facility Investigation ("RFI") [2] workplan detailing the investigations, tests, and other such matters that Allied-Signal proposes to use

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[2] In general terms, the RFI is the portion of the corrective action process where the permittee assesses releases previously identified by the Agency in the RCRA Facility Assessment by characterizing the nature and extent of the release. *See In re General Motors Corp.*, RCRA Appeal Nos. 90-24, 90-25, at 7, n.9 (EAB, Nov. 6, 1992); *In re American Cyanamid Co.*, RCRA Appeal No. 89-8, at 2, n.3 (Adm'r, Aug. 5, 1991).

to determine the extent and nature of any releases from solid waste management units ("SWMUs") and the need for corrective measures. *See* Permit Condition II.B. The permit further requires that upon approval of the RFI workplan, Allied-Signal shall fulfill the requirements of the plan and thereafter submit a report of the completed RFI work to the Region for approval. *Id.* The objective of the RFI report "shall be to ensure that the investigation data are sufficient in quality * * * and quantity to describe the nature and extent of contamination, potential threat to human health and the environment, and to support the Corrective Measures Study." Permit Attachment C, at C-16. The relationship among the various plans and reports are summarized by the Region in the following manner:

> The information required to be submitted to EPA in the form of reports (*e.g.*, the RFI and CMS Reports) is based on "tasks" which are initially described in the workplans for the studies on which such reports are based (*e.g.*, RFI Plan, CMS Plan). These workplans are prepared by the permittee and approved by EPA. These workplans describe, *inter alia*, location of wells, sampling parameters, soil conditions, surface water and sediment conditions, *etc.* Once the workplans and accompanying schedules are approved, the Permittee performs the specified tasks and generates the Report (*e.g.*, RFI Report, CMS Report).

Response to Petition for Review at 3-4.

Upon the Region's approval of a permittee's plans and reports, they become incorporated into the permit pursuant of permit condition I.C:

> All plans, reports, schedules, and other submissions required by the terms of this permit are, upon approval by the Regional Administrator, incorporated into this Permit. Any noncompliance with such approved studies, schedules, plans, reports, or other submissions shall be deemed noncompliance with this Permit.

Thus, once incorporated into the permit, the various interim submissions, like other permit provisions, become fully enforceable parts of the permit.

Allied-Signal's appeal focusses on the permit's dispute resolution provision, which establishes a procedure for resolving disputes over whether a particular interim submission, such as the RFI workplan or RFI report, should be approved by the Region and thus become an enforceable permit condition. Before turning to Allied-Signal's specific grievance with this provision, it will be useful to highlight some of its salient features. The complete text of the provision appears in the margin below. [3]

As written, the dispute resolution provision contemplates two possible scenarios following the Region's disapproval of a permittee's interim submission. The first is uncontroversial and arises whenever the permittee either agrees with the Region's deficiency determination or decides not to contest it. In either case, the permittee must submit a revised document to correct the deficiencies specified by the Region within 30 days of the deficiency determination. Upon timely submission of the revised document, the document becomes

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[3] The dispute resolution provision provides as follows:

> In the event of EPA disapproval in whole or in part of any submission requiring EPA approval, the Regional Administrator shall specify any deficiencies in writing. The Permittee shall modify the document to correct the deficiencies within thirty (30) days from receipt of disapproval by the Regional Administrator. The modified document shall be submitted to EPA in writing for review. Should the Permittee take exception to all or part of EPA's disapproval, the Permittee shall submit to the Regional Administrator a written statement of grounds for the exception within fifteen (15) days from receipt of EPA's disapproval. Representatives of EPA and the Permittee may confer in person or by telephone in an attempt to resolve any disagreement. In the event that resolution is not reached within forty-five (45) days from receipt of disapproval by the Regional Administrator, the Permittee shall revise the document as required by EPA. The Permittee, upon submission of the revised document, shall state whether or not he/she agrees in whole or in part with the revised document. In the event of any disagreement, the permit shall be modified in accordance with 40 C.F.R. §270.41 or 270.42 to incorporate the Regional Administrator's position on the matter in dispute.
>
> Permit Condition I.D.

incorporated into the permit as provided by permit condition I.C and is immediately enforceable. The formal permit modification provisions in 40 C.F.R. §§270.41 and 270.42 do not come into play under this scenario.

The second scenario is directly pertinent to the instant appeal. It takes place whenever the permittee decides to contest the deficiency determination. In that event, there begins a 45-day informal dispute resolution process in which the permittee must submit, within 15 days of the deficiency determination, a statement of grounds for taking exception to the determination. Following that, there is a 30-day period during which the permittee and the Region are expected to confer with each other to resolve their differences. If those efforts are not successful by the end of the 30-day period, then the permittee must revise the document in accordance with the Region's directions. Although at this point the revised document is implicitly approved by the Region, and therefore would be subject to immediate incorporation into the permit if permit condition I.C were the sole controlling consideration, the last sentence of the dispute resolution provision indicates otherwise. It provides, in effect, that the revised document will not become incorporated into the permit except in accordance with the formal permit modification procedures specified in §§270.41 and 270.42.[4] In other words, until those permit modification procedures have run their course, the revised document is not part of the permit and therefore is not immediately enforceable.

This latter aspect of the Allied-Signal dispute resolution provision represents a marked departure from widely followed permitting practices at EPA, which generally do not afford the permittee any recourse to the modification procedures set forth in §§270.41 and 270.42 whenever Regional permitting officials revise, or require revision

[4] The procedures specified in §§270.41 and 270.42 are general rules for effecting changes to permits (e.g., permit modifications) whether initiated by the permit issuer or by the permittee. Under these procedures, significant permit modifications are effected through a process that resembles issuance of a permit, with requirements for issuing a draft modification, an opportunity for public comment on the draft modification, and issuance of the final permit modification, which, in turn, is appealable to the Environmental Appeals Board for a final decision before it becomes effective. *See generally* 40 C.F.R. §270.41 and Part 124.

of, interim submissions. *See, e.g., In re General Electric Co.*, RCRA Appeal No. 91-7 (EAB, Apr. 13, 1993). Indeed, by reason of previous decisions of this Board and the Administrator, *In re General Electric Co., supra*, and *In re W.R. Grace & Company*, RCRA Appeal No. 89-28 (Adm'r, March 25, 1991), it is clearly established that the revision of an interim submission does not constitute a permit modification for purposes of §§270.41 and 270.42. Rather, incorporation of such a submission into the permit is in the nature of action taken to implement preexisting permit obligations, and for that reason does not represent a permit modification. *Id.*

> The fact that a Region revises the interim submission does not change this analysis. When the Region revises an interim submission, it is exercising its authority under the existing permit language to insure that the contemplated studies and investigations are adequate for selection of corrective remedies. The Region's revisions are part of a process contemplated in the original permit by which the general terms of the original permit are made more specific. Thus, when the Region makes such revisions, it is fulfilling the terms of the permit, not changing them. * * * [W]e conclude that Regional revisions to interim submissions are not appropriately characterized as modifications of the permit subject to the formal modification procedures of Section 270.41 and Part 124.

In re General Electric Co., supra at 11-12 (footnotes omitted).

Nevertheless, in making revisions to interim submissions, the Regions must satisfy certain minimum due process requirements: *i.e.*, they must (i) afford the permittee the opportunity to submit written statements to, and meet with, members of the permitting staff responsible for making the disputed revisions, (ii) afford the permittee an opportunity to present its objections in writing to the person in the Region who has authority for making the final permit decision, and (iii) issue a written decision based on the record that responds to the evidence and arguments of the permittee. *Id.* at 17 and 30. The permit modification procedures in §§270.41 and 270.42 by comparison are potentially much more elaborate, providing *inter alia* for a public hearing in certain cases and an opportunity to appeal the resulting decision to this tribunal. Therefore, when comparing the dispute

resolution provision in Allied-Signal's permit to the foregoing minimum due process requirements, it is clear that Allied-Signal's permit affords significantly more procedural process to the permittee than is required by law, as well as existing Agency practices and procedures.

Notwithstanding the additional process afforded by the dispute resolution provision, Allied-Signal still finds fault with the dispute resolution provision because, as best we are able to interpret its objections, it fears that regardless of the process afforded it in revising an interim submission, it may nevertheless be compelled, over its objections, to do testing or perform other burdensome and expensive requirements without any process whatsoever. In the words of Allied-Signal:

> EPA appears to have misunderstood Allied's concern with [the dispute resolution provision]. It is not the availability of comment and appeal in general that is the issue, but rather the question of whether the permit modification occurs before or after the time when the Permittee must conduct potentially significant additional studies. The revision of the document prior to permit modification is not *per se* objectionable, but when such revision must be preceded by, *e.g.*, additional testing or other expenditures, the burden placed on the Permittee is impermissibly onerous. * * * [W]here revision of the submission would involve more than simply revising a document, the Permittee should not be required to make the changes required by EPA prior to permit modification. Rather, EPA should require the changes through the permit modification process itself.

Petition for Review at 3-4.

As explained by the Region, however, there should be no occasion where, barring Allied-Signal's noncompliance with an existing permit requirement, Allied-Signal will not have an opportunity to challenge the revision of an interim submission before having to perform additional testing or incurring other expenditures required by the revision. The Region notes that there are two possible circum-

stances that might prompt it to direct Allied-Signal to perform testing following Allied-Signal's submission of an RFI report. *See* Response to Petition for Review at 4. One is a noncompliance situation where the Region's review of the RFI report reveals that Allied-Signal is in violation of a testing requirement already incorporated in the permit, such as in a previously approved RFI workplan. No new testing is involved in this situation, since the testing requirement already exists elsewhere in the permit. [5] The other situation is when the Region's review of the RFI report reveals that testing requirements not required by an existing permit provision are nevertheless necessary to achieve the goals of the corrective action process. *Id.* This situation involves new testing. It is only in the first circumstance where Allied-Signal would not be entitled to postpone implementation of the testing requirement until the dispute resolution procedures for revising the interim submission have run their course; however, as explained below, there is no deprivation of due process in that instance.

In the first situation, a revision of the report directing Allied-Signal to perform testing already required by the permit, but not yet complied with, would amount to no more than a restatement of an existing obligation. There is no reason why the mere restatement of that obligation in a revision of an interim submission should postpone implementation of the existing testing requirement. The regulations impose a continuing obligation on permittees to comply with all existing provisions of their permits, 40 C.F.R. §270.30(a). Any noncompliance with the permit, including noncompliance with requirements relating to the submission of documents and reports, can give rise to the immediate exercise of the Agency's enforcement authority. *See* RCRA §3008(a) (authorizing the Agency to enforce against violations of the Act, such as a failure to comply with mandatory permit requirements). This authority can be invoked at any time when a violation is believed to exist, and is therefore independent of the

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[5] Strictly speaking, there is no need in this situation for the Region to revise the permit in order to compel the permittee to comply with such a testing requirement. Since the testing requirement already exists elsewhere in the permit (for example, the RFI workplan), revising a report to add the testing requirement amounts to a redundancy. Nevertheless, for purposes of this decision we will assume that the Region has valid and compelling reasons (relating to administration of the permit) for duplicating an existing requirement.

Region's authority to revise a permittee's interim submissions. Consequently, the fact that the Region might restate an existing requirement in the context of revising a permittee's interim submission does not, without more, provide a basis for the permittee to postpone compliance with that requirement until the dispute resolution procedures for revising the interim submission have run their course. If Allied-Signal chooses not to comply with the requirement, the Region will presumably bring an enforcement action against it and all appropriate due process will be afforded to Allied-Signal in that context.

In the second situation, any requirement to perform testing that might arise from the Region's review and revision of an interim submission would flow from the Region's determination that compliance with the existing permit requirements, such as requirements contained in an approved RFI workplan, has failed to generate the type of information necessary to proceed to the next phase of the corrective action process. In that situation, any requirement or directive to perform testing would create a new obligation. The Region would have to implement the permit modification procedures before making the new testing requirement effective and enforceable. This is in fact exactly what the dispute resolution provision provides for, and this is also exactly how the Region interprets the provision. As explained by the Region,

> [I]f EPA determines that *additional* tasks not required by the approved workplan are necessary to achieve the goals of the study in issue, EPA may only require such tasks of Permittee by the permit modification process. Such process would, of course, provide Petitioner with the opportunity to be heard as to the appropriateness of the additional tasks. It is this opportunity which Petitioner appears to be seeking in its Petition, and which it already has.

Response to Petition for Review at 4. [6] It is clear, therefore, that in this

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[6] We hereby deem the Region's interpretation of the permit condition containing the dispute resolution provision as binding, thus eliminating Allied-Signal's concern. *See In re Owen Electric Steel Company of South Carolina*, RCRA Appeal No. 89-37, at 3, n.1 (Adm'r, Feb. 28, 1992) (The Administrator "deemed" the Agency's reading of the permit

(continued...)

second situation Allied-Signal's petition is grounded on an erroneous assumption, *i.e.*, that the permit modification procedures are not available before the testing requirement becomes mandatory. They are in fact available, and therefore Allied-Signal's petition for review does not raise any legitimate grounds for reviewing the dispute resolution provision of the permit. The available procedures in the circumstances described afford Allied-Signal the amount of process it has requested.

B. *Groundwater Contamination Notification*

A portion of the RFI Workplan/Investigation/Report Requirements in Allied-Signal's permit is entitled "Community Relations." One of the requirements of this Community Relations section provides for giving notification to neighboring property owners and residents if contaminants have migrated beyond the facility boundary:

> If, upon completion of the RFI, the Permittee discovers that hazardous constituents in the groundwater that may have been released from a SWMU at the Facility have migrated beyond the Facility boundary in concentrations that exceed health-based levels, the Permittee may be required within fifteen (15) calendar days of such discovery, [to] provide written notice to the Regional Administrator and any person who owns or resides on the land which overlies the contaminated groundwater.

Permit Attachment C, Section A.6.b (footnote omitted).

Allied-Signal contends that this provision is unreasonable because the Frankford Plant is located in a high density commercial and residential area where the groundwater is neither used nor usable for drinking water and therefore there is no likely route of human expo-

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[6](...continued)
to be authoritative and binding, since it flowed directly from the language of the permit and was reasonable).

sure to the contamination. [7] It argues further that the plant's location makes the notice requirement onerous since it would require Allied-Signal to 1) gain access to and conduct groundwater sampling at numerous off-site locations to determine if contamination came from one of its SWMUs, and 2) determine the identities and addresses of every owner and resident of overlying property, both of which "could be extremely time-consuming and difficult, if not impossible, tasks." Petition for Review at 8. We construe Allied-Signal's arguments as a challenge to the necessity of the notice requirement, and hence to the adequacy of the Region's justification for including the provision in the permit. [8]

The Region responds that the notification requirement is reasonable, despite the fact that the groundwater is not currently used for drinking water and notwithstanding any unavoidable, but necessary, burdens it may impose upon Allied-Signal. It argues that notice serves the dual purposes of (i) informing present and future users of the potential health risks of the contaminated groundwater and (ii) providing those users with an opportunity to comment upon potential response actions. Response to Petition for Review at 6. The Region also points out that some individuals may be using the groundwater for purposes other than drinking, and their interests must also be factored into the decision to include the notice requirement. *Id.* at 7. To give validation to these purposes, the Region cites the Agency's Subpart S proposal, *see* 55 Fed. Reg. 30,798 (July 27, 1990), which includes a

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[7] Allied-Signal also argues that because the groundwater is not a source of drinking water, the use of health-based action levels that are linked to drinking water to trigger the notice requirement is inappropriate, and in any event the permit definition of health-based levels is too vague. We agree with the Region that this issue was not raised in Allied-Signal's comments on the draft permit, even though it was reasonably ascertainable at that time, and therefore is not preserved for review. *See* 40 C.F.R. §§124.13 and 124.19(a); *In re Pollution Control Industries of Indiana, Inc.*, RCRA Appeal No. 92-3, at 3-4 (EAB, Aug. 5, 1992).

[8] Although the potential recipients of notice under the permit provision include the Regional Administrator as well as neighbors of the permittee's facility, Allied-Signal does not specifically voice objection to giving notice to the Regional Administrator. Accordingly, we interpret Allied-Signal's objections as being confined to giving notice to the neighboring residents and property owners.

notice requirement almost identical to the one at issue here. [9] As stated in the preamble to this still-pending proposal, the notice requirement is intended "to provide adequate awareness for persons who are, or who could potentially be exposed to the contaminated ground water." Response to Petition for Review at 6 (quoting 55 Fed. Reg. 30,798, 30,845 (July 27, 1990)). Except for this reference to the Subpart S proposal, no specific legal authority is cited by the Region for including the notice provision in the permit. Because we are not fully persuaded by the Region's stated rationale for including this condition in the permit, we are remanding this aspect of the permit to the Region for further action, as explained below.

We do not question the Agency's authority to issue a rule containing a notice requirement along the lines of the permit's notice requirement. The Agency has general rulemaking authority under RCRA to "prescribe * * * such regulations as are necessary to carry out [its] functions under [the Act]." RCRA §2002(a)(1), 42 U.S.C.A. §6912(a)(1). Those functions include, *inter alia*, "assuring that hazardous waste management practices are conducted in a manner which protects human health and the environment," [10] and establishing measures to carry out the corrective action provisions of RCRA contained in RCRA §3004(u) ("Continuing releases at permitted facilities") and RCRA §3004-(v) ("Corrective action beyond facility boundary"). Under the latter of these two sections, RCRA §3004(v), the Agency may require corrective action "beyond the facility boundary where necessary to protect human health and the environment unless the [permittee] demonstrates to the satisfaction of the Administrator that, despite the [permittee's] best

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[9] Proposed 40 C.F.R. §265.560 provides:

> If at any time the permitted [sic] discovers that hazardous constituents in ground water that may have been released from a solid waste management unit at the facility have migrated beyond the facility boundary in concentrations that exceed action levels, * * * the permittee shall, within fifteen days of discovery, provide written notice to the Regional Administrator and any person who owns or resides on the land which overlies the contaminated ground water.

55 Fed. Reg. at 30,882.

[10] RCRA §1003(a)(4), 42 U.S.C.A. §6902(a)(4).

efforts, the [permittee] was unable to obtain the necessary permission to undertake such action." 42 U.S.C. §6924(v). [11] By making the duty to perform remedial action conditional upon obtaining permission from neighboring residents and property owners, RCRA §3004(v) implicitly, but unequivocally, contemplates that some form of notice to those individuals may be necessary during some phase of the corrective action process *prior to* obtaining their permission to enter upon the property and commencing remedial action. Therefore, as a general proposition, properly promulgated regulations containing notice requirements are easily justifiable under the Act.

The proposed Subpart S rule is intended to address the corrective action provisions of the Act. 55 Fed. Reg. 30,799 ("This rule defines both the procedural and substantive requirements associated with sections 3004(u) and 3004(v)."). What the Region fails to recognize, however, is that the regulations in the proposed Subpart S rule are merely *proposals*, not final regulations, and therefore they do not have the force of law. They cannot be used to foreclose discussion of whether it is proper to include them, or provisions similar to them, in an individual permit. At most, they represent policy guidance by the Agency, to be followed if appropriate in the circumstances of the individual permit. [12] This is not to say that the Agency is barred from drawing upon language in proposed regulations such as the Subpart S regulations when writing the terms of an individual permit. Clearly, it may do that; however, since the proposed regulations are non-binding, they are "open to attack in any particular case." *See In re General Motors Corporation, Delco Moraine Division, et al.*, RCRA Appeal Nos. 90-24, 90-25, at 11, n. 15 (EAB, Nov. 6, 1992) (citing with approval the

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[11] Corrective action beyond the facility boundary can be implemented through a RCRA permit. *See* 40 C.F.R. §264.101(c) and §270.32(b)(1); *In re General Electric Company*, RCRA Appeal No. 91-7, at 12-16 (Remand Order, EAB, Nov. 6, 1992).

[12] As noted in previous decisions of this Board, the proposed Subpart S regulations represent the Agency's most recent, comprehensive statement on corrective action. *See, e.g., In re Beazer East, Inc. et al.*, RCRA Appeal No. 91-25, at 5, n.6 (EAB, March 18, 1993); *In re General Electric Company*, RCRA Appeal No. 91-7, at 17, n.9 (EAB, November 6, 1992).

"Friedman Memorandum");[13] *In re Envirosafe Services of Idaho, Inc.*, RCRA Appeal No. 88-41, at 6 (Adm'r, Apr. 3, 1990) (citing *Panhandle Producers and Royalty Owners Ass'n v. Economic Regulator Admin.*, 822 F.2d 1105, 1110-1111 (D.C. Cir. 1987)); *see also Simmons v. ICC*, 757 F.2d 296, 300 (D.C. Cir. 1985) ("When an Agency promulgates a policy without the formalities required to make it a valid rule, it must * * * in subsequent adjudications, 'be prepared to support the policy just as if the policy statement had never been issued.'" (citation omitted)). Consequently, whenever the Agency adopts a requirement from the Subpart S proposals, it must be prepared to "consider[] and reject[] proffered counterarguments." [14] *In re Envirosafe Services of Idaho, Inc., supra* at 6.

In this case, we are not persuaded that the Region has performed a thorough enough, permit-specific analysis as to why this particular notice requirement is appropriate. *See In re Sandoz Pharmaceuticals Corporation*, RCRA Appeal No. 91-14, at 11 (EAB, July 9, 1992) ("Sandoz is correct that corrective action requirements should be tailored to site-specific conditions at the facility."), citing *In re American Cyanamid Company*, RCRA Appeal No. 89-8, at 7 (Adm'r, Aug. 5, 1991) ("EPA guidance documents emphasize the importance of tailoring RCRA corrective action requirements to site-specific conditions in order to avoid imposing unnecessary or inappropriate burdens upon the permittee."). The notice provision crafted by the Region is unclear

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[13] The Friedman Memorandum is a legal guidance document issued to EPA Regional Counsels and RCRA Branch Chiefs, which indicates that although most of the Subpart S proposal may be used as guidance, any specific permit requirements based on the proposal must be justified on a case-by-case basis. *See* Memorandum, dated March 27, 1991, from Lisa K. Friedman, EPA Associate General Counsel, Solid Waste and Emergency Response Division, to Regional Counsels, RCRA Branch Chiefs, regarding "Use of Proposed Subpart S Corrective Action Rule as Guidance Pending Promulgation of Final Rule," at 3.

[14] In *In re Sandoz Pharmaceuticals Corporation*, RCRA Appeal No. 91-14, at 8-11 (EAB, July 9, 1992), the Region included a permit provision similar to one contained in the Subpart S rule, but deviated from it in material respects. We ruled that the deviation required explanation in view of the fact that the Subpart S rule "constitutes the Agency's most recent, comprehensive statement of its views regarding corrective action under RCRA §3004(u)." *Id.* at 9. In so ruling, we did not intend to imply that strict adherence to the Subpart S rule is sufficient justification by itself to validate inclusion of such a requirement in a permit. To do that would impermissibly raise the status of the proposed Subpart S rule to that of a legally binding final rule.

as to precisely what circumstances will trigger the notice requirement--notice "may be" required if contaminants in an off-site release exceed specified health-based levels. If the statutory authority for including a notice provision of this type derives principally from RCRA §3004(v), which seems logical under the circumstances, or from RCRA §3005(c)(3) – the so-called omnibus provision [15] – then an analysis of either section would lead one to the conclusion that the duty to give notice should be based on whether notice is necessary to protect human health and the environment. However, it is by no means clear that such a determination is required by the notice provision in Allied-Signal's permit. The Subpart S proposal relied upon by the Region indicates that risk-or health-based levels are not conclusive on the issue of protecting human health and the environment. *See* proposed 40 C.F.R. §264.520, 55 Fed. Reg. at 30,875. For example, under the Subpart S proposal, the Region has the flexibility to determine either that (i) a release in excess of a risk-based level does not require corrective action to protect human health and the environment or (ii) that a release below the threshold nevertheless requires corrective action to protect human health and the environment. *Id.* In view of the Region's reliance on the Subpart S proposal, it is reasonable to assume that it would interpret the section in a similar manner, thus raising the concern that notice might be required without any clear nexus to protection of human health and the environment.

Since we cannot conclude that the notice requirement challenged by Allied-Signal is properly linked to protection of human health and the environment, we are remanding the permit to the Region. On

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[15] The analysis is no different if instead of RCRA §3004(v), the statutory authority for the including the notice provision in the permit is deemed to be the so-called omnibus clause in RCRA §3005(c)(3), 42 U.S.C. §6925 ("Each permit issued under this section shall contain such terms and conditions as the Administrator (or the State) determines necessary to protect human health and the environment."). *See also* 40 C.F.R. §270.32(b)(2) (same). The omnibus clause and RCRA §3004(v) both require, as a condition precedent to implementation, a determination of necessity based on protection of "human health and the environment."

remand, the Region may either eliminate the permit condition [16] or revise it so that notice-giving is only a requirement if a determination has been made that, based on the record, notice is necessary to protect human health and the environment.

C. *Failure to Change Permit Language*

Allied-Signal contends that the Region abused its discretion by failing to change language in the permit to reflect the Region's responses to Allied-Signal's comments on the draft permit. Specifically, Allied-Signal states that "[f]or nine of the permit conditions for which Allied submitted Comments on the draft permit, EPA's Response to Comments accompanying the final permit expressed agreement with Allied's Comments; in each of these cases, however, the Agency refused to change the permit language to accommodate Allied's concerns." Petition for Review at 8. Although Allied-Signal asserts that the Region failed to change the language of nine permit conditions, it is pursuing its request for revised permit language for only three of them. Petition for Review at 9.

Permit condition I.C., as noted earlier, provides that upon approval by the Region, all plans, reports, schedules and other submissions required by the permit are incorporated into the permit. This condition further provides that "[i]n the event of unforeseen circumstances beyond the control of the Permittee which can not be overcome by due diligence, the Permittee may request a change, subject to Regional Administrator approval, in the previously approved plans, reports, schedules or other submissions."

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[16] Removal of the permit condition would not relieve Allied-Signal from the duty to give notice under appropriate circumstances in accordance with other permit terms. For example, Permit Condition II.H. requires Allied-Signal to use "its best efforts to obtain access to property beyond the boundaries of the Facility at which corrective action is required by this permit." Notification in some form is implicit in this requirement. Also, if the Region determines that such a release requires corrective action, Permit Attachment E, Section 5.d(e)(iv), requires Allied-Signal to complete a corrective measures study for the release, reporting on, *inter alia*, whether "access, easements [and a] right-of-way" are available to implement the selected corrective measure. Again, notification in some form is implicit in this requirement.

Allied-Signal contends that the "unforeseen circumstances" language "amounts to a force majeure provision, is too restrictive, and should be revised to allow for changes under other circumstances." Petition for Review at 10. In its comments on the draft permit, Allied-Signal requested that this provision be revised to allow any changes to approved plans and schedules to be made through a Class I permit modification under 40 C.F.R. §270.42(a). In response to the comment, the Region stated that:

> EPA does not agree with the Permittee's assertion that this permit condition is restrictive. EPA accepts all reasonable requests to revise plans and submissions. In addition, the Permittee always has the opportunity to submit a Class I permit modification. Accordingly, this provision will remain as written in the draft permit.

Allied-Signal contends if permit condition I.C is not changed to reflect the Region's intention to accept all reasonable requests to revise plans and submissions, Allied Signal must choose whether to follow the language of I.C or the more flexible language in the response to comments if it seeks a modification of an approved submission. In other words, Allied-Signal is concerned that the language of the permit will prevent the Region from fulfilling its promise to accept all reasonable requests to revise plans and submissions.

We conclude that Allied-Signal's concern is unfounded for two reasons. First, the Region's statement in its response to comments that it will accept all reasonable requests to revise plans and submissions merely restates what the Region is already required to do, namely, act reasonably in implementing all permit conditions. In any event, we hereby deem the Region's response to be an authoritative and binding interpretation of the permit condition at issue, thus eliminating Allied-Signal's concern. *See In re General Motors Corporation, Delco Moraine Division, et al., supra* at 11, n. 15 (2nd ¶) (EAB, Nov. 6, 1992); *In re*

Owen Electric Steel Company of South Carolina, RCRA Appeal No. 89-37, at 3, n.1 (Adm'r, Feb. 28, 1992);. [17]

Second, we agree with the Region that even if Allied-Signal doubts the Region's intent to accept all reasonable requests to revise plans and submissions in circumstances meeting the criteria of permit condition I.C, Allied-Signal may seek such revisions through formal permit modification procedures. Under permit condition I.C, approved plans and submissions become an enforceable part of the permit. The permit itself provides, in condition I.F, that its terms may be modified in accordance with 40 C.F.R. §§270.41 and 270.42. Thus, permit condition I.C is not the exclusive means available for Allied-Signal to seek revisions to plans and submissions incorporated into the permit by the Region's approval. [18] Therefore, review of this condition is denied.

Allied-Signal also seeks review of permit condition II.B.2, which states that the RFI Plan "shall comply" with Attachment C, the RFI Plan/Investigation/Report Requirements, and permit condition II.C.2, which provides that the Corrective Measures Study "shall comply" with the requirements of Attachment E, the Corrective Measures Study. Allied-Signal argues that in order to allow the flexibility necessary for the corrective action process, these permit conditions should be changed to allow Attachments C and E to be used as guidelines, and

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[17] Concerns as to the implementation of permit terms are not normally within the Board's purview. *See In re General Electric Co.*, RCRA Appeal No. 91-7, at 14 (EAB, Nov. 6, 1992) ("[T]he role of the Board is to determine whether the permit was appropriately issued. The Board has no oversight responsibility for the implementation of a validly issued permit."). To the extent that Allied-Signal's concern relates to the implementation of permit condition I.C, it is beyond the purview of the Board in this appeal.

[18] The Region correctly notes that it has no obligation to provide an opportunity for permit modification beyond those provided by 40 C.F.R. §§270.41 and 270.42 of the regulations, as set forth in permit condition I.F. Nevertheless, the Region has provided, in effect, an additional opportunity in the "unforeseen circumstances" provision of permit condition I.C. Thus, under the permit as written, Allied-Signal can proceed under permit condition I.C, which allows modifications in "unforeseen circumstances beyond the control of the Permittee which cannot be overcome by due diligence," or it can proceed under permit condition I.F, which allows permit modifications in a much broader variety of circumstances than under permit condition I.C.

not "followed to the letter." Petition for Review at 12. Although the response to comments indicates that the Attachments are intended to be used as guidance only, Allied-Signal contends that unless the "shall comply" language in the permit is changed to reflect the Region's stated intent, Allied-Signal could be subject to citizen suits under RCRA §7002, 42 U.S.C. §6972. *Id.* at 13.

The Region admits that the response to comments has created some confusion. In response to the petition for review, the Region clarifies its intent, stating that the Attachments are not themselves workplans, but are instead checklists of the elements that must be addressed in a site-specific workplan. Response to Petition for Review at 11. The Region explains that because Attachments C and E "are meant for universal application in designing a workplan, they are intentionally generic and broad." *Id.* According to the Region, Attachments C and E, however, also allow Allied-Signal the flexibility to tailor the required workplan to the Frankford Plant by addressing each element with information specific to that facility. *Id.*

In light of the Region's explanation of what use must be made of the Attachments to establish compliance with the permit, we conclude that Allied-Signal's concerns do not merit formal review. As explained by the Region, the permit reasonably requires Allied-Signal to comply with its terms by addressing each element of the Attachments with site-specific information. This process allows the party with the greatest familiarity with the facility, Allied-Signal, to apply the generic elements of the Attachments to the facility to create a facility-specific workplan. We conclude that the approach set forth in the permit as interpreted by the Region is sufficiently flexible to allow full implementation of the corrective action process specific to the needs of the Frankford Plant. [19] Based on the Region's interpretation of these permit conditions in its response to the petition for review, which we adopt as binding on the Agency, *see In re Owen Electric Steel Company of South Carolina*, *supra*, we conclude that review of these permit conditions is not warranted.

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[19] *See In re Beazer East, Inc. and Koppers Industries, Inc.*, RCRA Appeal No. 91-25, at 7 (EAB, Mar. 18, 1993) (Region's assurance that RFI and CMS workplan outlines were intended as guidelines was provided in the permit language and was sufficient to allow consideration of site-specific circumstances).

Conclusion

The notification issue discussed in part B, above, is remanded for further proceedings consistent with this decision. [20] The permit condition containing the notification requirement shall remain stayed on remand. The Region shall give public notice of the remand under 40 C.F.R §124.10. Appeal of the remand decision shall not be required to exhaust administrative remedies under §124.19(f)(1)(iii) of the rules. Review of the other two issues raised by Allied-Signal is hereby denied for the reasons set forth above.

So ordered.

[20] Although 40 C.F.R. §124.19 contemplates that additional briefing typically will be submitted upon a grant of a petition for review, a direct remand without additional submissions is appropriate where, as here, it does not appear as though further briefs on appeal would shed light on the issues addressed on remand. *In re Beazer East, Inc. and Koppers Industries, Inc.*, RCRA Appeal No. 91-25, at 15 (EAB, March 18, 1993).

CERTIFICATE OF SERVICE

I hereby certify that copies of the forgoing Order Denying Review in Part and Remanding in Part in the matter of Allied-Signal, Inc. (Frankford Plant), RCRA Appeal No. 90-27, were sent to the following persons in the manner indicated:

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(Slip Opinion)

NOTICE: This opinion is subject to formal revision before publication. Readers are requested to notify the Environmental Appeals Board, U.S. Environmental Protection Agency, Washington, D.C. 20460, of any typographical or other formal errors, in order that corrections may be made before publication.

BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In the Matter of:	
General Electric Company	RCRA Appeal No. 91-7
Permittee	
Permit No. MAD 002 084 093	

[Decided April 13, 1993]

REMAND ORDER

Before Environmental Appeals Judges Nancy B. Firestone, Ronald L. McCallum, and Edward E. Reich.

GENERAL ELECTRIC COMPANY

RCRA Appeal No. 91-7

REMAND ORDER

Decided April 13, 1993

Syllabus

The Environmental Appeals Board granted review of a petition filed by General Electric Company challenging the corrective action portion of a RCRA permit issued by EPA Region I. All of the issues in the case except one were disposed of in an earlier order. The one issue remaining for disposition relates to the Region's authority under the permit to revise reports and proposals submitted by GE in accordance with the permit. Under the permit, GE is required to determine the extent of contamination at the facility, the best methods to clean up such contamination, and the best way to carry out certain interim measures for addressing imminent threats to human health and the environment from the contamination. To accomplish these goals, the permit requires GE to submit proposals for completing a RCRA Facility Investigation (RFI), a Corrective Measures Study (CMS), and a number of interim measures to deal with imminent threats. When GE has completed the RFI, the CMS, and the interim measures, the permit also requires GE to prepare reports summarizing the work that has been done and if appropriate recommending that more work be done. The proposals and reports to be submitted by GE ("interim submissions") substantially define GE's obligations under the original permit. Such interim submissions are subject to the Region's approval, and the Region is authorized under the permit to revise them or to require GE to revise them. By revising GE's interim measures, the Region can require GE to do more work than GE thought was necessary to fulfill the requirements of the original permit. Once the Region has approved an interim submission, any work requirements contained therein become enforceable obligations under the permit.

GE argues that a revision by the Region of one of GE's interim submissions will constitute a modification of the permit and is therefore subject to the formal modification procedures at 40 CFR §270.41 and 40 CFR Part 124. GE also argues that, even if a revision of an interim submission does not constitute a permit modification for purposes of Section 270.41, such a revision does constitute a deprivation of property within the meaning of the Constitutional due process clause. GE argues, therefore, that it must be given notice and an opportunity for a hearing before the deprivation may be accomplished.

Held: A revision by the Region of an interim submission will not constitute a modification of the permit subject to the formal modification procedures at 40 CFR §270.41 and 40 CFR Part 124. However, before the Region approves the revised interim submission, it must give GE the opportunity for a hearing, and the procedures for such a hearing should be set out in GE's permit. The hearing procedures should be patterned after the dispute resolution provision described by the Region at oral argument but modified as necessary to conform with this decision. Thus, the dispute resolution provision to be inserted into GE's permit should provide that, if GE and the Regional permitting staff cannot resolve the dispute, GE will have the right to submit written arguments and evidence to the person in the Region who has authority to make the final permit decision for the Region, either the Regional Administrator or the person to whom the Regional Administrator has delegated authority to make such decisions. The dispute resolution provision, however, need not grant GE the right to make an oral presentation to the final decisionmaker.

Before Environmental Appeals Judges Nancy B. Firestone, Ronald L. McCallum, and Edward E. Reich.

Opinion of the Board by Judge Reich:

On March 13, 1992, the Environmental Appeals Board granted review of a petition filed by General Electric Company challenging the corrective action portion of a permit issued by EPA Region I under the Hazardous and Solid Waste Amendments ("HSWA") to the Resource Conservation and Recovery Act of 1976 ("RCRA"), 42 U.S.C. §§6901-6992k. The permit, which was issued on February 8, 1991, is for GE's manufacturing facility in Pittsfield, Massachusetts. [1] On November 6, 1992, the Board issued a Remand Order remanding certain issues raised by GE, dismissing other issues, and reserving judgment on one issue. The issue on which the Board reserved judgment relates to the absence in the permit of a specified procedure for handling disputes between GE and the Region over the Region's revisions of proposals and reports ("interim submissions") submitted by GE in accordance with the permit. For the reasons set forth below, the Board is remanding this issue to the Regional Administrator with instructions to change the language of the subject permit to add a procedure for resolving disputes over revisions of interim submissions.

I. *BACKGROUND*

The 1984 HSWA amendments added Section 3004(u) to RCRA, providing that any person seeking a permit under Section 3005(c) of RCRA for a treatment, storage, or disposal facility after November 8, 1984, must perform any "corrective action" necessary to clean up releases of hazardous wastes or hazardous constituents from any solid waste management unit (SWMU) at the facility. This requirement is implemented in the regulations at 40 CFR §264.101.

A permittee's corrective action work at a facility typically takes place in three stages. In the first stage, the permittee performs a RCRA Facility Investigation (RFI), the purpose of which is to determine the

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[1] The non-HSWA portion of the permit was issued by the Commonwealth of Massachusetts, an authorized state under RCRA §3006(b), 42 U.S.C. §6926(b).

extent and nature of any releases from SWMUs at the facility. In the second stage, the permittee performs a Corrective Measures Study (CMS), the purpose of which is to investigate potential corrective measures for cleaning up those releases. On the basis of that investigation, corrective measures are selected by the Region and incorporated into the permit through the formal modification procedures at 40 CFR §270.41 and 40 C.F.R. Part 124. The third and final stage of corrective action is implementation of the corrective measures selected by the Region. In addition, when circumstances warrant, the permittee is required to take corrective measures before the RFI and CMS are completed to address any imminent hazards to human health or the environment. Such corrective measures are called interim measures.

When the corrective action necessary to address releases at the site cannot be completed prior to the issuance of a permit, the permit contains a schedule of compliance, which dictates the corrective action tasks that need to be done and the time periods in which those tasks must be completed. [2] Frequently, at the time the permit is issued, the extent and nature of the contamination at the facility and the most effective ways of cleaning up the contamination are not fully known. As a result, when the Agency issues the permit, it does not have sufficient information to include a detailed schedule of compliance for the RFI or CMS to be performed at the site. For this reason, the obligations in the schedule of compliance relating to the RFI and CMS are written in general terms, with the permit providing that the details of those obligations will be filled in later as more information about the site becomes available. Once such information becomes available, the permittee is required to propose plans for carrying out the various steps of the RFI and CMS. The permittee must also submit reports on the work it has completed. The plans and reports submitted by the permittee must be approved by the Regional Administrator, who is authorized to revise or require the permittee to revise them. Once the Regional Administrator approves these interim submissions, they become enforceable obligations of the permit. Thus, the permittee's

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[2] *See* RCRA Section 3004(u), 42 U.S.C. 6924 ("Permits issued under section 6925 of this title shall contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) * * *.")

interim submissions are used to flesh out the more general obligations in the original permit.

The permit issued to GE follows this typical pattern. It sets up an extended schedule of compliance according to which GE is required to submit proposals and reports to the Region. First, GE's permit requires submission of a detailed proposal for a RCRA Facility Investigation to investigate releases from 106 identified SWMUs and of the sediments, surface water, and 100-year floodplain of the Housatonic River. Final Permit, Exhibit A to GE's Petition for Review, at 14-81. Under the permit, GE's RFI proposal is subject to review and approval by the Region, and the Region is authorized to revise or require revision of the proposal. Final Permit, at 86-87. Thus, by revising the proposal, the Region could, for example, require GE to dig more groundwater detection wells to determine the extent of a particular release than GE thought necessary. After GE has performed the investigation requirements in the approved RFI plan, it must submit an RFI report. The report is also subject to review and approval by the Region, and the Region is authorized to revise or require revision of the report. If the report concludes that further investigation is necessary and if the Region approves the report, the permittee must implement such further investigation according to the schedules contained in the report. Final Permit, at 97.

As part of the RFI, GE is required by the permit to submit a proposal for a Health and Environmental Assessment (HEA), identifying the human populations and/or environmental systems that may be exposed to hazardous waste and/or hazardous constituents released at the facility. Final Permit, at 73. Upon completion of the HEA, GE is required to submit an HEA Report, which is separate from the RFI report. The HEA Proposal and the HEA Report are both subject to review and approval by the Region, and the Region is authorized to revise or require revision of either of them. Final Permit, at 89.

At the time GE submits the RFI Report, GE is also required to submit a Media Protection Standards Proposal, containing at a minimum, proposed media protection standards (clean-up standards) for all releases identified during the RFI. The Region will then either approve or disapprove the proposal. If the Region disapproves the proposal, it is authorized to revise or require revision of the media

protection standards proposed by GE. Final Permit, at 103-04. On the basis of the media protection standards approved by the Region, GE will then submit a Corrective Measures Study Proposal. The purpose of the Corrective Measures Study Proposal is to identify, and justify the selection of, the corrective measures it will consider as potential methods of achieving the approved Media Protection Standards. Final Permit, 104-05. The Corrective Measures Study Proposal is subject to review and approval by the Region, and the Region is authorized to revise or require revision of the proposal. Thus, by revising the Corrective Measures Study Proposal, the Region could require GE to investigate the possibility of using a corrective measure not identified in GE's proposal. Once the Corrective Measures Study has been approved by the Region and performed by GE, the permit requires GE to submit a Corrective Measures Study Report. Among other things, the report must include an assessment of which corrective measure alternatives could be pursued to meet the Media Protection Standards. The Report is subject to review and approval by the Region, and the Region is authorized to revise or require revision of the report. On the basis of the report and other factors, the Region will select the corrective measures necessary to remedy the releases at the facility.

GE's permit requires it to carry out certain interim measures. Final Permit, at 108. It also requires GE to submit a proposal detailing the methodology and procedures GE will follow to carry out these interim measures. *Id.*[3] This proposal is also subject to the review and approval of the Region, and the Region is authorized to revise or require revision of the proposal. For example, the Region could require GE to use a different methodology to carry out a particular interim measure. Final Permit, at 112. Once the Region approves the proposal, GE will be required to carry out the interim measures using the methodologies and procedures specified in the approved plan. After that, GE will be required to submit an Interim Measures Report, which must summarize all work performed to carry out the interim measures and must include an evaluation of the effectiveness of the interim measures performed and the need for further work. If the Interim Measures Report concludes that further work is necessary, the

[3] Although the Region has agreed to delete some of the interim measures specified in the permit and the Board has remanded others to the Region for reconsideration, several of the interim measures originally specified in the permit remain.

report must include a proposed scope of further work, appropriate protocols, and schedules. The Interim Measures Report is subject to review and approval by the Region, and the Region is authorized to revise or require revision of the report. Thus, by revising the report, the Region might require GE to perform supplemental work to correct a particular problem that was not solved by the original interim measure. Final Permit, at 112-13. [4]

GE argues that revisions of its interim submissions constitute modifications of the permit and are therefore subject to the formal modification procedures at 40 CFR §270.41 and 40 CFR Part 124. A permit modification under those procedures can be appealed to the Environmental Appeals Board under 40 CFR § 124.19(a) and then to the U.S. Court of Appeals under RCRA Section 7006(b), 42 U.S.C. §6976. GE also argues that, even if a revision of an interim submission does not constitute a permit modification for purposes of Section 270.41, such a revision does constitute a deprivation of property within the meaning of the Constitutional due process clause. GE argues, therefore, that it must be given notice and an opportunity for a hearing before the deprivation may be accomplished. GE's challenge does not extend to the Region's ultimate selection of the corrective remedies to be performed at the site, since those corrective remedies become part of the permit through the formal permit modification procedures at 40 CFR §270.41 and 40 CFR Part 124.

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[4] This case is to be distinguished from *General Motors Corporation, Delco Moraine Division (North & South Plants)*, RCRA Appeal Nos. 90-24, 90-25 (EAB, November 6, 1992). The corrective action permit at issue in that case contained a provision that authorized the Regional Administrator to revise the permit's schedule of compliance to require the permittee to perform interim measures whenever the Regional Administrator determined that a release posed a threat to human health and the environment. The permit provided that such revisions to the schedule of compliance were to be accomplished through either the formal modification procedures at 40 CFR §270.41 or an abbreviated modification procedure described in the permit. The Board directed the Region to remove the abbreviated procedure from the permit because it had not been adopted by regulation and to provide that Agency-initiated modifications to incorporate interim measures must proceed according to the existing modification procedures in 40 CFR §270.41. *Id.* at 17. The holding in *General Motors*, however, has no bearing on this case because here, the interim measures were specified in the original schedule of compliance, while in *General Motors* the schedule of compliance did not specify any interim measures.

Permit conditions like the ones challenged here were considered by the Agency in *In re W.R. Grace & Company*, RCRA Appeal No. 89-28 (Administrator, March 25, 1991). In that case, the permittee argued that revisions of interim submissions by the Regional Administrator constituted permit modifications and must therefore conform to the formal modification procedures at 40 CFR §§270.41 & 124.5. Under those procedures, the modified portion of the permit is treated like a draft permit and is subject to the procedures in 40 CFR Part 124 for issuing draft permits. 40 CFR §124.5(c). If the Regional Administrator proceeds with a modification over the objections of the permittee, the permittee may appeal the result to the Environmental Appeals Board under 40 CFR §124.19(a), and it may appeal the Board's decision to the Court of Appeals under RCRA §7006(b), 42 U.S.C. §6976(b). The Administrator, however, rejected the permittee's argument that the Agency is constrained to follow these formal permit modification rules in revising an interim submission. He concluded that the "Regional revision of interim submissions does not conflict with the Agency's permit modification rules because such submissions are not part of the permit at the time of the Region's review and revision." *Grace*, RCRA Appeal No. 89-28, at 3.

The permittee in *Grace* also argued that by not subjecting Regional revisions of interim submissions to formal modification procedures, the permit deprived the permittee of its property without due process of law. The Administrator also rejected this argument, observing that:

> Although Grace invokes the constitutional due process clause, the permit on its face provides an opportunity for adequate process because Grace will be able to make its views known through its initial submissions as well as any subsequent communications with the

> Region, and it should receive a reasoned response to those views from the Region.

Id. at 3 (footnotes omitted). [5]

On November 3, 1992, the Board granted review and scheduled oral argument in a case involving the same issues decided in the *Grace* case. *In re Allied-Signal, Inc. (Metropolis, Illinois)*, RCRA Appeal No. 92-1 (EAB, November 3, 1992)(Order Granting Review and Scheduling Oral Argument). [6] In the order granting review, the Board noted that "[a]lthough *Grace* is presumptively conclusive of the permit modification and due process issues raised here by Allied, the Environmental Appeals Board is nevertheless concerned that *Grace* may require further explication and, also, that Allied's petition may raise related but distinguishable issues from those that were decided by *Grace*." *Id.* at 3.

On November 6, 1992, the Environmental Appeals Board issued an order disposing of all of the issues raise in GE's petition, except the issue of whether GE's permit should contain a dispute resolution procedure for resolving disagreements between GE and the Region over Regional revisions of interim submissions. With respect to this issue, the Board reserved judgment because the Board had granted review of the same issue in the *Allied-Signal* case discussed above. In its November 6, 1992 order, the Board invited the parties in this appeal to submit briefs on the questions that had been designated in the order scheduling oral argument in *Allied-Signal*. Subsequently, the *Allied-Signal* case was settled prior to oral argument, and the Board directed

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[5] The Administrator's *Grace* decision was appealed to the U.S. Court of Appeals for the First Circuit. *W.R. Grace & Co.–Conn. v. U.S. E.P.A.*, 959 F.2d 360 (1st Cir. 1992). On appeal, the Court declined to hear the case, ruling that it was not ripe for disposition. The Court concluded that an appeal of the contested permit provisions would not be ripe until an actual dispute arose over a Regional revision of a particular interim submission. *Id.* at 365-67.

[6] The questions designated for oral argument related to the Region's legal or policy basis for treating revisions of interim submissions differently than the selection of the corrective measures with respect to the Section 270.41 modification procedures, the effect of the *Grace* decision on a permittee's statutory right to judicial review of permit modifications, and the adequacy for due process purposes of a proposed hearing procedure for challenges to Regional revisions to interim submissions.

(rather than invited) GE and the Region to file briefs on the questions specified in the *Allied-Signal* case by February 10, 1993. In addition, the Board directed GE and the Region to prepare for oral argument on those same questions. For purposes of the oral argument, the Board later consolidated this case with *In Re UOP, Shreveport Plant*, RCRA Appeal No. 91-21, which involves the same issues. The oral argument was held on February 14, 1993.

II. *DISCUSSION*

Before turning to GE's arguments, it is first necessary to address the Region's argument that this case is not ripe for disposition. In support of this argument, the Region cites the decision of the U.S. Court of Appeals for the First Circuit in *W.R. Grace. and Co.–Conn. v. U.S. EPA*, 959 F.2d 360 (1st Cir. 1992), in which the permit provisions at issue in the Agency's *Grace* decision were appealed. The First Circuit found that the permittee's claim in that appeal was not ripe for disposition because there was no concrete dispute over a particular revision of an interim submission. *Id.* at 365.

We reject the Region's ripeness argument. The *judicial* doctrine of ripeness applied by the First Circuit in its *Grace* decision to determine whether it should decline to hear a challenge to the Agency's action has no direct application in the context of a permit proceeding within the Agency. Moreover, this appeal is clearly fit for disposition at this time. Under 40 CFR §124.19(a), the Board has authority to "review any condition" of a "final permit decision." This authority extends to challenges that call for some change in the language of the permit, either to modify or remove language already contained in the permit or to add language that should be in the permit. [7] Accordingly, in the context of permit appeals under Section 124.19(a), an appeal is "ripe" or fit for disposition by the Board if a final permit decision has been issued by the Region, and the petitioner is challenging the permit as it now reads. In this case, the Region has issued a final permit decision,

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[7] The challenge must be to the permit *as it reads at the time of issuance*. Thus, when a petitioner is not challenging the language of the permit as it reads at the time of issuance, but is really challenging the way the Region might implement the permit, the Board has declined to consider such a challenge. *See General Electric*, RCRA Appeal No. 91-7, at 14 (EAB, November 6, 1992).

and GE is challenging the *permit* as issued. It is taking the position that the permit, as it now reads, is defective because of the absence of a dispute resolution provision in the permit. This objection to the permit is thus properly before the Board and appropriate for disposition.

A. *Modification of the Permit*

Under 40 CFR §270.41, which governs Agency-initiated modifications of RCRA permits, the Agency may modify a permit if it determines that one or more "causes for modifications" are present. The causes for modification are listed in the regulation. One of those causes is that the Region has received information that was not available at the time of permit issuance and which would have justified the application of different permit conditions at the time of issuance if it had been available. GE argues that, when the Region revises an interim submission, it is doing so on the basis of new information gathered by the permittee that was not available at the time the permit was issued and that, if such information had been available at the time of permit issuance, the permit would have contained "different" permit terms. GE argues that, inasmuch as the Region is modifying the permit within the meaning of Section 270.41, it must accomplish the modification in accordance with that section and Part 124. [8]

Region I argued at oral argument and in its brief that the modification regulations were promulgated before 1984 and do not really speak directly to the issue of interim submissions as part of the corrective action process. The Region argues that the regulation on its

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[8] GE also argues that the Agency's position that revisions of interim submissions are not "modifications" of the permit for purposes of the formal modification procedures in Section 270.41 and Part 124 clearly implies that permittees have no right to judicial review of those requirements under §7006(b). We need not dwell for long on GE's suggestion that the Agency is somehow improperly depriving GE of its statutory right to judicial review because, as GE itself concedes, "[a] decision by the EPA Administrator cannot actually deprive a permittee of a statutory right to judicial review; if such a right exists, the courts will enforce it." GE Supplemental Brief, at 27. We note, however, that in holding that a revision of an interim submission by the Region is not a "modification" of the permit subject to the formal modification procedures in Section 270.41 and Part 124, neither the *Grace* decision nor this Board expresses or implies any position about the availability of judicial review under RCRA Section 7006(b). *See* note 22 *infra*.

face applies to new information which would have justified different permit conditions. Here, the Region argues, the new information gathered by the permittee does not justify permit conditions different from those in the permit, but rather merely implements and satisfies the information-gathering conditions already in the permit.

We agree with the Region's position. The new information presented in the interim submission is not the kind of new information contemplated in Section 270.41. The new information contemplated in that section comes to light unexpectedly and changes an erroneous assumption on which the original permit was based, and it leads to the removal or alteration of inappropriate permit terms that were based on the erroneous assumption. By contrast, the new information presented in an interim submission comes to light in accordance with the process established in the original permit precisely for the purpose of generating that supplementary information. It does not rectify a mistake or change a fundamental assumption in the original permit. It is used merely to make obligations that are already in the permit more specific. Thus, although there is no question that the incorporation of a revised interim submission as an enforceable part of the permit changes the existing permit, the change occurs automatically through the operation of the permit and not at the initiation of the Agency. Final Permit, at 86, 97, 105, 112. The fact that a Region revises the interim submission does not change this analysis. [9] When the Region revises an interim submission, it is exercising its authority under the existing permit language to ensure that the contemplated studies and investigations are adequate for selection of corrective remedies. The Region's revisions are part of a process contemplated in the original permit by which the general terms of the original permit are made

[9] In its brief, GE implicitly takes the position that a modification subject to Section 270.41 does *not* occur when an *un*contested interim submission becomes an enforceable part of the permit. At oral argument, however, GE's counsel was asked whether a modification subject to Section 270.41 occurs when an uncontested interim submission becomes an enforceable part of the permit. GE's counsel responded that it is not an issue in this case and conceded that he had not thought much about whether a member of the public would be able to argue that an uncontested interim submission would be a modification. Hearing Transcript, at 15-16. GE has provided no supportable distinction to show why, under §270.41, contested and uncontested submissions should be treated differently. In our view, for purposes of §270.41, they should be treated the same; neither is a permit modification.

more specific. Thus, when the Region makes such revisions, it is fulfilling the terms the permit, not changing them. For all the foregoing reasons, we conclude that Regional revisions to interim submissions are not appropriately characterized as modifications of the permit subject to the formal modification procedures of Section 270.41 and Part 124.

Subpart S: GE argues that support for its position can be found in the preamble to the proposed Subpart S rule. The Subpart S rule would establish a comprehensive regulatory framework for implementing the Agency's corrective action program. The proposal is relevant because it "constitutes the Agency's most recent comprehensive statement of its views regarding corrective action under RCRA §3004(u)." *Sandoz Pharmaceuticals Corporation*, RCRA Appeal No. 91-14, at 9 (EAB, July 9, 1992); *see also W.R. Grace & Company*, RCRA Appeal No. 89-28 (Administrator, March 25, 1991). The Subpart S rule provides for a set of streamlined procedures for modifying schedules of compliance in a corrective action program. 55 Fed. Reg. 30,883 (proposed 40 CFR §270.34(c)). The new procedure is less time-consuming than the modification procedure contained in Section 270.41 because the results of the procedure may be appealed directly to a court, thus bypassing administrative review. The Region would be able to use the new procedure as an alternative to Section 270.41 in cases where the Region believes that time is of the essence. The preamble to the Subpart S proposal notes that this abbreviated modification procedure "provides a mechanism to resolve disputes which may arise between the permittee and the Agency concerning the scope or meaning of conditions in the schedule of compliance when those disagreements cannot be resolved through less formal means." *Id.* at 30,847. For example, the procedure could be used when disputes arise over "the scope of remedial investigation and how many monitoring wells may need to be installed, or the appropriate soil sampling procedure." *Id.* at 30,849. GE believes that this procedure is intended to be available for the resolution of disputes over revisions to interim submissions. GE argues, therefore, that the proposed Subpart S rule recognizes that imposition of subsequent requirements on permittees through revision of interim submissions constitutes a permit modification, albeit with procedures different from those currently in Section 124.19.

We disagree with GE's argument that the Subpart S proposal supports its position. The preamble to the proposed corrective action rule makes quite clear that when a permit provides that interim submissions will become enforceable obligations under the permit, those submissions (even if revised by the Region) become part of the permit not through a modification procedure but by operation of the permit. 55 Fed. Reg. at 30,812. [10] GE argued at oral argument that the cited passage only applied to "approved" interim submissions and therefore has no relevance to this case, but the passage clearly applies to interim submissions that have been approved *after being revised by the Region*.

The preamble's discussion of the abbreviated modification procedure also provides no support for GE. That procedure applies only to *Agency-initiated* modifications of the schedule of compliance. At issue here, however, are changes to the permit that occur not at the initiation of the Agency but by operation of the permit. Moreover, the preamble discussion makes clear that the abbreviated modification procedures would apply to revisions of interim submissions only *after* those submissions have become enforceable obligations of the permit:

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[10] The preamble provides as follows:

> Plans for conducting remedial investigations would be subject to review and approval or modification by the Regional Administrator. When a workplan submitted for the Regional Administrator's approval does not adequately address all elements of the investigation, the Regional Administrator may either disapprove the plan and return it to the permittee for review, or make modifications to the plan and return the modified plan to the owner/operator as the approved plan. * * * An approved plan will establish both requirements applicable to the conduct of the investigation and a schedule for its implementation. Section 264.512(b) would provide regulatory authority for enforcing compliance with the approved plan, which becomes an enforceable part of the permit schedule of compliance. *In most cases, it is expected that the initial permit will specify that the plan becomes an enforceable component of the permit upon approval.* Alternatively, the permit may be modified to incorporate the provisions of the approved plan.

(Emphasis added.)

> It is important to note that for the purposes of this provision * * *, any plan submitted by the permittee pursuant to a schedule of compliance and approved by the Director, becomes an enforceable part of the schedule. Accordingly, ***modifications to such plans*** will be required to follow the appropriate procedures of § 270.41, 270.42, or 270.34(c).

Id. at 30,848 (emphasis added). Thus, the quoted passage makes clear that changes to interim submissions only constitute modifications of the permit *after* the interim submissions are approved by the Region and incorporated into the permit. Finally, we note that GE's interpretation of the Subpart S proposal was rejected in the Agency's *Grace* decision. *In re W.R. Grace & Company*, RCRA Appeal No. 89-28 (Administrator, March 25, 1991). That decision was issued by the same Administrator who signed the Subpart S proposal, giving particular credence to his interpretation of that proposal. For all the foregoing reasons, we reject GE's contention that its position finds support in the Subpart S proposal.

B. *The Due Process Requirements for an Administrative Hearing*

GE argues that even if the revision of an interim submission and its incorporation as an enforceable obligation of the permit do not constitute a modification of the permit subject to the procedures of Section 270.41, the Agency is nevertheless required under the due process clause to give GE an opportunity for a hearing to voice its objections before GE is required to comply with a revised interim submission. GE believes, therefore, that the permit should contain a dispute resolution provision that provides for an administrative hearing and subsequent judicial review.

The due process clause of the Fifth Amendment to the U.S. Constitution provides that the government may not deprive a person of his or her property without due process of law. Essentially, the due process clause guarantees that before a deprivation of property occurs, the person being deprived must be given notice of the impending deprivation and an opportunity for a hearing at which he or she can

present reasons why the deprivation should not take place. [11] What form this "hearing" will take depends on the type of case involved. [12] In one type of case, the hearing might be a formal, evidentiary hearing with many of the procedural safeguards associated with court proceedings, like the right to cross-examine adverse witnesses. [13] In another type of case the hearing might be nothing more than an informal meeting with a person who has authority to prevent the deprivation. [14] In still another type of case, just the opportunity to present objections in writing (a "paper hearing") without the opportunity for an oral presentation is enough to satisfy due process. [15] The nature of the hearing required by due process in a particular type of case (*i.e.*, which procedures will be used in conducting the hearing), is determined by weighing the interests of the person being deprived of property, the burden on the government of providing the particular procedures at issue, and the value of the procedures in reducing the risk of an erroneous determination. [16]

In analyzing GE's due process argument, we consider below (1) whether the revision of an interim submission constitutes a

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[11] *Mathews v. Eldridge*, 424 U.S. 319, 333 (1976)(citation omitted)("The fundamental requirement of due process is the opportunity to be heard 'at a meaningful time and in a meaningful manner.'"); *Cleveland Board of Education v. Loudermill*, 470 U.S. 532, 542 (1985)("An essential principle of due process is that a deprivation of life, liberty, or property 'be preceded by notice and opportunity for hearing appropriate to the nature of the case.'")(citation omitted).

[12] *Morrissey v. Brewer*, 408 U.S. 471, 481 (1972)("[D]ue process is flexible and calls for such procedural protections as the particular situation demands."); *Buttrey v. United States*, 690 F.2d 1170, 1178 (5th Cir. 1982)("A procedure that seems perfectly reasonable under one set of circumstances can, with only a slight modification of the facts, suddenly 'smack * * * of administrative tyranny.'") (citation omitted).

For a discussion of what kind of hearing is appropriate for cases involving revisions of interim submissions, see *infra* at 22-29.

[13] *See, e.g., Goldberg v. Kelly*, 397 U.S. 254 (1970)(termination of welfare benefits).

[14] *Memphis Light, Gas & Water Division v. Craft*, 436 U.S. 1, n.17 (1978)("The opportunity for informal consultation with designated personnel empowered to correct a mistaken determination constitutes a 'due process hearing' in appropriate circumstances.").

[15] *Mathews v. Eldridge*, 424 U.S. at 344-47.

[16] *Id.*

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[15] *Mathews v. Eldridge*, 424 U.S. at 344-47.

[16] *Id.*

significant deprivation of GE's property, thus requiring the Region to provide GE with the opportunity for a hearing, *i.e.* an opportunity to dispute the revision; [17] (2) if the Region must provide GE with the opportunity to dispute the revision, whether the dispute resolution procedure proposed by the Region in this case or the dispute resolution procedure developed by the various Regions subsequent to the *Grace* decision satisfy due process; and (3) if the Region must provide GE with the opportunity to dispute a revision to an interim submission, whether the permit should be used as a vehicle to set out the elements of a dispute resolution procedure.

A Deprivation of Property: The first question to be answered is whether a deprivation of property occurs when a permit is revised to require compliance with a revision to an interim submission. We believe that one does. As GE argues, once a permit has been granted, the permittee has a constitutionally protected property interest in that permit. *Kerley Industries, Inc. v. Pima County*, 785 F.2d 1444 (9th Cir. 1986). Because interim submissions flesh out a permit that is written in general terms, a revision to an interim submission has a material and, not infrequently, substantial effect in defining the permittee's obligations under the permit. In most cases, the Region's interpretation of what the original terms of the permit require will be more costly to fulfill than the permittee's interpretation of what the original terms of the permit require. Region I apparently agrees with the conclusion that a deprivation of property occurs, for it did not dispute GE's assertion that there is a deprivation in any of its briefs or at oral argument. In addition, several courts have assumed without discussion that an Agency decision requiring a person to comply with a requirement of RCRA can result in a deprivation of property for purposes of the due process clause. *See, e.g., Chemical Waste Management, Inc. v. U.S. E.P.A.*, 873 F.2d 1477 (D.C. Cir. 1989); *W.R. Grace & Co.--Conn. v. U.S. E.P.A.*, 959 F.2d 360, 365 (1st Cir. 1992). Having concluded that a deprivation of property occurs, we consider next what kind of a hearing the Agency must provide.

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[17] As used in this context, the term "hearing" means only an opportunity to present reasons why the interim submission should not be revised. It does not mean a formal trial-like proceeding with all the procedural safeguards associated with court proceedings. *See infra* at 22-29.

The Dispute Resolution Provisions: In the Agency's *Grace* decision, the Administrator stated that, until the Agency formally promulgates a hearing procedure for disputes over Regional revisions to interim submissions, the Regions are expected to ensure that each permittee "receives an adequate opportunity to be informed of, and to respond to, any Regional revisions to the interim submissions prior to Regional approval." *Grace*, at 4. In response to that decision, each Region has developed a dispute resolution provision to be included in corrective action permits that gives the permittee an opportunity to voice any objections it may have to Regional revisions of interim submissions. Transcript at 64-65. Although the dispute resolution provisions developed by the Regions are similar, they are not uniform, and an Agency-wide position on the content of such clauses has not be articulated, at least not in writing. Transcript at 65. At oral argument, Region I laid out the elements of the dispute resolution clauses developed by the Regions, as follows:

> – The permittee has the right to submit written statements to staff members responsible for making the disputed revisions and to meet informally with such staff members.
>
> – The permittee has the right to meet with someone higher up in the chain of command within the Region who will serve as the final decision-maker. In some Regions, this person is the Regional Administrator. In other Regions, the permittee may meet with the Regional Administrator or his or her delegate. In other Regions, the permittee has a right to meet with the Director of the Waste Management Division.
>
> -- The Region must issue a written decision on a written record, responding to the evidence and arguments of the permittee.

Transcript at 52, 65, 78-79. It is not clear whether the Regions believe that the procedures they have developed in response to the *Grace* decision represent the minimum required by due process or whether they are meant to provide more protection than is required by due process. Transcript at 78, 88-89.

The permit at issue here does not contain a dispute resolution provision. During settlement negotiations, however, the Region did offer to include such a provision in GE's permit. Exhibit D, GE Supplemental Brief. Under the proposed provision, GE would be able to meet with unspecified Regional staff members, and if such a meeting does not lead to a resolution, the Waste Management Division Director would make the final decision on the dispute. It is not clear whether the permittee would have the right to meet with the Division Director. [18]

GE's Argument: GE argues that the dispute resolution procedure offered by the Region is inadequate for the following reasons. First, GE believes that the Waste Management Division Director, by virtue of his or her close relationship to the Regional permitting staff, simply cannot be expected to act with the impartiality required by due process. In GE's view, only the Regional Administrator or the director of another division within the Region would come close to having the requisite degree of impartiality. GE maintains, however, that *no one* who works within the Region can be sufficiently impartial to satisfy due process completely. Any decision made by the Region will be tainted by institutional bias, according to GE. GE believes that this taint of bias can only be cured for purposes of due process if GE is able to obtain judicial review of the decision *before* GE is required to comply with the disputed permit requirement or face an enforcement action and possible penalties. GE argues, therefore, that due process requires the Agency to provide that the Region's decision on a dispute over revisions of interim submissions will constitute final agency action,

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[18] The Region suggested that 40 CFR §270.42 provides permittees with an opportunity for an adequate due process hearing. Under that section, a permittee could get a hearing in front of the Board simply by requesting a permit modification to remove a revised interim submission from the permit. The denial of that request could then be appealed to the Board. We are of the view, however, that Section 270.42 does not provide permittees with an adequate due process hearing because, when a permittee requests modification of the permit under Section 270.42, the contested permit provisions are *not* stayed during the pendency of the proceedings. Thus, the hearing is really a post-deprivation hearing rather than a pre-deprivation hearing. As was held in the Agency's *Grace* decision, however, due process requires that "the permittee receives an adequate opportunity to be informed of, and to respond to, any Regional revisions to the interim submissions *prior* to Regional approval." *In re W.R. Grace & Company*, RCRA Appeal No. 89-28, at n.5 (March 25, 1991)(emphasis added).

thereby opening the way for GE to seek pre-enforcement judicial review of the decision. Transcript at 25-28.

Below we discuss GE's arguments relating to the impartiality of the decisionmaker and the need for judicial review. We also discuss the issue of whether the right to make an oral presentation to the decisionmaker is required by due process in the context of revisions of interim submissions. The need for this procedural safeguard was raised by GE but was not contested by the Region, and in fact, the Region represented at oral argument that the right to make an oral presentation to the final decisionmaker is included in the dispute resolution provisions currently being used by the Regions. We nevertheless discuss this safeguard below because we believe that whatever policy considerations may militate in its favor, it is *not* an essential element of due process in the context of revisions of interim submissions.

In its Supplemental Brief on Appeal, GE mentioned four other procedural safeguards as essential requirements of the due process hearing that the Region must provide to GE in the event of a dispute over a revision of an interim submission: (1) the hearing must take place before the permittee is expected to comply with the revision to an interim submission; (2) notice detailing the Region's reasons for proposing to revise or require revision to the interim submission; (3) a decision based on the record; (4) a statement of reasons explaining the Region's final decision and responding to the arguments submitted by GE. The need for these four safeguards was not disputed by the Region either in its brief or at oral argument, and in fact the third and fourth safeguards are included in the dispute resolution procedures laid out by the Region at oral argument. Accordingly, we do not address these four safeguards below. We note, however, that these four safeguards are already required either implicitly or explicitly by the Administrator's *Grace* decision. *W.R. Grace & Company*, RCRA Appeal No. 89-28, at 3-4 & n.5 (Administrator, March 25, 1991). [19]

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[19] Two other safeguards that are among the panoply of possible procedural safeguards are the right to be represented by retained counsel and the right to cross-examine adverse witnesses. *Goldberg v. Kelly*, 397 U.S. 254, 269-271 (1970). These two safeguards were not raised by GE, and we have not addressed them in our discussion in (continued...)

Mathews v. Eldridge: In determining whether a particular procedural safeguard is required by due process in the context of a dispute over a revision to an interim submission, it is necessary to go through the familiar three-step inquiry set out by the U.S. Supreme Court in *Mathews v. Eldridge*, 424 U.S. 319, 335 (1976). That inquiry includes the following considerations:

(1) the private interest that will be affected by the official action;

(2) the risk of an erroneous deprivation of such interest through the procedures used, and the probable value, if any, of additional or substitute procedural safeguards;

(3) the Government's interest, including the function involved and the fiscal and administrative burdens that the additional or substitute procedural requirement would entail.

Before we discuss the particular safeguards at issue here, some general observations about the application of the *Mathews v. Eldridge* test are in order. First, when evaluating the burden on the Agency of providing any particular safeguard in its hearing procedure, we are mindful that, to date, the Agency did not identify a single instance where a permittee has availed itself of the formal dispute resolution provisions that the Regions have been putting into permits since the *Grace* decision was issued. Transcript at 75. Moreover, as a practical matter, we would expect that permittees will not want to squander the good will of Regional staff by invoking the dispute resolution procedures with frivolous and dilatory objections.

As for the interests of permittees, such interests will vary according to the particular circumstances of each case. In exceptional cases, Regional revisions could conceivably involve costs of millions of

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[19](...continued)
the text. With respect to cross-examination, however, we note that the right to cross-examine witnesses is not included in the procedures of 40 CFR Part 24, governing challenges to RCRA §3008(h) corrective action orders, or even in the procedures in Section 270.41, governing Agency-initiated permit modifications. GE agrees that either set of procedures would satisfy due process in this case.

dollars while the vast majority of revisions will involve increased costs of nowhere near that much. Because the financial stakes can vary so widely from case to case, it is conceivable that the procedural protections that would satisfy due process in ordinary cases might not satisfy due process in a case involving extraordinarily high financial stakes. [20] In such an extraordinary case the interest of the permittee might tip the *Mathews v. Eldridge* balance in the direction of more procedural protection. This possibility was recognized by the U.S. Court of Appeals for the First Circuit in its decision in *W.R. Grace & Co.– Conn. v. U.S. E.P.A.*, 959 F.2d 360, 365 (1st Cir. 1992):

> We suspect that the magnitude of any dispute between the parties--whether EPA requires the company to drill an additional five or five hundred sampling wells over Grace's objection, for example--will shape our judgment as to what the Constitution requires.

At oral argument, the Region also recognized this possibility, noting that the dispute resolution procedures developed by the Regions would not necessarily be adequate in all cases:

> EPA's dispute resolution provision was drafted to accommodate the great majority of disputes arising out of interim submissions. It is EPA's intent to provide additional process where the facts of a specific situation warrant such additional process.

Transcript at 67. In extraordinary cases, counsel for the Region suggested that the modification procedures at Section 270.41 might be appropriate, although he was careful to note that the Agency still would not regard the revision as a permit modification. Transcript at 61.

In light of the possibility that cases involving extraordinarily high financial stakes might warrant extra procedural safeguards, the

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[20] *Morrissey v. Brewer*, 408 U.S. 471, 481 (1972)("[D]ue process is flexible and calls for such procedural protections as the particular situation demands."); *Buttrey v. United States*, 690 F.2d 1170, 1178 (5th Cir. 1982)("A procedure that seems perfectly reasonable under one set of circumstances can, with only a slight modification of the facts, suddenly 'smack * * * of administrative tyranny.'") (citation omitted).

conclusions in this opinion as to what due process requires in the context of revisions of interim submissions, while holding true in the vast majority of cases, should not be taken to apply to such extraordinary cases. We recognize that in some cases, due process may require the Regions to offer more procedural protection than is afforded by the dispute resolution procedures. We must of necessity leave it to the Regions to determine on a case by case basis which cases warrant such special treatment.

Having made those general observations, we turn now to consider the impartial decisionmaker requirement, the need for judicial review, and the right to make an oral presentation to the final decisionmaker.

Impartial Decisionmaker: In the dispute resolution provision offered to GE during settlement negotiations, the final decisionmaker is the Region's Waste Management Division Director. In the Agency's current dispute resolution procedures as described by the Region at oral argument, the final decisionmaker is the Waste Management Division Director in some Regions and the Regional Administrator or his or her delegatee in other Regions. As noted above, GE believes that the Waste Management Division Director, because of his or her ostensible identification with the Regional permitting staff, cannot be expected to act with the impartiality required by due process. In GE's view, the Regional Administrator or the director of another division within the Region would come closest to having the requisite degree of impartiality, although GE believes that no person within the Region would be completely free of institutional bias. Transcript at 25-28. Within the framework of *Mathews v. Eldridge*, GE's argument is that the risk of an erroneous deprivation would be significantly reduced if the Regional Administrator or the director of a division other than the Waste Management Division served as the final decisionmaker, because they would be less influenced by institutional bias than the Waste Management Division Director.

We are not persuaded that the risk of an erroneous deprivation is significantly higher when the Waste Management Division Director is the decisionmaker than when the Regional Administrator is the decisionmaker, because we do not believe that the Waste Management Division Director would be unduly influenced by "institutional bias."

It is axiomatic that due process requires an impartial decisionmaker. [21] But it is also well established that, in a due process hearing at an administrative agency, the decisionmaker need not be independent from the agency to serve as an impartial decisionmaker. For example, in *Goldberg v. Kelly*, 397 U.S. 254 (1970), which represents the high water mark of affording procedural due process, the Supreme Court held that before the City of New York could terminate a welfare recipient's benefits, it must provide the recipient with an opportunity for an evidentiary hearing with an impartial decisionmaker. The Supreme Court held that the "prior involvement in some aspects of a case will not necessarily bar a welfare official from acting as a decision maker." *Id.* at 271. In another case, *Withrow v. Larkin*, 421 U.S. 35, 52 (1975), the Supreme Court held that an agency employee can serve as an impartial decisionmaker for due process purposes, even if that employee participated in the investigation of the case over which he or she is to preside in an adjudicative capacity. The Court noted in *Withrow*, moreover, that agency employees serving in an adjudicative capacity are presumed to act with honesty and integrity. *Id.* at 47. Thus, the mere fact that the Regional permitting staff work under the Waste Management Division Director does not by itself disqualify the Division Director from serving as an impartial decisionmaker for due process purposes.

The conclusion that the Waste Management Division Director can serve as an impartial decisionmaker for due process purposes is supported by the decision of the U.S. Court of Appeals for the District of Columbia in *Chemical Waste Management, Inc. v. U.S. E.P.A.*, 873 F.2d 1477, 1484 (D.C. Cir. 1989). The *Chemical Waste* decision addresses a due process challenge to the regulations at 40 CFR Part 24, which contain the procedures EPA must follow when it imposes corrective action orders on interim status facilities under RCRA Section 3008(h), 42 U.S.C §6928. Part 24 provides for a hearing conducted by a presiding officer. Under Part 24, that presiding officer can be any

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[21] *Goldberg v. Kelly*, 397 U.S. 254, 271 (1970)("And, of course, an impartial decision maker is essential."); *In re Murchison*, 349 U.S. 133, 136 (1955)("A fair trial in a fair tribunal is a basic requirement of due process."); *Hummel v. Heckler*, 736 F.2d 91, 93 (3rd Cir. 1984)("Indeed the absence in the administrative process of procedural safeguards normally available in judicial proceedings has been recognized as a reason for even stricter application of the requirement that administrative adjudicators be impartial.")

attorney who has had no prior connection to the case. The permittee in the *Chemical Waste* case argued that Part 24 procedures did not ensure an impartial decisionmaker because even if the presiding officer meets the criterion of having no prior connection to the case he or she might still be influenced by "institutional biases and prosecutorial zeal." *Id.* at 1484. In rejecting this argument, the Court relied on *Withrow v. Larkin*, 421 U.S. 35 (1975), in which the Supreme Court ruled that investigative and adjudicative functions could be combined in a single decisionmaker without necessarily violating due process. The Court also noted that there is a "presumption of honesty and integrity in those serving as adjudicators." *Chemical Waste*, 873 F.2d at 1484. Similarly, we conclude that the Division Director is not prevented by "institutional bias" from serving as an impartial decisionmaker for due process purposes.

For policy reasons, however, we believe that the final decisionmaker for the Agency should be the person with authority to issue the final permit decision itself. Since interim submissions substantially define the obligations of the permit, Regional revisions to interim submissions can have very significant financial consequences for the permittee, comparable to the consequences flowing from the terms of the original permit. Therefore, we believe that as a matter of fairness to the permittee, the person within the Region who has final authority to issue the original permit should also be the final decisionmaker in any dispute over a revision to an interim submission. In that way, decisions on disputes over revisions to interim submissions would be treated with the same importance as decisions pertaining to the original permit. By the same token, disputes over revisions of interim submissions should not be given more importance than decisions relating to the original permit. Thus, if the Division Director holds delegated authority to make final decisions on the original permit, it would be inappropriate and incongruous to send the dispute to the Regional Administrator, since that would give decisions on disputes over revisions of interims submissions more importance than is given to decisions on the original permit decision itself. Thus, the Board is of the view that, for policy reasons, the dispute resolution provisions in corrective action permits should provide that the final decisionmaker in disputes over revisions to interim submissions is the person within the Region who has delegated authority to make final decisions on the original permits.

We do not believe that such a requirement will be unduly burdensome in those Regions where the Regional Administrator has retained authority to make final decisions on the original permit. We note that according to Agency counsel, this is already Agency practice in a number of Regions, and further, to date, not a single permittee has invoked the dispute resolution provisions that Regions began putting into permits in response to the *Grace* decision. Transcript at 75. We also think that any potential burden is mitigated by our finding that there is no due process right to make an oral presentation to the final decisionmaker. *See infra* at p. 28.

Judicial Review: While GE believes that the Regional Administrator comes closer to having the requisite degree of impartiality for due process purposes than the Waste Management Division Director, GE maintains that *no one* who works within the Region can be sufficiently impartial to satisfy due process completely. Any decision coming out of the Region will be tainted by institutional bias, according to GE, and the taint of bias can only be cured for purposes of due process if GE is able to obtain judicial review of the decision. GE argues, therefore, that the Agency cannot fully satisfy the requirements of due process unless it provides that the Region's decision will constitute final agency action, thereby opening the way for GE to seek judicial review of the decision under the Administrative Procedure Act. Transcript at 25-28.

We do not believe that the Agency is required by due process to provide in the permit that the Region's decision will constitute final agency action. Even if due process requires that the administrative hearing in the context of a revision to an interim submission be followed by an opportunity for judicial review, such an opportunity will be available to GE even if the permit does not provide that the Region's decision is final agency action. At oral argument the Region took the position that a permittee will be able to obtain judicial review of a revision of an interim submission in an enforcement action for failure to comply with the interim submission. It is not clear whether the Region believes such review would be de novo or deferential, but it is

clear that the Region believes the underlying obligation could be challenged in an enforcement proceeding. Transcript at 56. [22]

The Region acknowledged, however, that during the pendency of an enforcement proceeding, daily penalties would continue to accumulate even if GE were challenging the underlying permit obligation that formed the basis for the enforcement action. Transcript at 74. Because of these accumulating penalties, GE argues that the opportunity for review during an enforcement action would not be meaningful because no rational permittee would risk accumulating daily penalties to find out whether the challenged permit term is improper. In support of its argument, GE cites a line of cases beginning with *Ex Parte Young*, 209 U.S. 123 (1975), that stand for the proposition that:

> [O]ne has a due process right to contest the *validity* of a legislative or administrative order affecting his affairs without necessarily having to face ruinous penalties if the suit is lost. The constitutional requirement is satisfied by a statutory scheme which provides for an opportunity for testing the validity of statutes or administrative orders without incurring the prospect of debilitating or confiscatory penalties.

Brown v. Williamson Tobacco Corp. v. Engman, 527 F.2d 1115, 1119 (2nd Cir. 1975)(emphasis in the original).

We are unpersuaded by GE's argument. If an enforcement action with accumulating daily penalties represented GE's only opportunity to contest the validity of a revision of an interim submission, GE's argument might have some force. But in this case, GE will have an opportunity for a hearing at the administrative level before it is expected to comply with a revision. Even if GE is correct that such an administrative hearing must be followed by some form of judicial

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[22] We leave it for the courts to decide whether GE would have an earlier opportunity for judicial review under the Administrative Procedure Act.

review to satisfy due process, [23] we are convinced that the combination of a hearing before the Agency followed by the opportunity for judicial review at the enforcement stage of the proceedings is all that due process requires. This conclusion is supported by the decision of the U.S. Court of Appeals for the First Circuit in *U.S. v. Charles George Trucking Co.*, 823 F.2d 685, 691-92 (1st Cir. 1987). In that case, the owners of a hazardous waste dump received a written request for information from EPA. When the owners failed to respond to the request, EPA successfully sued the owners in federal court for civil penalties for their failure to respond. On appeal, the owners, citing ***Ex Parte Young***, argued that their due process rights had been violated because their only opportunity to challenge EPA's information request was in the enforcement action when daily penalties were accumulating. The Court rejected this argument because EPA had notified the owners that failure to respond could result in an enforcement action and had offered them an opportunity to justify their failure to respond to the information request. Because the Court was satisfied that EPA had given the owners the notice and opportunity to respond that due process requires, it rejected their *Ex Parte Young* argument. *Id.* at 690-92. Similarly, because we believe that the dispute resolution procedures developed by the Regions and refined in this decision will provide GE with notice and an adequate opportunity to respond, we reject GE's *Ex Parte Young* argument.

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[23] Courts have recognized that when an administrative agency provides a full hearing at the administrative level with all of the procedural safeguards that are appropriate under the circumstances, due process does not require that the administrative hearing be followed by judicial review. *See Ortwein v. Schwab*, 410 U.S. 656 (1973)($25 filing fee to seek review of administrative decision in appellate court did not violate due process rights of indigents, where they received an adequate hearing at the administrative level); *Sabaroff v. Stone*, 638 F.2d 90, 92 (9th Cir. 1980) (judicial review was not an essential element of due process where Saharoff participated in an adversary proceeding before an administrative law judge); *Heirs of Garvey v. Sion Farm Esso Service Center*, 838 F.2d 98, 100 (3rd Cir. 1988)(Due process did not require judicial review of decision of the Virgin Islands Criminal Victims Compensation Commission denying claim for compensation, where the relevant act provided for contained adequate procedural means for fair determinations at the agency level). *Cf. Haskell v. U.S. Department of Agriculture*, 930 F.2d 816, 820 (10th Cir. 1991): "Although Haskell was not afforded an evidentiary hearing at the administrative level, he sought and received de novo review of the administrative decision from the district court. When such an opportunity for judicial review exists, the lack of an evidentiary hearing at the administrative level is not a denial of due process.").

Oral Presentation of Evidence and Arguments: The dispute resolution provision offered to GE during settlement negotiations provides that in the event the permittee is not able to reach an agreement with unspecified Regional staff members, the dispute will be decided by the Waste Management Division Director. It is not clear from the proposed provision whether the permittee would have the right to make an oral presentation to the Division Director. As noted above, the dispute resolution provisions developed by the Regions, as laid out by Region I at oral argument, provide that the permittee has a right to make an oral presentation to Regional staff members, and in the event no agreement is reached, the permittee has the right to make an oral presentation to someone higher up in the Regional organization (in some Regions, the Waste Management Division Director, and in other Regions, the Regional Administrator or his or her delegatee). Transcript at 52. While the dispute resolution procedures described by Region I at oral argument give the permittee the right to make an oral presentation of its arguments to the final decisionmaker, we are not convinced that due process requires the Region to include that procedural safeguard. In *Mathews v. Eldridge*, the Supreme Court noted that oral presentation to the decisionmaker has less value in the context of disability benefit determinations than it does in the welfare context of *Goldberg v. Kelly*, because disability determinations, based as they are on medical diagnoses and assessments of the recipient's ability to work, are "amenable to effective written presentation." *Mathews v. Eldridge*, 424 U.S. 319, 345 & n.28 (1976). The same reasoning applies in the context of this case. Corrective action determinations turn on technical data which is amenable to effective written presentation. An oral presentation to the final decisionmaker, therefore, would not significantly reduce the risk of an erroneous determination, and any effect it would have would be outweighed by the real (albeit modest) burden on the Agency of providing for such oral presentation. In arriving at this conclusion, we are mindful that the permittee will have an opportunity to make an oral presentation to the Regional staff before the dispute goes to the final decisionmaker.

Nevertheless, while the right to make an oral presentation to the final decisionmaker is not compelled as a matter of due process, we note that the Region envisions a meeting between the permittee and the final decisionmaker as part of the dispute resolution procedure. We

think this is a sound practice, and we encourage the Regions to retain this feature in their dispute resolution provisions.

Providing for Dispute Resolution in the Permit: Having determined that a dispute resolution procedure is required and having addressed what type of dispute resolution procedure is required, we consider next whether the dispute resolution procedures should be laid out in the permit itself. We have seen no case law to support the proposition that due process requires that hearing procedures for disputes over a permit must be laid out in the permit itself. As long as the permittee is given the requisite notice and hearing at a meaningful time, it does not matter whether the permit itself lays out the particular hearing procedure to be used. While the absence of a hearing might violate due process, the absence of language in the permit laying out the hearing procedure does not in itself violate due process. Nor is there anything in the statute or the regulations to suggest that corrective action permits are legally required to include procedures for a due process hearing in the permit.

Nevertheless, we believe that GE's permit should include such procedures as a matter of policy. As discussed above, the Agency is required to provide a hearing in the event the permittee disagrees with a Regional revision of its interim submissions. Because the need for the hearing is created by the language of the permit as issued, we believe that the permit itself is the best vehicle to provide for the fulfillment of that need. Requiring the Agency to include dispute resolution procedures in permits will best ensure that permittees are informed in a timely fashion of the availability of a hearing. Moreover, placing these procedures in corrective action permits will give reassurance of fairness to the regulated community whose obligations under their permits remain to be spelled out at a later date. [24]

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[24] Previously issued final permits that do not contain dispute resolution procedures need not be reopened or modified to add such procedures. The policy goals to be served by including hearing procedures in permits would not justify the burden and disruption that would be caused by reopening or modifying all such permits. Of course, persons holding such permits will have the same right to a due process hearing as those holding permits with the hearing procedures specified therein.

CERTIFICATE OF SERVICE

I hereby certify that copies of the forgoing Remand Order in the matter of General Electric Company, RCRA Appeal No. 91-7, were sent to the following persons in the manner indicated:

First Class Mail,
Postage Prepaid:

Douglas Luckerman
Assistant Regional Counsel
U.S. EPA, Region I
John F. Kennedy Federal Bldg.
One Congress Street
Boston, MA 02203-2211

James R. Beike, Esq.
Shea & Gardner
1800 Massachusetts Ave., NW
Washington, DC 20036

Dated: APR 13 1993

Mildred T. Connelly
Secretary

III. *CONCLUSION*

A revision by the Region of an interim submission will not constitute a modification of the permit subject to the formal modification procedures at 40 CFR §270.41 and 40 CFR Part 124. However, before the Region approves the revised interim submission, it must give GE the opportunity for a hearing, [25] and the procedures for such a hearing should be set out in GE's permit. The hearing procedures should be patterned after the dispute resolution provision described by the Region at oral argument but modified as necessary to conform with this decision. Thus, the dispute resolution provision to be inserted into GE's permit should provide that, if GE and the Regional permitting staff cannot resolve the dispute, GE will have the right to submit written arguments and evidence to the person in the Region who has authority to make the final permit decision for the Region, *i.e.*, either the Regional Administrator or the person to whom the Regional Administrator has delegated authority to make final permit decisions. The dispute resolution provision, however, need not grant GE the right to make an oral presentation to the final decisionmaker, although the Board does not wish to discourage the Region from providing this opportunity if it chooses to do so.

This case is remanded to the Region to make appropriate changes to the permit in light of this opinion.

So ordered.

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[25] *See* note 17 *supra*.

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United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

0032378
WA 8967
8·3·92
3 Bd

EPA

Reply To
Attn Of: HW-106

AUG 0 3 1992

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

R. D. Izatt, Program Manager
Office of Environmental Assurance, Permits, and Policy
Department of Energy
P.O. Box 550
Richland, Washington 99352

Re: RCRA Facility Assessment
1,000 Acre Leased Area
Hanford Federal Facility

Dear Mr. Izatt:

As you are aware, the United States Environmental Protection Agency (EPA) is currently conducting an assessment of past solid and hazardous waste management practices for all leased lands at the United States Department of Energy's (DOE's) Hanford Federal Facility. The 1,000 acre parcel leased by the State of Washington and administered by the Department of Ecology under RCW 43.200.80 is included in this assessment. Under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et seq., as amended (RCRA), a RCRA Facility Assessment (RFA) must be performed for all contiguous property owned by DOE, including lands leased to other parties, to support issuance of a dangerous waste permit for the Hanford Federal Facility.

It is EPA's understanding that this 1,000 acre parcel (see enclosed legal description) was leased to the State of Washington in 1962 with the intent to construct an extremely hazardous waste disposal facility. While a 100 acre parcel was subleased by the State to U.S. Ecology for use as a low-level radioactive waste disposal site, it is EPA's understanding that no other waste management activities were conducted on the remaining 900 acres.

To assist us in completing this RFA, please provide the information listed on Enclosure 2, to the extent possible, for activities conducted prior to 1962. All records relating to this area should be reviewed in obtaining the requested information, including the personal recollections of longtime employees. This information is requested pursuant to Section 3007 of RCRA, 42 U.S.C. § 6927. Information regarding use of this parcel subsequent to 1963 has been requested from the Washington State Department of Ecology.

Based on telephone conversations with Randy Kreckle of your staff, it is our understanding that a written request for this

information is being required by DOE, prior to release of this information. You may assert a claim of confidentiality for any information entitled to protection under 40 C.F.R. Part 2, Subpart B, by designating the information you believe is entitled to such protection.

The RFA is being performed by PRC Environmental Management, Inc. (PRC), a contractor to EPA. PRC is an authorized contractor of EPA (Contract No. 68-W9-0009) and is acting on behalf of EPA.

If your files regarding this parcel are voluminous, please contact Jerry Shuster of PRC at (206) 624-2692 to schedule a record review appointment. If you have any questions regarding this letter or the RFA process, please contact Christy Ahlstrom of my staff at (206) 553-8506.

Sincerely,

for Randall F. Smith, Director
Hazardous Waste Division

Enclosures

cc: Chuck Clarke, Director, Washington State Department of Ecology
Randy Kreckle, Department of Energy
David Jansen, Ecology Hanford Project Office

ENCLOSURE 1

FACILITY LEGAL DESCRIPTION

The following is the legal description for the entire 1000 acres, more or less, the State of Washington holds under lease from the United States Department of Energy:

"A tract of land lying in Sections 7, 8 and 9, Township 12 North, Range 26 East W.M., containing 1000 acres more or less, more particularly described as follows:

That part of the South half of said Section 7 bounded on the West and North by the following described line:

BEGINNING at a point on the South line of said Section 7, which point is South 88 degrees 44' 47" West 4515.30 feet from the Southeast corner of the Section, and at coordinates North 438,868.46 and East 2,222,800.00 on the Washington State Grid System (South Zone); thence North 1781.54 feet; thence East 2200.00 feet; thence North 907.19 feet more or less to the North line of said South half of the section; thence North 88 degrees 38' 43" East along said line 2275.48 feet more or less to the East quarter corner of said Section 7.

The South half of Section 8.

The South half, and the South half of the North half of Section 9, EXCEPT that portion lying easterly of the following described line:

BEGINNING at a point on the East line of said Section 9, which point is North 0 degrees 53' 09" West 3071.71 feet from the Southeast corner of the section, and at coordinates North 442,268.92 and East 2,237,790.19 on the Washington State Grid System (South Zone); thence Northwesterly along a 1055.37 foot radius curve to the right an arc distance of 1064.64 feet (the chord of said arc bears North 30 degrees 21' 08" West 1020.05 feet) to a point on the North line of the South half of the North half of said Section 9, said point being a coordinates North 443,149.16 and East 2,237,274.74 on the Washington State Grid System (South Zone)."

ENCLOSURE 2

RFA INFORMATION REQUEST
STATE LEASED LANDS

1. Provide a summary of land usage on this parcel prior to 1963 (the date of execution of the lease).

2. If available, provide a detailed topographic map, at a scale of 1" = 500', of the leased area.

3. A SWMU is defined as any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released. Identify and provide the following information for all Solid Waste Management Units (SWMUs) known or suspected:

   a) Unit description
   b) Dates of operation
   c) Operational status (active, inactive, closed)
   d) Waste types, quantities, sources, and disposition
   e) Release controls
   f) History of leaks, spills, or other uncontrolled releases
   g) Description of inspection and maintenance procedures.

4. Provide any groundwater, air, and soil sampling data collected at the leased parcel, to the extent such records exist.

5. Provide current and historical aerial photographs of the leased parcel, to the extent such photographs exist.

6. Provide copies of applications and permits for disposal of solid wastes within the lease boundary, to the extent such records exist.

7. Provide any documentation of any receipt of hazardous waste and location of the final disposition of the waste.

8. Provide information and documentation of on-site monitoring wells and location of drinking water wells or sources.

9. Provide any available information on activities conducted in the lease area subsequent to the lease agreement between Department of Energy and Department of Ecology in 1963.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

DEC 9 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RES

MEMORANDUM

SUBJECT: Staying HSWA Permit Conditions

FROM: for Sylvia K. Lowrance, Director
Office of Solid Waste (~~OS-300~~)
Bruce R. Weddle

TO: Allyn M. Davis, Director
Hazardous Waste Management Division, Region VI

This memorandum responds to your request of October 26, 1988 for clarification of certain issues related to the staying of permit conditions. You asked us to address the applicability of §124.16(b)(2) to HSWA/RCRA joint permits. In addition, you asked whether the Region can and should postpone the effective date of the HSWA portion of the permit in each of the following cases:

a. Where both the HSWA portion and the authorized State RCRA portion of the permit were appealed, the HSWA issues have been resolved, but some time will elapse before the State issues are also resolved and the State portion of the RCRA permit can become effective, and

b. Where the State portion of the permit is appealed without any appeal of the HSWA conditions.

You explained that your questions arose in the context of appeals of facility permits in authorized States. We address your questions below in that context.

I. Applicability of § 124.16(b)(2).

Section 124.16(b)(2) provides that "[n]o stay of an EPA-issued RCRA, UIC, or NPDES permit shall be granted based on the staying of any State-issued permit except at the discretion of the Regional Administrator and only upon written request from the State Director." In your memorandum, you suggest that §124.16(b)(2) was promulgated before the enactment of HSWA and was not intended to apply to the situation where an authorized State is issuing its authorized portion of a RCRA permit and EPA is issuing the HSWA portion of that permit.

We agree that §124.16(b)(2), along with its requirement for a written request from the State Director, does not apply to joint EPA-State issuance of RCRA permits in authorized States. As you know, under our interpretation of the statute and regulations, only one permit is typically issued to a facility under the authority of Subtitle C. Because most authorized States are not yet authorized for HSWA, however, the permit usually consists of a Federal portion (issued by EPA pursuant to HSWA) and a State portion (issued by the authorized State pursuant to RCRA). The HSWA portion, in and of itself, is only part of the RCRA permit. It would not qualify, therefore, as an "EPA-issued RCRA...permit" under §124.16(b)(2). A different situation exists in unauthorized States, where EPA issues the entire RCRA permit (HSWA and non-HSWA portions). Such a permit would qualify as an "EPA-issued RCRA...permit" under §124.16(b)(2).

II. Staying of HSWA Permit Conditions.

In your memorandum, you outline situations in which the HSWA portion of a permit might become effective before resolution of an appeal on the State portion. You express concern about declaring the HSWA portion of a permit effective because doing so might cause the facility to lose interim status.

We recognize that problems might arise if facility interim status were to terminate before a permit became fully effective. However, issuance of the HSWA portion of a jointly issued RCRA permit does not terminate the interim status of a facility. Interim status ends when final administrative disposition of the RCRA permit application occurs. Thus, effectiveness of the authorized State's permit decision is a prerequisite for termination of interim status. This will be a matter of State law (e.g., whether the State appeal stays the State permit decision). If permit effectiveness is stayed during an appeal as a matter of State law, facility interim status most likely continues under State law until the entire State portion of the permit goes into effect. We believe that the Region will, in most cases, want to issue the HSWA portion of the permit and begin corrective action as soon as possible. This will not jeopardize a facility's interim status should non-HSWA State portions be appealed. Furthermore, corrective action conditions can become effective when the permit is "issued" (per the language in RCRA section 3004(u)), not necessarily when all permit appeals are completed.

If, for some reason, the Regional Administrator wishes to delay the effective date of the HSWA portion, as your memorandum suggests, the ability to do so depends on the circumstances in each case. We have, therefore, addressed the issue in the context of each scenario you present in your memorandum.

a. Both the HSWA and State RCRA portion of the permit are appealed (under EPA and State procedures respectively).

In the first scenario you describe, both the HSWA portion and the RCRA portion of the permit are appealed and Federal resolution of the HSWA issues occurs before the State appeal is resolved. We believe that, in the course of reissuing the HSWA portion after an appeal, the Regional Administrator has discretion to postpone the effective date of the HSWA portion under the procedures of §124.15(b)(1) and §124.19(f). It should be noted that such a postponement may not be necessary in many cases because we interpret §124.16(a)(2) to mean that uncontested HSWA provisions that are inseverable from stayed State provisions are also stayed.

b. The State portion is appealed and the HSWA portion is not.

Under your second scenario, the State portion of the permit is appealed without any appeal of the HSWA conditions. In this case, the Regional Administrator does not have an opportunity to delay the effective date under either §124.15(b)(2) or §124.19 because the Regional Administrator's final permit decision has been issued and become effective prior to advent of the permit appeal.

This outcome is a function of the nature of the joint RCRA/HSWA permitting process. In the case of an authorized State, where issuance of the full RCRA permit is a combined action, State procedures must be followed to issue the State portion and the procedures of Part 124 must be followed to issue the Federal portion. While there may be a joint proceeding, two separate decisions must be made because the State has no authority to issue the Federal portion or vice versa. These two decisions can occur at the same or different times. In turn, the State portion must be appealed through State procedures and the HSWA portion through the procedures of Part 124. Where there is no appeal of the HSWA portion, no stay of the HSWA portion occurs automatically per §124.16(a)(1) as no appeal is taken under §124.19. Furthermore, the Regional Administrator's issuance of the HSWA portion will already have an effective date specified, per §124.15(b). Hence, the Region will not have the

opportunity to alter that date once the final HSWA permit decision becomes effective, except via permit modification procedures. However, the effective date of the HSWA provisions could otherwise be delayed automatically under §124.16(a)(2) if they are inseverable from stayed RCRA permit conditions.

I hope this addresses all of your concerns. If you have any questions, please call Barbara Foster at FTS 382-4751.

cc: Michelle Anders
Fred Chanania

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 18 1986

OFFICE OF
SOLID WASTE AND EMERGENCY RESP

MEMORANDUM

OSWER POLICY DIRECTIVE #9502.00-2

SUBJECT: RCRA Corrective Action at Federal Facilities

FROM: J. Winston Porter
Assistant Administrator

TO: Regional Administrators, Regions I - X

On March 5, 1986, we published two notices in the Federal Register (copies attached) about corrective action at Federal facilities. I am writing to clarify some possible misconceptions over the two March 5 notices.

The first notice states: (1) §3004(u) applies to Federal facilities; (2) Federal agencies are subject to the same "property-wide" definition of facility as other owner/operators; and (3) the term "owner" applies to individual Federal departments, agencies, and instrumentalities rather than the U.S. government. The second notice announces EPA's intent to promulgate rules to further clarify Federal ownership and to establish a scheme of priorities for corrective action at Federal facilities.

Our office has heard conflicting statements on the effect of EPA's intent to promulgate a rule on national priorities. Some Federal agencies may incorrectly believe that corrective action has been "put on hold" until EPA issues a final regulation. This is not true. Until EPA issues a final rule on priorities for corrective action at Federal facilities, the Regions must continue to process and issue permits, including negotiating corrective action schedules of compliance under §3004(u). Current permitting negotiations on corrective action between EPA and Federal agencies must not be affected by the two Federal Register notices. EPA shall continue to require corrective action at Federal facilities and EPA shall continue to require schedules of compliance in the permits of Federal facilities. Where appropriate, administrative orders under §3008(h) should also be issued to direct Federal agencies to conduct corrective action activities prior to issuance of the permit.

In negotiating schedules of compliance, the Federal agencies may legitimately raise the issue of the relative priority of the facility in question. Where EPA, the State and the Federal agency agree that the facility is of lesser importance, the timeframes for conducting corrective action activities in the schedule of compliance should reflect this. Where the three parties are unable to agree on the schedule for conducting corrective action activities, these disputes should be referred to Bruce Weddle, Director, Permits and State Programs Division, OSW, or Lloyd Guerci, Director, RCRA Enforcement Division, OWPE, to resolve permitting or enforcement issues, respectively. We are prepared to work with the Federal agency Headquarters to obtain resolution of these problems.

I have already written to the major Federal agencies (Departments of Energy, Defense and the Interior) to explain our intent to continue the permit process and to negotiate schedules of compliance for corrective action. I urged each of them to begin considering their own priorities to facilitate the negotiation process, and I will meet with each agency to discuss its plans.

While negotiation of corrective action schedules of compliance may be handled on a case-by-case basis until the final rule is promulgated, there is one area discussed in the Federal Register notice which we cannot address without a regulation. The notice states that in some situations where a private party has partial property interests such as leases or mineral extraction rights, it may be appropriate to define the facility boundary in terms of the private party's property interest rather than the Federal agency's property interest. In these limited situations the private party would be responsible for taking corrective action rather than the Federal government. In all such cases prior to issuance of the final rule, the Federal agency will be considered the owner of such property and will be held responsible for releases from such operations and for releases on its contiguous Federal lands.

I hope this will help to clarify corrective action at Federal facilities. Questions on this subject may be addressed to Paul Connor, Federal Facility Coordinator in OSW (FTS 475-7066) for permitting issues or to Tony Baney, Federal Facility Coordinator in OWPE (FTS 382-4460) for enforcement issues.

Attachments

cc: Director, Hazardous Waste Division,
Regions I-X
Chief, Hazardous Waste Branch,
Regions I-X
Allan Hirsch, OFA
Regional Federal Facility Coordinators,
Regions I-X

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 1 1985

MEMORANDUM

SUBJECT: Applicability of RCRA to Department of Energy Facilities

FROM: John H. Skinner
Director
Office of Solid Waste (WH-562)

TO: Directors, Hazardous Waste Division
Regions I-X

This memorandum will provide you with information on three issues related to the applicability of RCRA to Department of Energy (DOE) facilities. First, I want to update you on the status of our negotiations with DOE. Second, I want to provide guidance as to how the Agency will treat DOE facilities, both for the present and in the future. Last, I want to provide some information and guidance on what we will be expecting of the States and how we will be judging their programs, relative to DOE, for purposes of authorization.

We are continuing to negotiate and define with DOE both the legal and technical parameters under which the two agencies will operate. As a result of the U.S. District Court decision regarding DOE's Y-12 facility in Tennessee and the subsequent acceptance by DOE that the Court's decision would apply to all DOE's facilities, both agencies have agreed that RCRA applies to DOE facilities for both hazardous wastes and certain radioactive mixed wastes. We are currently developing policy and drafting regulations and guidance that will formalize our operations.

Three joint EPA-DOE committees have been formed to establish this policy. The first committee is a policy committee to write and interpret regulations, including the legal definition of source, special nuclear, and byproduct wastes. The second committee is looking at the technical application of the regulations. The third committee is discussing security issues, especially clearances required to inspect handlers and to review data. The regulations that are developed as a result of these committees' deliberations will be incorporated in revisions

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to 40 CFR Parts 124, 260-265, 271 and 10 CFR Part 692. The revisions should include a working definition of "byproduct material," procedures for review and approval of variances (e.g., exemption from reporting certain waste analyses), procedures for the handling of classified information, and requirements for State programs.

In addition to establishing regulatory requirements for State authorization, EPA may assume a limited role in mediating disputes between DOE and an authorized State. Upon the request of either DOE or an authorized State, EPA might issue an advisory opinion as to whether the application of particular State hazardous waste regulations is inconsistent with the Atomic Energy Act. The opinion would not bind either party. However, if DOE and the State are unable to resolve their differences and must seek a legal remedy, a court could consider EPA's opinion in rendering a decision, whether that opinion favored the State or DOE.

Let me turn to the second point of this memorandum--treatment of DOE facilities. EPA considers the February 22, 1984, Memorandum of Agreement to have been superseded by subsequent events. No Hazardous Waste Compliance Plans will be issued. All DOE facilities are required to obtain a RCRA permit for certain RCRA regulated mixed wastes as well as for their hazardous wastes. Until we promulgate new regulations defining mixed wastes and establishing the standards for DOE handlers, we recommend that permits be issued for all wastes which exhibit a characteristic or are listed, and those mixed wastes which are clearly RCRA wastes, i.e., where DOE agrees that a particular mixed waste is subject to RCRA. Thus, where EPA is the permitting authority, we can add conditions at a later date for handling any subsequently defined mixed wastes. The Agency need not defer all action on DOE permits pending promulgation of the regulations.

You should also be following the same protocol and schedule for inspecting DOE handlers as you do now for all hazardous waste handlers. Keep in mind that starting in November 1985, Federal facilities must be inspected by EPA on an annual basis as required by the Hazardous and Solid Waste Amendments of 1984. Security clearances may be needed for individuals performing these inspections. If the inspection documents the presence of one or more Class I violations, a Notice of Violation/Compliance Demand (NOV/CD) should be developed, which recites for the record all violations present at the handler, specifies in detail the necessary remedies for each and establishes a reasonable implementation schedule. The NOV/CD should be accompanied by a cover letter that advises the handler of its options for response and specifically allows it to reach consensual settlement of the case. This would be accomplished by the handler agreeing in

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writing, within ten days of receipt of the NOV/CD to implement the remedies as indicated in the schedule. The NOV/CD is still effective upon receipt, notwithstanding any efforts to resolve the case through the consent mechanism. Thirty days should be provided in the NOV/CD to reach a negotiated settlement before moving ahead with an administrative order.

Failing that, you should work with your Region's Federal Facilities Coordinator and also notify us of your problems. Headquarters involvement may not be appropriate, but we would like to remain informed of any difficulties. Where it is appropriate, Tony Baney of the Office of Waste Programs Enforcement should be informed, as well as OSW's Federal Facilities Coordinator, Andrea Pearl who will work with EPA's Office of Federal Activities and DOE Headquarters' staff to try to facilitate a resolution. Tony's number is FTS 475-6173 and Andrea's number is FTS 382-2210.

We will also continue, for the time being, to follow the policy outlined in Lee Thomas' February 21, 1984, memorandum to Ernesta Barnes (copy attached) regarding the applicability of States' regulations to DOE facilities. That is, States do not have to regulate mixed waste at the present time as an authorization requirement. A State may indeed regulate such wastes under State law; however, under RCRA, States cannot yet receive authorization to do so. We intend to publish a Federal Register notice describing our interpretation of the radioactive waste exclusion. At such time, States will be required to obtain authorization by furnishing a certification from the State Attorney General that the State program covers those radioactive wastes that are subject to RCRA. In some cases, an amendment to the State program may be required. The time frames contained in 40 CFR §271.21(e) will apply.

In the meantime, where a State has legal authority over RCRA-exempted mixed wastes, such State is not authorized to issue RCRA permits to facilities which handle those mixed wastes. State-imposed requirements which are beyond the scope of the Federal program (such as the management of these mixed wastes as hazardous) are not part of the Federally approved RCRA program. It should be noted that in an authorized State, EPA also cannot issue permits for handling such mixed wastes. Section 3006(c)(4) of the Hazardous and Solid Waste Amendments of 1984 allows joint Federal-State permits to be issued where a State is not yet authorized for a particular new requirement of the Amendments. However, the mixed waste issue is not addressed in the Amendments and, therefore, that provision is inapplicable.

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I hope this discussion has been helpful. We will be keeping you informed as we progress. In the meantime, I would urge you to begin making the States aware of our plans.

Attachment

cc: Hazardous Waste Branch Chiefs, Regions I-X
Federal Facilities Coordinators, Regions I-X
Jack McGraw
Gene Lucero
Mike Cook
John Lehman
Eileen Claussen
Lisa Friedman
Lee Herwig

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FEB 21 1984

MEMORANDUM

SUBJECT: State Regulation of Radioactive Waste
/signed/ Lee M. Thomas

FROM: Lee M. Thomas
Assistant Administrator

TO: Ernesta B. Barnes
Regional Administrator, Region X

This memorandum is in response to your September 30, 1983, memorandum requesting guidance on State regulation of radioactive waste. I have discussed the Agency's authority to regulate radioactive waste under RCRA with Headquarters' Offices of Radiation Programs, Enforcement and Compliance Monitoring, Federal Activities, Waste Programs Enforcement, General Counsel, and Solid Waste. I have concluded that the issues of Federal regulation of radioactive wastes under RCRA and the Agency's position on State control over radioactive wastes for the purpose of receiving authorization under RCRA should be resolved, for the time being, as outlined below.

Section 1004(27) of RCRA and the regulations at 40 CFR 261.4 (a)(4) exclude from the definition of solid waste (and therefore from the definition of hazardous waste) source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954.[1] EPA does not regulate these wastes as hazardous; thus we cannot require the States to regulate them. Although there are no RCRA wastes listed because they are radioactive, nor is radioactivity a RCRA characteristic at the present time, there are some radioactive wastes that are outside the source, special nuclear, or byproduct universe that EPA does have authority, under RCRA, to regulate if they are hazardous. These include naturally-occurring radionuclides and accelerator-produced radioisotopes (radium and beryllium-7 are examples). EPA and authorized States must regulate these wastes when they are listed or when they exhibit any of the characteristics identified in Part 261, Subpart C. For States, the authority to regulate these wastes need not necessarily be the hazardous waste authority. It could, for instance, be another State authority that controls all radioactive waste. Of course that authority, and the mechanism implementing it, must be equivalent to RCRA.

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[1] The definitions of these materials (see Attachment) are specific in that Act and the wastes are regulated by the Nuclear Regulatory Commission (NRC) or an NRC Agreement State.

Any facility that receives RCRA hazardous waste must meet RCRA standards and operate under either interim status or a RCRA permit. Naturally-occurring and accelerator-produced radioactive wastes determined to be hazardous under RCRA must go to a RCRA facility. It is worth noting that, although these wastes are not presently regulated by anyone at the Federal level for their radioactivity (some States do regulate them), RCRA requires that EPA (and authorized States) regulate them when they exhibit a hazardous waste characteristic.

EPA recognizes that there are some waste streams that contain both source, special nuclear, or byproduct material and RCRA hazardous wastes. EPA's authority to regulate these "mixed" wastes under RCRA is not entirely clear, and the universe and generators of these wastes have not been fully identified. We are working to determine EPA's legal authority over these wastes, and we are working with the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) to identify both the wastes and appropriate and effective measures for managing them. Once a final determination about these issues has been reached, EPA will announce it publicly. If EPA determines that these wastes, which are currently regulated under the Atomic Energy Act, are subject to regulation under the Federal RCRA program, authorized States will have the time frame provided in 40 CFR 271.21(e) to amend their programs to become equivalent. Until that time, EPA will not require the States to regulate any waste stream that has both hazardous and source, special nuclear, or byproduct components as a requirement for authorization.

The simplest way for a State to satisfy these requirements is to adopt the same exclusionary language found in RCRA. An exclusion of all radioactive wastes is too broad to satisfy this requirement since some hazardous wastes that are not source, special nuclear, or byproduct material may thereby be excluded from control. If a State does have such broad exclusionary language, the Attorney General must fully explain how those excluded wastes will be regulated in a manner equivalent to the Federal program. At such time as we clarify our position on the mixed wastes discussed above, we will be able to provide you and the States with additional guidance. We do, however, urge the Regions and States to review together the States' authorities over radioactive wastes to ensure that they are properly managed so as to provide maximum protection to human health and the environment. This review can be especially beneficial to those States seeking Congressional approval under section 4 of the Low Level Waste Policy Act of 1980 (P.L. 96-573) to enter into regional compacts for managing radioactive wastes.

FEB 21 1984

MEMORANDUM

SUBJECT: State Regulation of Radioactive Waste
/signed/ Lee M. Thomas

FROM: Lee M. Thomas
Assistant Administrator

TO: Ernesta B. Barnes
Regional Administrator, Region X

This memorandum is in response to your September 30, 1983, memorandum requesting guidance on State regulation of radioactive waste. I have discussed the Agency's authority to regulate radioactive waste under RCRA with Headquarters' Offices of Radiation Programs, Enforcement and Compliance Monitoring, Federal Activities, Waste Programs Enforcement, General Counsel, and Solid Waste. I have concluded that the issues of Federal regulation of radioactive wastes under RCRA and the Agency's position on State control over radioactive wastes for the purpose of receiving authorization under RCRA should be resolved, for the time being, as outlined below.

Section 1004(27) of RCRA and the regulations at 40 CFR 261.4 (a)(4) exclude from the definition of solid waste (and therefore from the definition of hazardous waste) source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954.[1] EPA does not regulate these wastes as hazardous; thus we cannot require the States to regulate them. Although there are no RCRA wastes listed because they are radioactive, nor is radioactivity a RCRA characteristic at the present time, there are some radioactive wastes that are outside the source, special nuclear, or byproduct universe that EPA does have authority, under RCRA, to regulate if they are hazardous. These include naturally-occurring radionuclides and accelerator-produced radioisotopes (radium and beryllium-7 are examples). EPA and authorized States must regulate these wastes when they are listed or when they exhibit any of the characteristics identified in Part 261, Subpart C. For States, the authority to regulate these wastes need not necessarily be the hazardous waste authority. It could, for instance, be another State authority that controls all radioactive waste. Of course that authority, and the mechanism implementing it, must be equivalent to RCRA.

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[1] The definitions of these materials (see Attachment) are specific in that Act and the wastes are regulated by the Nuclear Regulatory Commission (NRC) or an NRC Agreement State.

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Any facility that receives RCRA hazardous waste must meet RCRA standards and operate under either interim status or a RCRA permit. Naturally-occurring and accelerator-produced radioactive wastes determined to be hazardous under RCRA must go to a RCRA facility. It is worth noting that, although these wastes are not presently regulated by anyone at the Federal level for their radioactivity (some States do regulate them), RCRA requires that EPA (and authorized States) regulate them when they exhibit a hazardous waste characteristic.

EPA recognizes that there are some waste streams that contain both source, special nuclear, or byproduct material and RCRA hazardous wastes. EPA's authority to regulate these "mixed" wastes under RCRA is not entirely clear, and the universe and generators of these wastes have not been fully identified. We are working to determine EPA's legal authority over these wastes, and we are working with the Department of Energy (DOE) and the Nuclear Regulatory Commission (NRC) to identify both the wastes and appropriate and effective measures for managing them. Once a final determination about these issues has been reached, EPA will announce it publicly. If EPA determines that these wastes, which are currently regulated under the Atomic Energy Act, are subject to regulation under the Federal RCRA program, authorized States will have the time frame provided in 40 CFR 271.21(e) to amend their programs to become equivalent. Until that time, EPA will not require the States to regulate any waste stream that has both hazardous and source, special nuclear, or byproduct components as a requirement for authorization.

The simplest way for a State to satisfy these requirements is to adopt the same exclusionary language found in RCRA. An exclusion of all radioactive wastes is too broad to satisfy this requirement since some hazardous wastes that are not source, special nuclear, or byproduct material may thereby be excluded from control. If a State does have such broad exclusionary language, the Attorney General must fully explain how those excluded wastes will be regulated in a manner equivalent to the Federal program. At such time as we clarify our position on the mixed wastes discussed above, we will be able to provide you and the States with additional guidance. We do, however, urge the Regions and States to review together the States' authorities over radioactive wastes to ensure that they are properly managed so as to provide maximum protection to human health and the environment. This review can be especially beneficial to those States seeking Congressional approval under section 4 of the Low Level Waste Policy Act of 1980 (P.L. 96-573) to enter into regional compacts for managing radioactive wastes.

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WA 8967 2
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TO ALL NRC LICENSEES:

SUBJECT: GUIDANCE ON THE DEFINITION AND IDENTIFICATION OF COMMERCIAL MIXED LOW-LEVEL RADIOACTIVE AND HAZARDOUS WASTE AND ANSWERS TO ANTICIPATED QUESTIONS

Under the Resource Conservation and Recovery Act (RCRA), the U.S. Environmental Protection Agency (EPA) has jurisdiction over the disposal of solid wastes with the exception of source, byproduct, and special nuclear material, which are regulated by the U.S. Nuclear Regulatory Commission (NRC) under the Atomic Energy Act (AEA). Low-Level Radioactive Wastes (LLW) contain source, byproduct, or special nuclear materials, but they may also contain chemical constituents which are hazardous under EPA regulations in 40 CFR Part 261. Such wastes are commonly referred to as Mixed Low-Level Radioactive and Hazardous Waste (Mixed LLW).

NRC regulations exist to control the byproduct, source, and special nuclear material components of the Mixed LLW; EPA has the authority and continues to develop regulations to control the hazardous component of the Mixed LLW. Thus, all of the individual constituents of Mixed LLW are subject to either NRC or EPA regulations. However, when the components are combined to become Mixed LLW, neither agency has exclusive jurisdiction under current Federal law. This had led to a situation of dual regulation where both agencies, NRC and EPA, regulate the same waste.

The enclosed document, "Guidance on the Definition and Identification of Commercial Mixed Low-Level Radioactive and Hazardous Waste," was developed jointly by the NRC and EPA to aid commercial LLW generators in assessing whether they are currently generating Mixed LLW. This guidance is based on NRC and EPA regulations in effect on December 1, 1986. In addition to the

definition and the methodology for identifying Mixed LLW, which we hereby endorse, the staff has prepared answers to anticipated questions from generators which are also included.

Sincerely,

R E Browning for

John G. Davis, Director
Office of Nuclear Material
Safety and Safeguards
U. S. Nuclear Regulatory Commission

J. Winston Porter

J. Winston Porter
Assistant Administrator
Office of Solid Waste
and Emergency Response
U.S. Environmental
Protection Agency

Enclosures:
As Stated

GUIDANCE ON THE DEFINITION AND IDENTIFICATION OF COMMERCIAL MIXED LOW-LEVEL RADIOACTIVE AND HAZARDOUS WASTE

(87/01/05)

Definition

Mixed Low-Level Radioactive and Hazardous Waste (Mixed LLW) is defined as waste that satisfies the definition of low-level radioactive waste (LLW) in the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) and contains hazardous waste that either (1) is listed as a hazardous waste in Subpart D of 40 CFR Part 261 or (2) causes the LLW to exhibit any of the hazardous waste characteristics identified in Subpart C of 40 CFR Part 261.

Identification

The policy provided in this guidance is developed for commercial LLW jointly by the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Environmental Protection Agency (EPA). LLW that contains hazardous wastes defined under the Resource Conservation and Recovery Act (RCRA) is Mixed LLW. Under current Federal law, such waste is subject to regulation by NRC under the Atomic Energy Act (AEA), as amended, and by EPA under the AEA and RCRA, as amended. In the absence of legislation to the contrary, management and disposal of this waste must be conducted in compliance with NRC and EPA or equivalent state regulations.

This guidance presents a methodology (Figure 1) that may be used by generators of commercial LLW to identify Mixed LLW. Implementation of the methodology should identify Mixed LLW and aid generators in assessing whether they are currently generating Mixed LLW. Generators are cautioned, however, that application of the methodology does not affect the need to comply with applicable NRC and EPA regulations. Because EPA's regulations for hazardous waste are currently changing, generators should use applicable regulations that are in effect at the time of implementation of the methodology. This guidance has been prepared based on NRC and EPA regulations in effect on December 1, 1986.

Application of this methodology to identify Mixed LLW will reveal the complexities of the definition of Mixed LLW. If generators have specific questions about whether LLW is Mixed LLW, they should promptly contact the agencies by writing to the persons listed below.

Questions and Answers

As a supplement to the Guidance on the Definition and Identification of Commercial Mixed Low-Level Radioactive and Hazardous Waste (Mixed LLW), answers to anticipated questions are included to clarify obscure points and to stimulate additional questions from potential Mixed LLW generators.

1. Are my low-level radioactive wastes exempt from RCRA because they are source, special nuclear, or byproduct materials as defined under the AEA?

Except for certain ores containing source material, which are defined as source material in 10 CFR 40.4(h), and uranium and thorium mill tailings or wastes, NRC and EPA consider that only the radionuclides themselves are exempt from RCRA. Section 1004(27) of RCRA excludes source, special nuclear, and byproduct material from the definition of "solid waste." RCRA defines solid waste as:

> "any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, or from community activities, but does not include solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (86 Stat. 880), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923)." [emphasis added]

Since "hazardous waste" is a subset of "solid waste," RCRA also excludes source, special nuclear, and byproduct materials from the definition of hazardous waste and, therefore, from regulation under EPA's RCRA Subtitle C program. Section 11 of the Atomic Energy Act, as amended, defines these radioactive materials as follows:

> Source material means (1) uranium, thorium, or any other material which is determined by the Atomic Energy Commission (AEC) pursuant to the provisions of section 61 of the AEA to be source material, or (2) ores containing one or more of the foregoing materials, in such concentration as the AEC may by regulation determine from time to time.
>
> Special nuclear material means (1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the AEC, pursuant to the provisions of Section 51 of the AEA, determines to be special nuclear material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.
>
> Byproduct material means (1) any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear

material, and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.

Source, special nuclear, and byproduct materials, however, may be mixed with other radioactive or non-radioactive materials that are not source, special nuclear, or byproduct materials. For example, tritium may be contained in toluene, a nonhalogenated aromatic solvent. Consistent with the definition of byproduct material, the tritium may be considered a byproduct material, while the toluene that contains the tritium would not be byproduct material. Mixtures of toluene and tritium could satisfy the definition of Mixed LLW because they contain listed hazardous waste (spent toluene) and tritium that may qualify as LLW if it has been produced by activities regulated by NRC under the AEA.

2. What are some examples of Mixed LLW?

A preliminary survey performed for the NRC identified two potential types of Mixed LLW:

- LLW containing organic liquids, such as scintillation liquids and vials; organic lab liquids; sludges; and cleaning, degreasing, and miscellaneous solvents.

- LLW containing heavy metals, such as discarded lead shielding, discarded lined containers, and lead oxide dross containing uranium oxide; light water reactor (LWR) process wastes containing chromate and LWR decontamination resins containing chromium; and mercury amalgam in trash.

The preliminary survey concluded that potential Mixed LLW comprises a small percentage of all LLW. For example, LLW containing organic liquids accounted for approximately 2.3% by volume of LLW reported in the preliminary survey (Bowerman, et al., 1985).

An earlier survey identified a more diverse universe of potential Mixed LLW including wastes that contained aldehydes, aliphatic halogenated hydrocarbons, alkanes, alkenes, amino acids, aromatic hydrocarbons, chelating agents, esters, ethers, ketones, nitrosamines, nucleotides, pesticides, phenolic compounds, purines, resins, steroids, and vitamins (General Research Corporation, 1980). NRC also anticipates that additional LLW may be identified as Mixed LLW in the future, as generators implement the definition of Mixed LLW and as EPA revises the definition of hazardous waste.

3. Could some "below regulatory concern" wastes be considered Mixed LLW?

A determination that radioactive wastes are below regulatory concern (BRC) for radioactivity may affect how the wastes are managed or discarded, but it does not affect the legal status of the wastes. Specifically, their status with respect to the definition of Mixed LLW does not change. BRC waste is still LLW because it satisfies the definition of LLW in the LLRWPAA and is within the NRC's jurisdictional authority under the AEA.

When radioactive waste contains sufficiently low concentrations or quantities of radionuclides, NRC may find that they do not need to be managed or disposed of as radioactive wastes. For NRC to make such a finding, management and disposal of the waste must not pose an undue radiological risk to the public and the environment. However, NRC's determination that the radioactive content of the wastes is below NRC regulatory concern does not relieve licensees from compliance with applicable rules of other agencies governing non-radiological hazards (e.g., regulations of EPA or the Department of Transportation).

Therefore, some BRC wastes may still be considered Mixed LLW if they contain hazardous wastes that have been listed in Subpart D of 40 CFR Part 261 or that cause the LLW to exhibit any of the hazardous characteristics described in Subpart C of 40 CFR Part 261. BRC Mixed LLW may be managed without regard to its radioactivity (but it must still be managed as a hazardous waste in compliance with EPA's regulations for hazardous waste generation, storage, transportation, treatment, and disposal (cf. 40 CFR Parts 262 through 266)).

4. If I use chemicals in my process that are identified by EPA as hazardous constituents, should I assume that my LLW is Mixed LLW?

No. Low-level radioactive waste that contains hazardous constituents may not necessarily be Mixed LLW. As defined above, Mixed LLW is LLW that contains a known hazardous waste (i.e., a listed hazardous waste) or that exhibits one or more of the hazardous characteristics because it contains non-AEA materials. For wastes that are not listed in Subpart D of 40 CFR Part 261, testing is not necessarily required to "determine" whether the LLW exhibits any of the hazardous characteristics. A generator may be able to determine whether the LLW is Mixed LLW based on knowledge of the waste characteristics or the process that generates the LLW.

Furthermore, if the generator normally segregates LLW from hazardous and other types of wastes, there is no need to assume that hazardous wastes may have been inadvertently mixed with LLW or to inspect each container or receptacle to ensure that inadvertent mixing has not occurred. Although the generator is subject to RCRA inspections and must follow the manifest, pre-transport, and other requirements of 40 CFR Part 262, the generator is not required to demonstrate that every LLW container does not contain hazardous waste.

5. What are EPA and NRC currently doing to address the Mixed LLW issue, and what should generators do in the interim before a regulatory program for Mixed LLW is established?

An incentive exists for generators to minimize the generation of Mixed LLW because Mixed LLW must currently be managed and disposed of in compliance with the regulatory controls of both EPA and NRC. These dual regulatory controls complicate management and disposal of the waste. NRC and EPA are presently working together to develop guidance for generators and disposal site operators on the management, treatment, and disposal of Mixed LLW. In the interim, generators are encouraged to minimize the generation of Mixed LLW through management practices such as waste segregation and materials tracking. Generators and waste handlers are also encouraged to consider treatment techniques to reduce the amount and hazards of Mixed LLW requiring licensed land disposal. Kempf et al (1986) prepared a preliminary evaluation of current practices and potential management options for Mixed LLW. Current disposal site operators must develop and operate facilities to dispose of Mixed LLW in compliance with both NRC and EPA requirements or cease disposing of Mixed LLW. Licensees should recognize that all of these activities must be performed in compliance with applicable NRC requirements in 10 CFR Parts 20, 30, 40, 50, 61, and 70, and applicable EPA requirements in 40 CFR Parts 124, and 260 through 270, or applicable State requirements.

6. What should I do if I believe that the RCRA regulations are inconsistent with the AEA regulations?

Section 1006 of RCRA states that, "Nothing in this Act shall be construed to apply to (or to authorize any state, interstate, or local authority to regulate any activity or substance which is subject to . . . the Atomic Energy Act of 1954 (42 U. S. C. 2011 and following) except to the extent that such application (or regulation) is not inconsistent with the requirements of such [Act]." This provision allows the modification of the RCRA requirements when they are found to be inconsistent with the AEA requirements. "Inconsistent" includes situations where satisfying both sets of regulations (RCRA and AEA regulations) would increase the radiation hazard, would be technically infeasible, or would violate national security interests. Variances from the RCRA requirements may be granted to generators, transporters, and facilities that treat, store, or dispose of Mixed LLW.

NRC licensees may petition for variances from RCRA requirements when they believe that application of one or more of these requirements would be inconsistent with the AEA. NRC licensees should first discuss the inconsistency with NRC prior to preparing the petition. NRC's review will ensure that the licensees' interpretations of the AEA requirements are correct and that the reasons for the variance petition are technically sound.

7. How can I obtain representative samples of heterogeneous trash included in LLW to perform the hazardous characteristics tests?

Before discussing the collection of representative samples of waste, generators are reminded that they are not required to test all LLW to determine if the waste contains hazardous wastes that cause the LLW to exhibit the hazardous waste characteristics. Such comprehensive testing of all LLW would likely violate the principle of keeping radiological exposures as low as is reasonably achievable. Generators should select testing as a basis for determining whether the LLW exhibits any of the hazardous waste characteristics if they cannot make the determination based on their knowledge of the process that generates the LLW.

Representative samples of waste should be collected for testing in accordance with EPA's regulations in 40 CFR Part 261.20(c), which state that waste samples collected using applicable methods specified in Appendix I of Part 261 will be considered as representative samples for hazardous characteristics testing. This appendix has been included in its entirety in Appendix II of this guidance. The sampling techniques described in Appendix I of Part 261 apply to extremely viscous liquids, fly ash-like material, containerized liquid wastes, and liquid wastes in pits, ponds, lagoons, and similar reservoirs. In the absence of guidance about sampling heterogeneous wastes, generators should use appropriate portions of the sampling methods described in Appendix I of Part 261 in combination with other methods to collect, to the maximum extent practicable, representative samples of the waste to be tested.

References

Bowerman, B. S., Kempf, C. R., MacKenzie, D. R., Siskind, B. and P. L. Piciulo, 1985, "An Analysis of Low-Level Wastes: Review of Hazardous Waste Regulations and Identification of Radioactive Mixed Wastes," NUREG/CR-4406, U. S. Nuclear Regulatory Commission.

General Research Corporation, 1980, "Study of Chemical Toxicity of Low-Level Wastes," NUREG/CR-1793, U. S. Nuclear Regulatory Commission.

Kempf, C. R., MacKenzie, D. R., and B. S. Bowerman, 1986, "Management of Radioactive Mixed Wastes in Commercial Low-Level Wastes," NUREG/CR-4450, U. S. Nuclear Regulatory Commission.

WA 8967
9-1-88

Facility: Nuclear Engineering (U.S. Ecology)

ID No. WAD060048360

Date of Inspection: September 1, 1988
Date of Report: September 7, 1988

Address: Rt. 4 Hanford Reserve
Richland, Washington 99352

Report Prepared by: Jack Boller, Environmental Protection Specialist
Washington Operations Office
Environmental Protection Agency, Region 10
Olympia, WA 98504

Inspector: Jack Boller, EPA/WOO Jack Boller
Jeff Rodin, EPA Region 10/WMB

Purpose:

This inspection was conducted to gather information on facility compliance with applicable regulations for management of hazardous waste under the Washington State and United States hazardous waste laws.

General Facility Process Information:

U.S. Ecology operates a land disposal facility for low level radioactive waste. They claim that they have never received mixed waste but only non hazardous radioactive waste. The waste is packaged in 55 gallon drums and buried in trenches which are forty feet deep. Waste is received from universities, hospitals, laboratories and various other generators from across the nation.

Notification and Permits:

U.S. Ecology filed a Notification of Hazardous Waste Activity on August 18, 1980 for disposal of hazardous waste. They declined to file a part A permit application until EPA and the Washington Department of Ecology (Ecology) decide whether or not their waste is a mixed waste. This decision has not been made by either agency. Both EPA and Ecology contend that the facility is potentially a mixed hazardous waste disposal facility and are treating it as such until proven otherwise. The facility filed a request for withdrawal of their ID number. This request has not been granted.

Inspection:

At 8:30 a.m. on September 1, 1989, Jeff Rodin of EPA and I arrived at the U.S. Ecology facility on the Hanford Reserve outside of Richland, Washington. We entered the office and met John De Old, the facility manager. We introduced ourselves and explained the purpose of our visit. We were led to a conference room where we began a review of manifests for shipments received in the last year. We were looking for evidence of receipt of mixed wastes. No such evidence was found.

We toured the facility starting with the vehicle maintenance shop. The shop does not appear to generate any RCRA regulated waste. We toured the burial trenches and did not observe any violations. This concluded our inspection and we left the site at 10:00 a.m.

Conclusion:

No evidence was found that would indicate that mixed wastes are being managed at the site.

Inspection date
9/1/89

EXHIBIT IV-1

GENERAL SITE INSPECTION INFORMATION FORM

Nuclear Engineering — Rt. 4 Hanford Reserve
A. Site Name — B. Street (or other identifier)

Richland , Wa — 99352 — Benton
C. City — D. State — E. Zip Code — F. County Name

G. Site Operator Information

1. Name John DeOld — 2. Telephone Number (509) 377-2411

3. Street — 4. City Richland — 5. State Wa — 6. Zip Code 98352

H. Site Description

Low level radioactive waste disposal facility

I. Type of Ownership

X 1. Federal __2. State __3. County __4. Municipal __5. Private

J.

X 1. Generator __2. Transporter __3. Treatment __4. Storage X 5. Disposal (Low level Rad waste only)

K. Regulatory Status

X 1. Interim Status __3. Part B Permit Application Submitted

__2. Permitted Facility __4. Part B Permit Application in Preparation

L.

1. Principal Inspector Name: Jack Boller
2. Title
3. Organization: EPA R10/WOO
4. Telephone No. (area code and No.): (206) 753-9428 FTS 434-9428

M. Inspection Participants

1. Jeff Rodin EPA	6.
2.	7.
3.	8.
4.	9.
5.	10.

EXHIBIT IV-2

GENERAL FACILITY CHECKLIST

Section A - General Facility Standards

1. Does facility have EPA Identification No.? X Yes __ No

   a. If yes, EPA I.D. No. WAD060048360
      If no, explain. _____

2. Has facility received hazardous waste from a foreign source? __ Yes X No

   a. If yes, has it filed a notice with the Regional Administrator? __ Yes __ No N/A

Waste Analysis — Appears to be conditionally exempt generator

3. Does facility maintain a copy of the waste analysis plan at the facility? __ Yes __ No N/A

   a. If yes, does it include:

      1. Parameters for which each waste will be analyzed? __ Yes __ No
      2. Test methods used to test for these parameters? __ Yes __ No
      3. Sampling method used to obtain sample? __ Yes __ No
      4. Frequency with which the initial analyses will be reviewed or repeated? __ Yes __ No
      5. (For offsite facilities) waste analyses that generators have agreed to supply? __ Yes __ No
      6. (For offsite facilities) procedures which are used to inspect and analyze each movement of hazardous waste, including:

         a. Procedures to be used to determine the identity of each movement of waste. __ Yes __ No
         b. Sampling method to be used to obtain representative sample of the waste to be identified. __ Yes __ No

4. Does the facility provide adequate security through:

   a. 24-hour surveillance system (e.g., television monitoring or guards)? X Yes __ No

      OR

(continued)

EXHIBIT IV-2 (continued)

b. 1. Artificial or natural barrier around facility (e.g., fence or fence and cliff)? X Yes __No

Describe _____

AND Patrolled by Hanford Gaurds

2. Means to control entry through entrances (e.g., attendant, television monitors, locked entrance, controlled roadway access)? X Yes __No

Describe _____

General Inspection Requirements

Conditionally exempt gen.

5. Does the owner/operator maintain a written schedule at the facility for inspecting:

N/A

a. Monitoring equipment? __Yes __No
b. Safety and emergency equipment? __Yes __No
c. Security devices: __Yes __No
d. Operating and structural equipment? __Yes __No
e. Types of problems of equipment:

1. Malfunction __Yes __No
2. Operator error __Yes __No
3. Discharges __Yes __No

6. Does the owner/operator maintain an inspection log? __Yes __No

a. If yes, does it include:

1. Date and time of inspection? __Yes __No
2. Name of inspector? __Yes __No
3. Notation of observations? __Yes __No
4. Date and nature of repairs or remedial action? __Yes __No

b. Are there any malfunctions or other deficiencies not corrected? (Use narrative explanation sheet.) __Yes __No

Personnel Training

7. Does the owner/operator maintain personnel training records at the facility? __Yes __No

(continued)

How long are they kept? N/A

a. If yes, do they include:

1. Job title and written job description of each position? __Yes __No
2. Description of type and amount of training? __Yes __No
3. Records of training given to facility personnel? __Yes __No

Requirements for Ignitable, Reactive, or Incompatible Waste

8. Does facility handle ignitable or reactive wastes? __Yes __No

a. If yes, is waste separated and confined from sources of ignition or reaction (open flames, smoking, cutting and welding, hot surfaces, frictional heat), sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat?

1. If yes, use narrative explanation sheet to describe separation and confinement procedures.
2. If no, use narrative explanation sheet to describe sources of ignition or reaction.

b. Are smoking and open flame confined to specifically designated locations? __Yes __No

c. Are "No Smoking" signs posted in hazardous areas? __Yes __No

d. Are precautions documented (Part 264 only)? __Yes __No

9. Check containers

a. Are containers leaking or corroding? __Yes __No

b. Is there evidence of heat generation from incompatible wastes? __Yes __No

Section B - Preparedness and Prevention

1. Is there evidence of fire, explosion, or contamination of the environment? __Yes __No

If yes, use narrative explanation sheet to explain.

(continued)

EXHIBIT IV-2 (continued)

N/A

2. Is the facility equipped with:

   a. Internal communication or alarm system? __Yes __No

      1. Is it easily accessible in case of emergency? __Yes __No

   b. Telephone or two-way radio to call emergency response personnel? __Yes __No

   c. Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment? __Yes __No

   d. Water of adequate volume for hoses, sprinklers, or water spray system? __Yes __No

      1. Describe source of water _____

3. Is there sufficient aisle space to allow unobstructed movement of personnel and equipment? __Yes __No

4. Has the owner/operator made arrangements with the local authorities to familiarize them with characteristics of the facility? (Layout of facility, properties of hazardous waste handled and associated hazards, places where facility personnel would normally be working, entrances to roads inside facility, possible evacuation routes.) __Yes __No

5. In the case that more than one police or fire department might respond, is there a designated primary authority? __Yes __No

   a. If yes, name primary authority _____

6. Does the owner/operator have phone numbers of and agreements with State emergency response teams, emergency response contractors, and equipment suppliers? __Yes __No

   a. Are they readily available to all personnel? __Yes __No

7. Has the owner/operator arranged to familiarize local hospitals with the properties of hazardous waste handled and types of injuries that could result from fires, explosions, or releases at the facility? __Yes __No

8. If State or local authorities decline to enter, is this entered in the operating record? __Yes __No

(continued)

N/A

Section C - Contingency Plan and Emergency Procedures

1. Is a contingency plan maintained at the facility? __Yes __No

   a. If yes, is it a revised SPCC Plan? __Yes __No

   b. Does contingency plan include:

      1. Arrangements with local emergency response organizations? __Yes __No
      2. Emergency coordinators' names, phone numbers, and addresses? __Yes __No
      3. List of all emergency equipment at facility and descriptions of equipment? __Yes __No
      4. Evacuation plan for facility personnel? __Yes __No

2. Is there an emergency coordinator on site or on call at all times? __Yes __No

Section D - Manifest System, Recordkeeping, and Reporting

1. Does facility receive waste from offsite? __Yes __No

   a. If yes, does the owner/operator retain copies of all manifests? __Yes __No

      1. Are the manifests signed and dated and returned to the generator? __Yes __No
      2. Is a signed copy given to the transporter? __Yes __No

2. Does the facility receive any waste from a rail or water (bulk shipment) transporter? __Yes __No

   a. If yes, is it accompanied by a shipping paper? __Yes __No

      1. Does the owner/operator sign and date the shipping paper and return a copy to the generator? __Yes __No
      2. Is a signed copy given to the transporter? __Yes __No

3. Has the owner/operator received any shipments of waste that were inconsistent with the manifest (manifest discrepancies)? __Yes __No

   a. If yes, has he attempted to reconcile the discrepancy with the generator and transporter? __Yes __No

      1. If no, has Regional Administrator been notified? __Yes __No

(continued)

EXHIBIT IV-2 (continued)

N/A

4. Does the owner/operator keep a written operating record at the facility? __Yes __No

   a. If yes, does it include:

      1. Description and quantity of each hazardous waste received? __Yes __No
      2. Methods and dates of treatment, storage, and disposal? __Yes __No
      3. Location and quantity of each hazardous waste at each location? __Yes __No
      4. Cross-references to manifests/shipping papers? __Yes __No
      5. Records and results of waste analyses? __Yes __No
      6. Report of incidents involving implementation of the contingency plan? __Yes __No
      7. Records and results of required inspections? __Yes __No
      8. Monitoring or testing analytical data (Part 264)? __Yes __No
      9. Closure cost estimates and, for disposal facilities, post-closure cost estimates (Part 264)? __Yes __No
      10. Notices of generators as specified in §264.12(b) (Part 264)? __Yes __No

5. Does the facility submit a biennial report by March 1 every even-numbered year? __Yes __No

   a. If yes, do reports contain the following information:

      1. EPA I.D. number? __Yes __No
      2. Date and year covered by report? __Yes __No
      3. Description/quantity of hazardous waste? __Yes __No
      4. Treatment, storage, and disposal methods? __Yes __No
      5. Monitoring data under §265.94(a)(2) and (b)(2) (Part 265)? __Yes __No
      6. Most recent closure and post-closure cost estimates? __Yes __No
      7. For TSD generators, description of efforts to reduce volume/toxicity of waste generated, and actual comparisons with previous year? __Yes __No
      8. Certification signed by owner/operator? __Yes __No

6. Has the facility received any waste (that does not come under the small generator exclusion) not accompanied by a manifest? __Yes __No

   a. If yes, has he submitted an unmanifested waste report to the Regional Administrator? __Yes __No

7. Does the facility submit to the Regional Administrator reports on releases, fires, and explosions; contamination and monitoring data; and facility closure? __Yes __No

EXHIBIT IV-3

LAND DISPOSAL RESTRICTIONS CHECKLIST*

1. Are hazardous wastes land-disposed on site? ("Land disposal" includes placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, concrete vault, or bunker intended for disposal purposes; and placement in or on the land by means of open detonation and open burning where residues continue to exhibit hazardous characteristics). __Yes X No

   a. If yes, are one or more of the following circumstances true: N/A

      1. Granted extension from effective date pursuant to §268.5? __Yes __No
      2. Granted exemption from a prohibition pursuant to a petition under §268.6? __Yes __No
      3. Disposing of soil or debris resulting from a CERCLA response action or a RCRA corrective action, which will not be prohibited until November 8, 1988? __Yes __No
      4. Facility is a small quantity generator of less than 100 kg of hazardous waste per month? __Yes __No

2. Are restricted wastes or residuals from treatment of a restricted waste diluted in any way prior to disposal? __Yes __No

3. Are there active surface impoundments used for treatment of hazardous wastes? __Yes __No

   a. If yes, does the unit's design and operation meet the requirements set forth in §268.4? __Yes __No

4. Has the facility sought exemption from any prohibition under Subpart C of §268 for the disposal of a restricted hazardous waste? __Yes __No

   a. If yes, has the facility's demonstration included the required components (waste I.D., waste analysis, comprehensive environmental characterization of unit site, QA/QC plan, sampling, testing, modeling)? __Yes __No

5. Has the facility determined whether it generates a restricted waste through waste analysis? __Yes __No

   a. If yes, is the facility, in fact, handling a restricted waste(s)? __Yes __No

(continued)

N/A

b. If yes, does the restricted waste require treatment? __Yes __No

c. If yes, has the generator notified the treatment facility in writing, and does the notification include all required components ([PA hazardous waste number, corresponding treatment standard, manifest number of shipment)? __Yes __No

6. Does the facility handle EPA Hazardous Waste Nos. F001 through F005 (solvent wastes)? __Yes __No

a. If yes, do any of the following conditions apply:

1. The generator of the solvent waste is a small quantity generator (not more than 1000 kg/month)? __Yes __No
2. The solvent waste is generated from a CERCLA response corrective action? __Yes __No
3. The solvent waste is a solvent-water mixture, solvent containing sludge, or Solvent-contaminated soil (non-CERCLA or RCRA corrective action) containing less than 1 percent total F001 through F005 solvent constituents. __Yes __No

b. If no, have any of these restricted wastes been land-disposed (except in an injection well) since November 8, 1986? __Yes __No

7. Does the facility handle EPA Hazardous Waste Nos. F020, F021, F023, F026, F027, or F028 (dioxincontaining wastes)? __Yes __No

a. If yes, do any of the following conditions apply:

1. Wastes are treated to meet standards of Subpart D of §268? __Yes __No
2. Wastes are disposed of at a facility that has been granted a petition? __Yes __No
3. An extension has been granted? __Yes __No

b. If no, will these restricted wastes be land disposed after November 8, 1988? __Yes __No

8. Are restricted wastes being treated? __Yes __No

a. If yes, have any of their associated hazardous constituents exceeded the "Constituent in Waste Extract" (CWE) levels? __Yes __No

*See OSWER Dir. No. 9938.1A (LDR Inspection Manual) for more detailed guidance!

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November 3, 1987

RCRA COMPLIANCE INSPECTION

FACILITY: US Ecology, Richland, Washington, 99352

EPA I.D. #: WAD060048360

CONTACT PERSON: Wayne N. Pierre, EPS
RCRA Compliance Section

INSPECTORS: Wayne Pierre, EPA-10
Jack Boller, EPA-10
Julie Atwood, Ecology

FACILITY CONTACT: John Deold, Manager

INSPECTION DATE: August 14, 1987

PURPOSE:

The inspection was conducted to determine the facility's compliance with applicable regulations for the management of hazardous waste in the authorized state of Washington. As the state of Washington had not received authorization for mixed waste at the time of the inspection, the facility was not subject to regulation with the exception of managing non-radioactive hazardous waste.

FACILITY BACKGROUND:

US Ecology is a commercial low-level radioactive waste disposal facility located on the Hanford reservation. Us Ecology both notified and submitted a Part A permit application in 1980. These documents were submitted as a preservation of rights rather than as a statement of hazardous waste activity, however. On October 31, 1985, US Ecology submitted a closure plan and post-closure permit application to EPA pursuant to Section 3005(e) of RCRA again claiming that the documents are submitted in the event that the facility is subject to regulation. US Ecology's position was further clarified in a letter dated February 26, 1987 to Marsha Williams, Director, Office of Solid Waste, EPA, in which they describe their contractural arrangements with their generators who supposedly warrantee that shipments to the facility comply with all applicable laws and have indemnified US Ecology for any failur to do so. As EPA's policy for mixed waste is that authorized state programs must specifically be authorized for mixed waste to be federally effective, the net result of US Ecology's position is that they are not subject to federal regulation unless they have specifically received non-radioactive hazardous waste.

Although information gathered by EPA indicates that the facility may have received radioactive waste shipments with non-radioactive waste components, US Ecology's practice of not opening containers for inspection would not have revealed this information as the waste was shipped as mixed waste. US Ecology's new radioactiive waste license issued in January 1987 requires that 1 package be opened per week.

EPA's previous inspection of this facility was on June 18, 1985.

WA 8967 4a
3-14-87

RCRA COMPLIANCE
REGION 10

EPA INSPECTION REPORT SUBMITTAL SLIP

I. Submitted By: W. Pierre Date: 11/3/87

✓ Narrative
✓ Checklist(s)
✓ Photos – to be submitted
✓ Attachment(s)
___ Comments

COMPANY NAME
U.S. Ecology
Insp of 8/14/87
WAD.., 8360

✓ CMEL Attached previously submitted

II. Date Reviewed: 11/3/87
Reviewed By: CRice
Title: Chief RCS

✓ Accepted ___ Returned

III. Comments:

IV. Route To:
~~(1) Matthew – pc entry~~
~~(2) A Boyd – FYI~~
~~(3) W. Pierre~~
(4) File

9413286.0891

OPENING CONFERENCE:

At approximately 9:00 a.m. we met with John Deold, Manager and Pat Seegers, Corporate Environmental Officer out of Louisville, Ky. Jack and I showed our credential and we identified the purpose of the inspection. We inquired about the status of the closure activities identified in the 1985 closure plan and was informed that closure had not been formally implemented. Trench 11 was still operational (11B) along with the new trenchs 13 and 14. The chemical trench which was used for non-radioactive hazardous waste was discontinued in the late 1960 according to US Ecology. We briefly discussed the concern of the facility's inadvertent receipt of hazardous waste as appeared to have happened in 1986 with four containers from North American Phillips. However, the quantity of mercury which was observed appeared limited to that which was leaking and the state was unable to document that the waste load was hazardous waste.

INSPECTION:

We proceeded into the field at approximately 9:10 a.m. and toured the facility in a van under escourt. The underground tank closure which was being coordinated through DSHS was still underway. Security signs were posted and visible from 25" away. We inquired as to whether the facility was storing any waste and was informed that they may keep packages above ground for up to three (3) days before being considered as storage. A dosimeter was issued as required equipment for proceeding onto the facility. We drove around the 100 acre tract and observed that cell 11A was non-operational and filled with soil to grade. A layer of 6" rock and gravel was atop the soil. To expedite our inspection and attend the Hanford outbriefing in the afternoon we avoided leaving the van which would require us to survey out or go through decontamination, we provided John with Julie Atwood's camera and identified where we wanted photographs. A photo was taken of Trench 11A.

Trench 14 was inspected next where we observed wastes being placed in the trench using the same method observed in 1985. Cranes are used to lift the wastes into the trench and then the wastes area released and allowed to lay in an unorganized manner. It was pointed out by the facility manager that the soils were sandy and would easily flow to fill the void spaces created. Two photos were obtained of trench 14 which was begun in February 1987. We next proceeded to Trench 13 where almost 800' was filled and covered of this trench which was begun in February 1986. We requested the facility's definition of a radioactive area and was informed that the level was 2 mr/hr or greater. The highest levels of radioactive waste known to have been received at the facility was approximately 40,000 rem. A photo was obtained of trench 13. Trench 11B was in use also and was reserved for caison contained wastes.

Upon leaving the secure area we proceeded to the maintenance shed where the facility was reportedly generated approximately 15 gal/month of hazardous waste organic solvent which is less than the 220 pounds generation rate for small quanity generators.

RECORD REVIEW:

After the maintenance shed, we reviewed the manifests of wastes received at the facility in the last six (6) months. Each manifest was a radioactive waste shipment manifest. No hazardous waste manifests were received at the facility. None of the shipping names on any of the dozens reviewed identified a known hazardous waste with the exception of one which identified a waste containing 10% TCA which records indicated was trichloroacetic acid which is not a federal hazardous waste.

CLOSING:

During the inspection we met with Earl Ingersol from DSHS who accompanied us in the field inspection and was available to answere questions. He pointed out that the new license requires one package to be opened each week if the radioactive level is less than or equal to 100 mr/hr. This inspection is visual only, however. Mr. Ingersol identified that DSHS had not observed any discrepancies since the incident with North American Phillips. In closing we identified that we had not observed any hazardous waste shipments into the facility and requested a copy of the most recent license and Operations Manual, either of which were available for duplication at the time of the inspection.

SUMMARY:

Attachment I is a copy of the recent radioactive waste license. Attachment II is an example radioactive waste manifest. Attachment III is an example of US Ecology's attention to waste descriptions on manifest and excluding wastes believed from that description to be mixed wastes. Attachment IV is a plan of the ground water monitoring well locations for use in post-closure monitoring. Attachment V is a copy of the closure plan submitted in November 1985. No major deficiencies were observed in the plan based on a preliminary review. The photographs taken during the inspection are not yet available and will be attached to this report when received.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

Region 10 Inspection Checklist

Purpose--This checklist is designed to serve as a guideline to the major points of the regulations adopted pursuant to RCRA for inspectors to use while visiting hazardous waste (HW) regulated facilities. This checklist should not serve as a substitute for a detailed knowledge of the relevant regulations. The following is the outline of the checklist.

I. General Information
II. Small Quantity Generator (SQG) Regulations (40 CFR 261.5)
III. Generator Regulations (40 CFR 262)
IV. Transporter Regulations (40 CFR 263)
V. Treatment, Storage, and Disposal (TSD) Interim Status Regulations (40 CFR 265)
VI. Treatment, Storage, and Disposal (TSD) Permit Status Regulations (40 CFR 264)

I. General Information (Date Revised November 21, 1983)

A. Date/Time Inspection commenced: August 14, 1987

B. Facility

EPA/State ID WAD 060048360

Name & Addresses US Ecology INC

1. Mailing: PO Box 1638
2. Location: located on Hanford Reservation Richland, Wa. 99352

Contact: John Deold

Telephone: (509) 377-2411

C. Compliance Summary

	IN	OUT	N/A
RCRA (Statute)	( )	( )	( )
40 CFR 270	( )	( )	( )
40 CFR 124	( )	( )	( )
40 CFR 261.5	( )	( )	( )
40 CFR 262	( )	( )	( )
40 CFR 263	( )	( )	( )
40 CFR 264 (Permit)	( )	( )	( )
40 CFR 265	( )	( )	( )

To be determined

Specific Violations: _____

D. Inspector

Name (Print) Wayne Pierce Title: EPS

Signature Wayne L Pierce

Organization RCRA compliance

Phone (206) 442-7261

E. Inspection Participants:

Name	Title	Phone #
Julie Atwood	Ecology	
Jack Boller	WOO	

F. Notification/Permit Information

1. Started operation: 1965 Date: _____
2. Notification filed: YES NO Date: 11/18/80
3. Part A application filed: YES NO Date: 11/18/80
4. Part B called/Date Due YES NO Date: _____
5. Part B application: YES NO Date: 11/8/85

submitted pursuant to LOIS conditionally

6. Changes in Notification or Part A: _____

7. Facility's classified as:

Generator	( )
Transporter	(✓)
Treatment facility	( )
Storage facility	( )
Disposal facility	(✓)
Small quantity generator	( )
Recycler	( )
Less than 90 day storage	( )
Wastewater treatment unit exemption (WWTU)	( )
Elementary neutralization unit exemption (ENU)	( )

8. Does facility have a Part A withdrawal request in ? YES NO

Status _____

Comments: handles MIXed waste not regulated by federal gov't in the authorized state of Washington

G. Hazardous Waste Generation (HW)and Management (List EPA Waste Code)

1. General information

Uses radioactive waste manifest see Attachment II

accepts low level radioactive wastes per license see Attachment I

PHD982860896

claim they do not accept hw

a. Characteristic HW (DXXX)?

(1) Ignitability_____
(2) Corrosivity_____
(3) Reactivity_____
(4) EP Toxicity_____

b. Listed HW?

(1) HW from non-specific sources (FXXX)

_____

(2) HW from specific sources (KXXX)

_____

c. Discarded commercial chemical product(PXXX or UXXX)

(1) PXXX_____
(2) UXXX_____

d. Has facility petitioned to delist waste? YES NO

Date:_____ Comments:_____

_____

_____

e. Does facility qualify for WWTU or ENU? YES NO

Comments:_____

f. Has a determination been made for each waste generated that it is or is not a RCRA hazardous waste?

(1) What are the wastes generated? _____

(2) How was the hazardous waste determination made for each waste (i.e., lab analyses, knowledge of waste streams or processes, waste listed in Part 261)?

Comments:_____

_____

_____

(3) Are records available on the determination(s)? YES NO

(4) Are all hazardous wastes noted during inspection listed on the facility's RCRA notification/ Part A application? YES NO

If so explain.

2. Specific information
Provide the following information for each of the individual HW streams listed above. (Complete a separate form for each HW.)

a. EPA HW Code
b. HW description
c. Composition (including sampling requirements)
d. Process producing waste:
e. Rate of waste production
f. Time of storage
g. Waste handling prior to disposal
h. Waste disposal practice and manifest
i. Reporting and recordkeeping
j. Comments

H. Miscellaneous Notes:

conditionally exempt to SQG Solvent to safety Klean

II. Small Quantity Generator (SQG) Regulations 40 CFR 261.5 (Date Revised November 21, 1983)

N/A

A. General

1. Has the generator ever accumulated more than 1000 kilograms of D, F, K or U coded HW or 1 kilogram of P coded HW [261.5(f)]? YES NO

a. If yes, generator must comply with the generator regulations (262) and if stored for more than 90 days the applicable TSD regulations. Refer to Generator and/or TSD inspection checklist.

B. Small Quantity Generator (SQG) Regulations

1. A SQG must determine if he generates a hazardous waste (262.11). YES NO

2. Which of the following describes the SQG's treatment and/or disposal of his HW?

a. occurs on-site YES NO

b. ensure delivery to an off-site facility, either of which is:

(1) permitted under Part 270 YES NO

(2) in interim status under Part 270 and 265 YES NO

(3) authorized to manage HW by an authorized state YES NO

(4) permitted, licensed or registered by a State to manage municipal or industrial solid waste; or YES NO

(5) (a) facility which

(a) beneficially uses, re-uses recycles or reclaims his HW YES NO

b. treats his waste prior to use, re-use, recycle, or reclamation YES NO

3. Does generator manifest his wastes (not required)? YES NO

N/A

III. Generator Regulations 40 CFR 262 (Date Revised November 21, 1983)

A. Is the facility or does facility claim to be a small quantity generator? YES NO

Comments:_____

B. Does generator transport its own waste? YES NO

1. If NO, what is contractor's EPA ID, name, address, and phone?

2. If YES, see Transporter Regulations (Section III).

C. Does generator use the manifest system? YES NO

1. Does the Generator ever offer his hazardous waste to transporters or to TSD facilities which do not have an EPA ID number? YES NO

What transporters or TSD facilities?

2. A generator transporting or offering for transport hazardous waste for off-site TSD must first prepare a manifest.

3. If the waste is undeliverable to the primary or alternate facility, the generator must either designate another alternate facility or instruct the transporter to return the waste.

Does the manifest contain the following information:

a. Manifest document number YES NO

b. Generator's name, mailing address, phone number, and EPA ID number YES NO

c. Name and ID number of each transporter YES NO

d. Name, address and EPA ID number of the designated and alternate TSD facilities, if any. YES NO

e. Description of waste(s) required by DOT regulations in 49 CFR 172.101, 172.202, 172.203. YES NO

- Proper shipping name YES NO
- Hazard Class YES NO
- Identification number YES NO

f. Total quantity of <u>each</u> hazardous waste by units of <u>weight</u> or <u>volume</u> and type and number of containers placed aboard transport vehicle. YES NO

4. Does the manifest contain the certification attesting to proper classification, description, packaging, labeling, marking and condition in accordance with DOT and EPA regulations? YES NO

5. Does the manifest contain an adequate number of copies to provide one copy for:

a. Generator's records YES NO

b. Records of each transporter YES NO

c. TSD facility owner or operator's records YES NO

d. Signature by each transporter and return to generator YES NO

e. Signature by TSD facility and return to generator YES NO

6. Does the generator use the manifest properly by:

a. Signing the certification YES NO

b. Obtaining signature and date of acceptance from initial transporter YES NO

c. Retaining one copy of the transporter's signed manifest for 3 years or until receipt of a signed copy from disposal facility YES NO

d. Giving transporter the remaining copies of the manifest YES NO

7. Does the generator contact the transporter and/or the designated TSD facility to determine the shipment status in the event that a signed copy from the designated facility has not been received within 35 days? YES NO

8. Does the generator submit an Exception Report to the U.S. EPA in the event that a signed copy of the manifest has not been received from the designated TSD facility within 45 days? YES NO

9. The Manifest Exception Report must include

   a. A legible copy of the manifest and

   b. A letter of explanation describing efforts and results of status investigation.

********** TSD FACILITIES SKIP TO MODULE V **********

D. Does generator operate a specific area on-site for container handling or storage? YES NO

1. Does generator comply with the requirements set forth in governing on-site waste accumulation: YES NO

   a. Labeling and marking YES NO

   b. Dating YES NO

   c. Inspections (weekly for containers) YES NO

2. Are incompatible wastes segregated? YES NO

3. What quantities of HW are stored? _____

4. What is the longest period that it has been stored? _____

5. Were there any hazardous wastes stored on site at the time of inspection? (90 day storage allowance is allowed only if waste is stored in accordance with §262.34; i.e. must be stored in containers or tanks. Thus need to make note if storing in waste pile, etc.) YES NO

   a. If yes, do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure? YES NO

   b. If not properly packaged or in secure tanks, please explain. YES NO

   c. Are containers clearly marked and labeled? YES NO

   d. Do any containers appear to be leaking? YES NO

   e. If yes, approximately how many? _____

6. Generators may store hazardous waste for less than 90 days without a permit or TSD status providing certain requirements have been met. YES NO

   a. Are the containers made of or lined with materials which will not react with and are compatible with the hazardous waste to be stored in them? YES NO

   b. Are the containers always closed, except to add or remove waste? YES NO

   c. Are container storage areas inspected weekly for leaks and container deterioration (40 CFR 265.174)? YES NO

   d. Are precautions taken to prevent accidental ignition or reaction of ignitable or reactive waste? YES NO

   e. Are containers holding ignitable or reactive waste located at least 50 feet from the facility's property line? YES NO

   f. Is the facility aware of and complying with the following requirements for incompatible wastes:

      (1) Incompatible wastes must not be placed in the same containers, unless in compliance with 265.17(b) YES NO

      (2) HW must not be placed in an unwashed container that previously held an incompatible waste YES NO

      (3) Are storage containers holding HW that are incompatible with any waste or other material stored nearby separated from or protected from them by means of a dike, berm, wall, or other device? YES NO

      Explain?

   g. Are containers marked or labeled in a manner equivalent to 40 CFR 172 subpart E? YES NO

   h. Comments:

7. a. Does the generator import or export HW? YES NO

b. If yes, has notification of this activity been submitted to the EPA Regional Administrator? YES NO

c. Is a copy of that notification available? (If yes, obtain copy). YES NO

d. If a copy is not available, or can not be obtained, determine: 1) when the notification was submitted; 2) for what waste type and; 3) for what foreign facility (name and address). YES NO

8. TANKS

Where tanks are used to store hazardous waste, the requirement of 40 CFR Part 265 Subpart J must be complied with (except 265.193), as follows:

a. Is storage in tanks conducted such that:

(1) It does not generated heat, pressure, fire, explosion or violent reaction? (If no, explain) YES NO

(2) It does not produce uncontrolled toxic mists, fumes, dusts, or gases? (If no, explain) YES NO

(3) It does not produce uncontrolled flammable fumes or gases? YES NO

(4) It does not damage the tank? YES NO

(5) It does not threaten the environment in other ways (i.e., leaks, spills)? YES NO

Comments:

b. Is 2 feet of freeboard maintained in uncovered tanks? YES NO

If no, is secondary containment used? YES NO

(Explain)

c. Is the tank(s) continuously fed? YES NO

If yes, is there a means to stop inflow? YES NO

Explain

d. Are inspections of the following conducted:

(1) Discharge control equipment? YES NO
How often?

(2) Waste feed cut-off systems? YES NO
How often?

(3) Data from tank monitoring equipment? YES NO
How often

(4) The level of waste in the tank? YES NO
How often?

(5) The structural integrity of tank? YES NO
How often?
How are inspections conducted?
What is observed (looked for)?

(6) The immediate area around the tank for signs of leaks and the integrity of secondary containment (if any)? YES NO

e. (1) Have any tanks once used for storage of hazardous waste been closed or their function changed? When?

(2) Were all hazardous wastes and/or residues removed? YES NO

(3) What was the disposition of the wastes or residues (i.e., where did it go)? YES NO

(4) When shipped?

f. Are ignitable or reactive wastes placed in tanks? YES NO

If yes, what measures are used to prevent ingnition or reaction?

g. Have wastes been placed in a tank which previously contained potentially incompatible waste or residue? YES

h. (1) If reactive or ignitable wastes are stored in covered tanks, are they in compliance with the National Fire Protection Association's buffer zone requirements? YES

(2) Are "No Smoking" signs posted? YES

(3) Have others measures been adopted to reduce hazards associated with storage of ignitable or reactive waste in tanks? YES NO

Explain

9. Preparedness and Prevention (265 Subpart C)

a. Is facility maintained and operated to minimize the hazards of fire, explosion, and sudden or non-sudden releases to the environment? YES NO

Explain:

b. Is internal emergency communication equipment or alarm systems installed? YES NO

What type?

c. Is a device (e.g., telephone) immediately available for summoning emergency assistance? YES NO

d. Are fire extinguishers or other emergency equipment immediately available on-site? YES NO

e. Is emergency communications and response equipment tested? YES NO

How often?

f. Is aisle space adequate for emergency response? YES NO

What is the aisle spacing?

g. (1) Have any arrangements been made with local emergency response organizations? YES NO

(2) Which organizations?

(3) If local organizations have declined to enter into response agreements, is this documented in the facility's operating record? YES NO

Explain

10. Contingency Plan/Emergency Procedures

a. Has contingency plan been developed? (It may be a modified SPCC plan) YES NO

b. Have incidents occurred where the plan has been implemented? YES NO

c. Have incidents occurred where the plan should have been implemented but was not YES NO

Explain

d. A copy of the plan should either be obtained for post-inspection office review or it should be examined during inspection for the following:

(1) Does the plan describe actions to be taken by personnel in response to fire, explosion, or releases to the environment? YES NO

(2) Does the plan describe arrangements made with external emergency response organizations? YES NO

(3) Does the plan list those qualified to act as emergency coordinator including their name, address, and phone? YES NO

(a) Is the list current? YES NO

(4) Is all emergency equipment available at the facility listed in the plan? YES NO

(a) Is the location and a description of the equipment included? YES NO

(b) Are capabilities described for each piece or equipment unit? YES NO

(5) Does the plan include evacuation procedures including a description of signals to initiate evacuation (and routes and alternative routes)? YES NO

(6) Is a copy of the plan maintained at the active facility (versus main office)? YES NO

(a) Has a copy been supplied to appropriate off-site emergency response organizations? YES NO

To which?

(7) Is at least one designated person always available to respond to emergencies (i.e., of those on the coordinator list)? YES NO

How are they available

What are the limits of this person's authority to respond to emergencies?

(8) Has an emergency occurred? YES NO

Was the plan implemented? YES NO

(Describe the incident)

11. Personnel Training

a. Has a training program been developed? YES NO

What type? (Classroom? On-the-job Training?)

b. Does the program include contingency plan and response training? YES NO

c. Does the program include measures to familiarize personnel with emergency response equipment, procedures, and systems including:

(1) Procedures for using and maintaining equipment? YES NO

(2) Key parameters for automatic waste feed cut-off? YES NO

(3) Communications or alarm equipment? YES NO

(4) Response to fire and explosion? YES NO

(5) Response to ground water contamination incidents? YES NO

(6) Facility shut down? YES NO

d. Are records available at the facility for the following:

(1) Job title for each position related to hazardous waste management and maintaining equipment? YES

(2) Written job description for each job title? YES

(a) Does the job description include the skill, education or qualifications required for the position? YES NO

(b) The duties assigned to that position? YES NO

(3) A written description of the type and amount of training to be given to those in each job position? YES NO

(4) A record of training completed or experience obtained for each job position by employee? YES NO

(5) Was the required training obtained within 6 months of employment or by May 19, 1981, by each individual involved in hazardous waste management activities? YES NO

E. Is Generator familiar with Generator Reporting Procedures?

1. Annual Reports YES NO
2. Exception Reports YES NO
3. Spills and Discharges into the Environment YES NO
4. Comments

F. Is generator aware of and complying with regulations concerning the preparation of hazardous waste for transport? YES NO

1. Packaging 40 CFR 173, 178, 179, and with requirements of STATE YES NO
2. Labeling 49 CFR 172 YES NO
3. Marking 40 CFR 172 YES NO
4. Placarding 49 CFR 172 Subpart F YES NO
5. Containers with of hazardous waste must be marked with the following or essentially equivalent, words and in information, displayed in accordance with 40 CFR 172.304.

HAZARDOUS WASTE - State and Federal Law prohibits improper disposal. If found, contact the nearest police or public safety authority, and the U.S. Environmental Protection Agency.

Generator's Name and Address
Manifest Document No. _____

6. Comments"

G. Are any wastes generated at this facility being transported or stored prior to being recycled, reclaimed, or recovered?

YES NO

1. If yes, what are they_____

a.	Sludge	( )
b.	Characteristic HW	( )
c.	Listed HW	( )
d.	Comments	

N/A for now

IV. Transporter Regulations (40 CFR 263) (Date Revised November 21, 1983)

A. Transporter facility description.

1. Operates as a Transfer Facility — YES NO
2. Operates as a Storage Facility — YES NO
3. Operates as a Generator — YES NO
4. Imports Wastes — YES NO
5. Combines Manifested Shipments — YES NO

B. Does transporter have an EPA ID? — YES NO

C. Does the transporter comply with generator regulations under Part 262 if he imports hazardous waste or combines wastes of different DOT shipping descriptions into a single container? — YES NO

D. Does the transporter comply with storage regulations under Parts 270, 264, and 265 if he stores manifested shipments at a transfer facility for more than 10 days? — YES NO

E. Is transporter aware of and complying with manifest requirements under RCRA 263.20?

1. Before transporting HW is manifest dated and signed by generator? — YES NO
2. Does the transporter sign, date, and return a copy of the manifest to the generator before transporting waste off the generator's property? — YES NO
3. Does the transporter delivering hazardous waste to another transporter or the designated facility:

a. Obtain a signed and dated (S/D) copy of the manifest? — YES NO

b. Retain one copy of the manifest containing signatures of the generator, himself, next designated transporter or the designated TSD facility for 3 years from original manifest date? — YES NO

c. Give remaining copies of the manifest to accepting transporter or designated facility? — YES NO

4. Does transporter deliver the entire quantity of HW accepted to:

   a. The designated facility listed on the manifest? or YES NO

   b. The alternate designated facility in the event the shipment cannot be delivered to the designated facility? or YES NO

   c. The next designated transporter? YES NO

5. If delivery is not possible, does the transporter contact the generator and revise the manifest according to instructions? YES NO

F. In the event of a spill or discharge during transport, does the transporter comply with the requirements set forth in 40 CFR 263.30? YES NO

1. Give notice to generator YES NO

2. Give notice to the National Response Center (800-424-8802) if required by 40 CFR 171.15?

3. Report in writing, as required by 40 CFR 171.16, to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. YES NO

4. Comments YES NO

N/A for now

V. TREATMENT, STORAGE and DISPOSAL (TSD) Interim Status Regulations Facilities, 40 CFR 265. (Date Revised November 21, 1983)

A. Type of Activity

1. Storage

a. Containers	( )
b. Tanks	
(1) Above ground	( )
(2) Below ground	( )
c. Surface Impoundments	( )
d. Waste Piles	( )
e. Other	( )

2. Treatment

a. Settling	( )
b. Evaporation	( )
c. Filtration	( )
d. Energy Recovery	( )
e. Incineration	( )
f. Thermal Treatment	( )
g. Recycling/Recovery	( )
h. Chem/Phys/Biological	( )
i. Other	( )

3. Disposal

a. Landfill	( )
b. Land Treatment	( )
c. Surface Impoundment	( )
d. Incineration	( )
e. Other	( )

4. Comments:

5. Are hazardous wastes accepted from "outside" (off-site) sources(wastes not generated on site)? YES NO

   a. If YES, has a chemical and physical analysis of a representative sample been obtained in accordance with 40 CFR 265.13? YES NO

   b. Does the facility confirm that each hazardous waste received at the facility matches the identity of tr waste on the manifest? YES NO

   c. How does the facility determine this?

they has installed monitoring wells see Attachment IV they are not complying with federal hazardous waste requirements

B. Subpart B - General Facility Standards (40 CFR 265.10 - 265.17)

1. Does the facility obtain a detailed analysis of his waste prior to storing, treating, or disposing of it? YES NO

Describe:

2. Does the facility follow a Written Waste Analysis Plan Does the Plan include?

a. Parameters to be tested? YES NO
b. Methods of analysis? YES NO
c. Methods to get representative samples? YES NO
d. Testing frequency? YES NO

Comments:

3. Did inspector collect a copy of the Plan for a thorough review of it at EPA's offices? YES NO

4. Security

a. Have site owner/operators taken appropriate measures to ensure against unauthorized entry? YES NO

(1) Are signs posted at each entrance to active portion, and at other locations, in sufficient numbers to be seen by an approach? YES NO

(2) Are they legible from a distance of 25 feet or more? YES NO

(3) Does the facility have a 24-hour surveillance system or artificial or natural barrier/or combination of both, to control access to the active portion? YES NO

Comments:

5. Does the facility follow a Written Inspection Schedule (4 CFR 265.15? YES NO

a. Does it include inspecting all:
Monitoring equipment? YES NO
Safety and emergency equipment? YES NO
Security devices? YES NO
Detecting equipment? YES NO

Dangerous waste storage areas? YES NO

b. Is this inspection schedule maintained at the facility? YES NO

c. Is an inspection log maintained? YES NO

(1) Is the log, or its summary, kept at the facility for at least three years from the date of inspection? YES NO

(2) Does the log include:

(a) date of time of inspection? YES NO

(b) inspectors name? YES NO

(c) observations? YES NO

(d) date and nature of repairs? YES NO

Comments:

6. Personnel Training (40 CFR 265.16)

a. Has a training program been developed? YES NO
What Type? (Classroom/on-the-job)

b. Does the program include contingency plan and response training? YES NO

c. Does the program include measures to familiarize personnel with emergency response equipment, procedures, and systems including: YES NO

(1) Procedures for using and maintaining equipment? YES NO

(2) Key parameters for automatic waste feed cut-off systems. YES NO

(3) Communications or alarm equipment YES NO

(4) Response to fire and explosions YES NO

(5) Response to ground water contamination incidents? YES NO

(6) Facility shut down? YES NO

d. Are records available at the facility for the following:

(1) Job title for each position related to hazardous waste management and maintaining equipment? YES NO

(2) Written job description for each job title? YES NO

(a) Does the job description include the skill, education or qualifications required for the position YES NO

(b) The duties assigned to that position? YES NO

(3) A written description of the type and amount of training to be given to those in each job position? YES NO

(4) A record of training completed or experience obtained for each job position by employee YES NO

(5) Was the required training obtained within 6 months of employment or by May 19, 1981, by each individual involved in hazardous waste management activities? YES NO

C. Subpart C - Procedures and Preventions (40 CFR 265.30)

1. Is facility maintained and operated to minimize the hazards of fire, explosion, and sudden or non-sudden releases to the environment? YES NO

   Explain:

2. Is internal emergency communication equipment or alarm systems installed? YES NO

   What type?

3. Is a device (e.g., telephone) immediately available for summoning emergency assistance? YES NO

4. Are fire extinguishers or other emergency equipment immediately available on-site? YES NO

5. Is emergency communications and response equipment tested? YES NO

   How often?

6. Is aisle space adequate for emergency response? YES NO

   What is the aisle spacing?

7. Have any arrangements been made with local emergency response organizations? YES NO

8. Which organizations?

9. If local organizations have declined to enter into response agreements, is this documented in the facility's operating record? YES NO

   Explain

C. Subpart C - Procedures and Preventions (40 CFR 265.30)

1. Is facility maintained and operated to minimize the hazards of fire, explosion, and sudden or non-sudden releases to the environment? YES NO

   Explain:

2. Is internal emergency communication equipment or alarm systems installed? YES NO

   What type?

3. Is a device (e.g., telephone) immediately available for summoning emergency assistance? YES NO

4. Are fire extinguishers or other emergency equipment immediately available on-site? YES NO

5. Is emergency communications and response equipment tested? YES NO

   How often?

6. Is aisle space adequate for emergency response? YES NO

   What is the aisle spacing?

7. Have any arrangements been made with local emergency response organizations? YES NO

8. Which organizations?

9. If local organizations have declined to enter into response agreements, is this documented in the facility's operating record? YES NO

   Explain

D. Subpart D - Contingency Plan and Emergency Procedures 40 CFR 265.50

1. Has contingency plan been developed? (It may be a modified SPCC plan) YES NO

2. Have incidents occurred where the plan has been implemented? YES NO

3. Have incidents occurred where the plan should have been implemented but was not YES NO

   Explain

4. A copy of the plan should either be obtained for post-inspection office review or it should be examined during inspection for the following:

   a. Does the plan describe actions to be taken by personnel in response to fire, explosion, or releases to the environment? YES NO

   b. Does the plan describe arrangements made with external emergency response organizations? YES NO

   c. Does the plan list those qualified to act as emergency coordinator including their name, address, and phone? YES NO

      (1) Is the list current? YES NO

   d. Is all emergency equipment available at the facility listed in the plan? YES NO

      (1) Is the location and a description of the equipment included? YES NO

      (2) Are capabilities described for each piece or equipment unit? YES NO

   e. Does the plan include evacuation procedures including a description of signals to initiate evacuation (and routes and alternative routes)? YES NO

f. Is a copy of the plan maintained at the active facility (versus main office)? YES NO

(1) Has a copy been supplied to appropriate off-site emergency response organizations? YES NO
To which?

5. Is at least one designated person always available to respond to emergencies (i.e., of those on the coordinator list)? YES NO
How are they available

6. What are the limits of this person's authority to respond to emergencies?

a. Has an emergency occurred? YES NO

b. Was the plan implemented? YES NO

c. (Describe the incident)

E. Subpart E - Manifest System, Recordkeeping, and Reporting 40 CFR 265.70

1. Manifest System

a. Upon receipt of a manifested hazardous waste shipment, does the TSD facility:

(1) Sign and date each copy of manifest receipt of certifying waste? YES NO

(2) Note any discrepancies on each copy? YES NO

(3) Give delivering transporter one signed and dated copy of the manifest? YES NO

(4) Send a S/D copy of the manifest to the generator within 30 days after delivery and? YES NO

(5) Retain a copy of each manifest at the facility for 3 years from delivery? YES NO

b. If the TSD facility initiates a hazardous waste shipment, does it comply with generator requirements in Part 262? YES NO

c. Does the TSD facility examine manifests and wastes received to detect any significant discrepancies in quantity or type of waste, such as: YES NO

(1) Bulk waste-quantity variation of 10 percent or greater

(2) Batch waste - any variation in piece count

(3) Waste type - obvious differences discernible by inspection or waste analysis

d. If significant discrepancies are found, does the TSD facility:

(1) Reconcile discrepancies with generator or transporter within 15 days? or YES NO

CO has shipped suspicious waste back to generator see Attachment III for example of scintillation liquids

9413286.0920

(2) Immediately submit to EPA-RA a Discrepancy Report describing the discrepancy and attempts to resolve it and a copy of the manifest involved? YES NO

e. TSD facilities must keep a written operating record documenting the following details:

(1) Waste description and quantity received

(2) Methods and dates of its treatment, storage, and disposal

(3) The location and quantity of each HW at the facility

2. Operating Record

a. Does the owner/operator of the facility maintain an operating record at the facility (40 CFR 265.73)? YES NO

b. Does the record contain the following information.

(1) A description of, and the quantity of each HW received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility? YES NO

(2) The location of each Hazardous Waste within the facility, and its quantity? YES NO

(3) A map showing disposal sites? YES NO

(4) Summary reports and details of all incidents that require implementing the Contingency Plan? YES NO

(5) Records and results of inspections as required (need only be kept three years)? YES NO

(6) All closure and post-closure cost estimates required for the facility? YES NO

(7) The results of testing and waste analysis? YES NO

3. Facility Reporting Procedures

a. Has the owner/operator prepared and submitted a single copy of the Annual Report to EPA by March 1 of each year? YES NO

b. Is owner/operator familiar with procedures for emergencies? YES NO

c. If a TSD facility accepts a regulated hazardous waste shipment without the required manifest or shipping paper, does it file an "Unmanifested Waste Report" within 15 days or receipt? YES NO

F. Subpart F - Ground-Water Monitoring (40 CFR 265.90)

1. Are ground-water (GW) monitoring regulations required at this facility? YES NO

2. If YES, what is the relevant process unit?

a. Surface impoundment ( )
b. Waste pile ( )
b. Land treatment ( )
c. Landfills ( )
d. Other ( )
Describe:

3. Has the owner/operator implemented a ground water monitoring plan? YES NO

4. If NO, has the facility implemented one of the following:

a. GW Waiver [265.90(c)] ( )
b. Alternate GW Monitoring System [265.90(d)] ( )
c. Neutralization Waiver (265.90(e)] ( )
d. Describe:

5. Does the ground water monitoring program consist of the following:

a. At least 1 upgradient and 3 downgradient wells? YES NO
b. GW Sampling and Analysis Plan YES NO
c. GW sampling quarterly first year YES NO
d. GW sampling semiannually after that YES NO
e. Drinking Water Standards parameters YES NO
Sampling frequency_____
f. GW Quality parameters YES NO
Sampling frequency_____
g. GW Indicator parameters YES NO
Sampling frequency_____
h. GW elevation parameters YES NO
i. Outline GW Quality Assessment Program YES NO
j. Statistical Analysis of Indicator parameters YES NO

Results:

6. Has the facility implemented GW Quality Assessment program. YES NO

   a. Date:_____
   b. Results:

7. Does the facility maintain the necessary records.

   a. Initial background parameter concentrations YES NO
   b. Subsequent parameters concentrations YES NO
   c. Statistical evaluations YES NO

8. Has the facility reported necessary information YES NO

   a. DW Standards for 1st year YES NO
   b. GW Indicator parameters annually YES NO
   c. Statistical evaluation YES NO

9. Comments:

See Attachment V

G. Subpart G - Closure and Post-Closure (40 CFR 265.110)

Closure 11/85 pla

1. Has the facility developed a closure plan which outlines all necessary steps to safely close the facility? (40 CFR 265.117)

   a. Description of how and when the facility will be partially closed (if applicable) and finally closed? YES NO

   b. Estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility? YES NO

   c. Description of the steps needed to decontaminate the facility equipment during closure? YES NO

   d. Comment:

Post-Closure Pt B application submitted for post closure

2. Has the facility developed a post-closure plan which contains the following steps to safely care for the facility after closure/post-close of the facility? (40 CFR 265.117)

   a. Description of how post closure will be carried out for the next 30 years. (T) ( )

   b. Notice to the local land authority within 90 days after closure is completed? (T) ( )

   c. Notice in deed to property? (T) ( )

unknown don't have non-sudden for land disposal

H. Subpart H - Financial Requirements 40 CFR 265.140

1. Liability

a. (1) Does facility maintain liability insurance for sudden occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million? YES NO

(2) By what method did the owner/operator demonstrate sudden liability coverages to the RA?

4/15/86 Coverage
National Union Fire Ins. Co.
Industrial Indemnity
"Absolute Pollution Exclusion" clause

(a) If HW facility liability endorsement(s) ( )

(b) If HW facility certificate(s) of liability insurance ( )

(c) financial test ( )

(d) corporate guarantee ( )

(e) multiple mechanisms (specify) ( )

2. If a surface impoundment, landfill, or land treatment exist at the facility,

b. (1) does facility maintained liability insurance for nonsudden occurrence in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million? YES NO

(2) By what method did the owner/operator demonstrate non-sudden liability coverage to RA?

(a) HW facility liability endorsement(s)' ( )

(b) HW facility certificate(s) of liability insurance' ( )

(c) financial test ( )

(d) corporate guarantee ( )

(e) multiple mehcanisms (specify) ( )

c. Has owner/operator submitted an originally signed duplicate of liability coverage demonstration to RA?

d. Is wording of liability coverage instruments identical to that specified in 40 CFR 264.51?

YES NO

Comment:

2. Assurance closure plan submitted 11/85

a. Closure

(1) Has facility prepared a written estimate of the cost of closing the facility in accordance with the closure plan (40 CFR 265.112)? Yes NO

(2) Is this cost estimate adjusted annually for inflation? YES NO

(3) Has facility established financial assurance for the closure of the facility (40 CFR 265.143)? YES NO

(4) By what method has this been achieved:

(a)	Trust fund	( )
(b)	Surety bond (with standby trust)	( )
(c)	Letter of credit (with standby trust)	( )
(d)	Insurance	( )
(e)	Financial test	( )
(f)	Corporate guarantee	( )
(f)	Multiple mechanisms	( )

(5) Has facility submitted an originally duplicate of financial assurance to RA? YES NO

(6) Is wording of the financial assurance statement identical to that specified in 40 CFR 264.151 YES NO

(7) Comment:

b. Post-Closure (Disposal Facilities)

(1) Has facility prepared a written estimate of the cost of post-closure monitoring and maintenance of the facility (40 CFR 265.144)? YES NO

(2) Is this cost estimate inflation adjusted annually YES NO

(3) Has owner/operator established financial assurance for the post-closure care of the facility (40 CFR 265.145)? YES NO

(4) By what method has this been achieved:

(a)	Trust fund	( )
(b)	Surety bond (with standby trust)	( )
(c)	Letter of credit (with standby trust	( )
(d)	Insurance	( )
(e)	Financial test	( )
(f)	Corporate guarantee	( )
(g)	Multiple Mechanisms	( )

8. Has owner/operator submitted an originally signed duplicate of financial assurance to Regional Administrator? YES NO

9. Is wording of the financial assurance statement identical to that specified in 40 CFR 264.151? YES NO

I. Subpart I Use and Management of Containers (40 CFR 265.170)

1. Does this section apply to this facility? YES NO

2. Are the containers made of or lined with materials which will not react with and are compatible with the hazardous waste to be stored in them? YES NO

3. Are the containers always closed, except to add or remove waste? YES NO

4. Are container storage areas inspected weekly for leaks and container deterioration (40 CFR 265.174)? YES NO

5. Are precautions taken to prevent accidental ignition or reaction of ignitable or reactive waste? YES NO

6. Are containers holding ignitable or reactive waste located at least 50 feet from the facility's property line? YES NO

7. Is the facility aware of and complying with the following requirements for incompatible wastes:

   a. Incompatible wastes must not be placed in the same containers, unless in compliance with 265.17(b) YES NO

   b. HW must not be placed in an unwashed container that previously held an incompatible waste YES NO

   c. Are storage containers holding HW that are incompatible with any waste or other material stored nearby separated from or protected from them by means of a dike, berm, wall, or other device? YES NO

   Explain?

8. Are containers marked or labeled in a manner equivalent to 40 CFR 172 subpart E? YES NO

9. Comments:

J. Subpart J - Tanks (40 CFR 265.190) N/A

1. Does this section apply to this facility? YES NO

2. Do tanks on the facility hold hazardous waste? YES NO

   If so, what are their contents?

   _____

   _____

3. Is storage in tanks conducted such that:

   a. It does not generated heat, pressure, fire, explosion or violent reaction? (If no, explain) YES NO

   b. It does not produce uncontrolled toxic mists, fumes, dusts, or gases? (If no, explain) YES NO

   c. It does not produce uncontrolled flammable fumes or gases? YES NO

   d. It does not damage the tank? YES NO

   e. It does not threaten the environment in other ways (i.e., leaks, spills)? YES NO

   Comments:

4. Is 2 feet of freeboard maintained in uncovered tanks? YES NO

   If no, is secondary containment used? YES NO

   (Explain)

5. Is the tank(s) continuously fed? YES NO

   If yes, is there a means to stop inflow? YES NO

   Explain

6. Are Hazardous Waste storage tanks operated in a manner which minimizes the possibility of overfilling? YES NO

   How:

   Waste feed cut-off ( )
   Bypass system to another tank ( )
   High level alarm ( )
   Other_____

7. Are inspections of the following conducted:

   a. Discharge control equipment? YES NO
      How often?

   b. Waste feed cut-off systems? YES NO
      How often?

   c. Data from tank monitoring equipment? YES NO
      How often

   d. The level of waste in the tank? YES NO
      How often?

   e. The structural integrity of tank? YES NO
      How often?
      How are inspections conducted?
      What is observed (looked for)?

   f. The immediate area around the tank for signs of leaks and the integrity of secondary containment (if any)? YES NO

8. Have any tanks once used for storage of hazardous waste been closed or their function changed? When?

   a. Were all hazardous wastes and/or residues removed? YES NO

   b. What was the disposition of the wastes or residues (i.e., where did it go)? YES NO

   c. When shipped?

9. Are ignitable or reactive wastes placed in tanks? YES NO

10. If yes, what measures are used to prevent ingnition or reaction?

11. Have wastes been placed in a tank which previously contained potentially incompatible waste or residue? YES NO

12. If reactive or ignitable wastes are stored in covered tanks, are they in compliance with the National Fire Protection Association's buffer zone requirements? YES NO

13. Are "No Smoking" signs posted? YES NO

14. Have others measures been adopted to reduce hazards associated with storage of ignitable or reactive waste in tanks? YES NO

Explain

15. Waste Analysis and Trial Tests

Before treating and storing of hazardous waste in a tank is a detailed chemical and physical analysis of the waste obtained? YES NO

16. Does the company have and follow a written waste analysis plan? YES NO

a. Does the plan identify parameters used? YES NO

Explain

b. Sampling Method? YES NO

Explain

c. How frequent is analysis repeated? YES NO

d. Are results of waste analysis and trial tests placed in the facility's operating record.

17. Are waste analyses done when a tank is used to treat or store a HW which is substantially different or treated differently from waste previously treated or stored in the tank? YES NO

N/A

K. Subpart K - Surface Impoundments (40 CFR 265.220)

1. Does this section apply to this facility? YES NO

2. Does the surface impoundment maintain enough freeboard to prevent any overtopping of the dike by overfilling, wave action, or a storm? YES NO

3. Are the surface impoundments designed and operated to allow two feet of freeboard? YES NO

4. Do earthen dikes have a protective cover which minimizes erosion (grass, rock, shale)? YES NO

5. Is a waste analysis or trial test conducted whenever a surface impoundment is used to chemically treat a HW which is substantially different or treated differently from waste previously treated in the surface impoundment? YES NO

6. Are results of waste analyses documented in the facility's operating record? YES NO

7. Are the surface impoundments inspected on a routine basis? How often? YES NO

8. Are ignitable or reactive wastes held in a surface impoundment (40 CFR 265.229)? YES NO

9. Comments:

The following 40 CFR Subparts do not have a specific checklist prepared because few of these types of facilities exists in Region X. Inspection made at facilities which operate any of the following would require the inspector to prepare an inspection checklist prior to the site visit.

L. Subpart L - Waste Piles (40 CFR 265.250)
M. Subpart M - Land Treatment (40 CFR 265.270)
N. Subpart N - Landfills (40 CFR 265.300)
O. Subpart O - Incinerators (40 CFR 265.340)
P. Subpart P - Thermal Treatment (40 CFR 265.370)
Q. Subpart Q - Chemical, Physical, and Biological Treatment (40 CFR 265.400)
R. Subpart R - Underground Injection (40 CFR 265.430)

VI. Treatment, Storage, and Disposal (TSD) Permit Regulations (40 CFR 264) (Date Revised November 21, 1983)

This Part of the checklist does not have a specific checklist prepared because the checklist would be different for each facility. A compliance inspection made at a facility which has been issued a Part B Permit needs to have checklist and/or narrative which reviews all of the requirements of the facility's Permit. This checklist and/or narrative needs to be developed by the individual inspector.

WA 8967
1-27-87

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January 27, 1987

Mr. Wayne Pierre
U.S. EPA Region 10
1200 6th Avenue
Seattle, WA 98101

Dear Mr. Pierre:

PRC Environmental Management and its subcontractor, Jacobs Engineering Group, Inc. are pleased to submit the draft report for Work Assignment No. 580 initiated under Contract No. 68-01-7-037. This report is entitled "U.S. Ecology Generator Inspections."

Please note that this draft incudes our handwritten comments on the text. These comments are not significant enough to delay the submittal of this draft for your review. We have requested Jacobs to address our comments in the final report.

Please refer any site-specific questions directly to Geoff Watkins (Jacobs-Engineering Group, Inc.).

Should you have any other questions or wish to discuss this report with me directly, please feel free to do so.

Thank you for your continuing assistance and cooperation.

Sincerely,

PRC Environmental Management, Inc.

Daniel T. Chow

DTC/mrj
Enclosures

cc: Nancy Deck (letter with report)
Bruce Bakaysa (letter only)
Chuck Rice (letter only)
Charlotte White (letter with report)
Geoff Watkin

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U.S. ECOLOGY GENERATORS INSPECTIONS

DRAFT REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	580
EPA Region	:	10
Site No.	:	N/A
Date Prepared	:	January 27, 1987
Contract No.	:	68-01-7037
PRC No.	:	15-5800-00
Prepared By	:	Jacobs Engineering Group, Inc. (Geoff Watkin)
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US ECOLOGY

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SECTION 1
SUMMARY

The United States Environmental Protection Agency - Region 10 is currently determining the RCRA compliance status of the US Ecology facility in Richland, Washington. The US Ecology landfill accepts radioactive wastes. The EPA Region 10 office requested technical support in inspecting various generators in Washington state.

The purpose of the technical support is to determine whether hazardous wastes were disposed at the US Ecology facility by three research institutions. The project approach of this study consisted of:

- o Development Sampling and QA/QC Plan,
- o Preliminary Investigation,
- o Laboratory Inspections, and
- o Report Preparation.

The waste handling and disposal procedures of University of Washington, Washington State University, and Virginia Mason Research Center were inspected. In addition, the Radioactive Waste Shipment and Disposal Manifests completed by these facilities were reviewed. The three sites investigated presented sufficient data for documentation of the disposal of hazardous waste at the US Ecology landfill.

During the laboratory inspection at each institution, waste generation processes were examined and lab personnel were interviewed. Samples of wastes representative of those disposed at US Ecology were obtained and analyzed for RCRA ignitability and corrositivity characteristics at selected laboratories.

Washington State University and Virginia Mason Research Center are classified as small quantity generators based upon the volume of hazardous waste generation during FY 1985.

As a result of the study it was determined that hazardous wastes were disposed at the US Ecology landfill by University of Washington (Dr. Hashke's laboratory) and Virginia

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Mason Research Center (Gleisner's laboratory). It is probable that the Washington State University disposed hazardous waste at the landfill, although it was not definitely established through physical documentation.

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SECTION 2
INTRODUCTION

2.1 PROJECT BACKGROUND

The United States Environmental Protection Agency - Region 10 is currently determining the RCRA compliance status of the US Ecology facility in Richland, Washington. The US Ecology landfill accepts radioactive waste. Presently, it is not known if the radioactive wastes exhibited hazardous waste properties since US Ecology did not open or inspect containers nor request analysis for hazardous waste characteristics prior to disposal.

The University of Washington, Washington State University, and Virginia Mason Research Center have been identified by U.S. EPA Region 10 as generators disposing of radioactive wastes at the Richland US Ecology disposal facility.

University of Washington (UW), located in Seattle, has 705 research laboratories of which approximately 250 are currently active. Washington State University (WSU), located in Pullman, has approximately 350 laboratories, 105 of which use radioactive materials in conducting various types of plant and animal research. Virginia Mason Research Center (VM), located in Seattle, has five laboratories which generate radioactive wastes. These laboratories generate radioactive wastes, and some generate hazardous waste and mixed wastes (a mixture of hazardous and radioactive wastes).

The objective of this study is to determine whether hazardous wastes were disposed at the US Ecology facility by the research institutions.

In 40CFR 261, five characteristics of hazardous waste are listed:

- o General;
- o Ignitability;
- o Corrosivity;
- o Reactivity; and
- o Extraction procedures (EP) toxicity.

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2.2 PROJECT APPROACH

The work assignment investigation performed by Jacobs consisted of four tasks. Each of the task is briefly described below:

TASK 1: DEVELOP SAMPLING AND QA/QC PLAN

A sampling and QA/QC plan was developed in accordance with EPA sampling protocol and National Enforcement Investigations Center (NEIC) enforcement considerations. The sampling objectives in the plan included the following:

- Purpose of the sampling project;
- Sampling locations;
- Sampling methods;
- Type and number of samples;
- Analyses to be performed;
- Methods of handling, storing, and transporting samples;
- Decontamination procedures;
- Safety procedures; and
- QA/QC procedures.

TASK 2: PRELIMINARY INVESTIGATION

Background information provided by EPA was examined to obtain information concerning the generator facilities and waste generating processes. The information was reviewed to become familiar with facility procedures and operations.

TASK 3: LABORATORY INSPECTIONS

At each facility, Jacobs reviewed all relevant documents, including Material Safety Data Sheets and results of sampling and analyses performed on the waste. Waste generation processes were inspected and samples of wastes representative of those disposed at US Ecology were obtained. The samples were shipped to selected laboratories for analysis to determine if they exhibited RCRA hazardous waste characteristics. In addition, Jacobs interviewed employees familiar with the processes of generating the US Ecology disposed wastes.

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TASK 4: REPORT PREPARATION

Information gathered from tasks 1 through 3 have been compiled and summarized in Sections 3 through 7 of this report. Section 9 presents the conclusions of this project.

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SECTION 3
WASTE HANDLING AND DISPOSAL PROCEDURES

3.1 UNIVERSITY OF WASHINGTON WASTE HANDLING AND DISPOSAL PROCEDURES

When UW laboratories accumulate a sufficient volume of radioactive waste, a request is submitted to the UW Radiation Control Department (RC) to have the waste removed. During the week following the request, a representative from RC visits the lab and inspects the containers holding radioactive waste. If the wastes are properly packaged they will be removed and temporarily stored before disposal. If the wastes are not packaged correctly or not properly solidified (i.e., there is presence of unabsorbed liquid within the disposal container), a notice is placed on the container notifying the lab why the wastes were not removed.

Liquid wastes are packaged by the laboratories in white polyethylene containers which meet DOT-7A specifications. The liquids are absorbed in diatomeaceous earth.

Solid wastes consisting of paper, plastic and glass, which are contaminated with radioactivity, are packaged in cardboard boxes lined with a plastic bag. RC consolidates and compacts the paper, plastic and glass into 55-gallon drums.

Before radioactive wastes are received by RC, the laboratory indicates on the box or bucket the radioactive isotopes and their concentrations. RC uses these isotope concentrations in manifesting the material for disposal. RC does not test the waste for radioactivity or hazardous properties prior to disposal.

On the average, UW sends two to four shipments of radioactive wastes to US Ecology per year. Prior to October 1985, scintillation fluids were sent to US Ecology for disposal; however, since October 1985, the scintillation fluids have been stored by RC and tested periodically for radioactivity. When the radioactivity of all isotopes has fallen below 0.05 microcuries per gram (uCi/g), the wastes are sent to a California facility for incineration.

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3.2 WASHINGTON STATE UNIVERSITY WASTE HANDLING AND DISPOSAL PROCEDURES

At WSU, each laboratory stores radioactive wastes until a sufficient volume accumulates to warrant removal. Laboratories requesting waste removal complete a Radioactive Waste Receipt form. This form identifies the following:

- o Waste User,
- o Department,
- o Building/Location,
- o Date,
- o Waste Type,
- o Isotope,
- o Activity,
- o Chemical Form, and
- o Volume of Waste.

When notified, Radiation Safety dispatches a trained radiation control officer to pick up the waste. Once the wastes are received and separated by waste type, one of five disposal paths occur:

1) Incineration - solid radioactive wastes are incinerated at the WSU pathological incinerator. Scintillation liquids were incinerated from 1981 to 1983. This disposal method was stopped by the Washington State Health Department in 1983.

2) Storage for Reduction - mixed wastes containing isotopes that have short half-lives are stored until radioactive levels fall below detectable limits. When radioactivity is not detectable, the materials are disposed of as hazardous wastes.

3) Disposal into Sanitary Sewer System - low level radioactive wastes with non-hazardous components are disposed through the sanitary sewer system.

4) Disposal at US Ecology - non-hazardous and non-mixed wastes are disposed at the US Ecology landfill in Richland, WA.

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5) Reclamation by RAMP Industries - since 1983 scintillation liquids have been recycled by RAMP Industries, Denver, CO.

3.3 VIRGINIA MASON RESEARCH CENTER WASTE HANDLING AND DISPOSAL PROCEDURES

Each of the five laboratories at VM temporarily accumulate and store its own radioactive wastes. The laboratory identifies the radioactive levels of the materials which are then moved and stored in a hazardous and radioactive waste storage area. After a sufficient volume of it has accumulated the wastes are disposed. The types of wastes generated during 1982 through 1985 consisted of the following:

- Scintillation liquids (labeled as toluene on Radioactive Waste Shipment and Disposal Forms),
- Laboratory trash, and
- Animal carcasses.

Approximately three times a year a disposal broker (Ralph M. Baltzo) collects the wastes and packages the material for shipment and disposal. Currently VM disposes of laboratory waste (clothing and glassware contaminated with low levels of radioactivity) at the US Ecology landfill.

Scintillation vials were packaged in 55-gallon drums surrounded by absorbent material (Floor Dry/Superfine).

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SECTION 4
MANIFEST REVIEW

4.1 UNIVERSITY OF WASHINGTON MANIFEST REVIEW

The Radioactive Waste Shipment and Disposal Manifests completed by UW from January 1982 to August 1986 were reviewed. The manifests list four types of wastes disposed at US Ecology:

- Paper, plastic and glass (PPG) - solid waste contaminated with radioactive materials (e.g. aprons, glass, pipettes).

- Animal carcasses and lime - animals used in medical research contaminated with radioactive isotopes. Lime is added to facilitate organic decomposition.

- Absorbed aqueous solutions - non-hazardous radioactive mixtures (e.g., rinse solutions, pH buffers, and dialysis solutions).

- Toluene-scintillation cocktails. The last shipment of scintillation waste was in October, 1985.

4.2 WASHINGTON STATE UNIVERSITY MANIFEST REVIEW

A detailed review of Radioactive Waste Receipt forms of WSU from 1982 through 1985 indicated that:

- No instances of hazardous or mixed waste disposal.

- Identified five laboratories that are major generators of radioactive wastes.

- No scintillation liquids were disposed at the U.S. Ecology facility.

- From 1981 through 1983 scintillation wastes were burned at the pathological incinerator.

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- o Since 1983 scintillation wastes have been recycled by RAMP Industries.

4.3 VIRGINIA MASON RESEARCH CENTER MANIFEST REVIEW

Radioactive Waste Shipment and Disposal Manifests completed by VM and Ralph Baltzo from January 1983 to September 1986 were reviewed. This review indicated that animal carcasses and solid laboratory wastes were disposed at the US Ecology landfill. Scintillation wastes were disposed from January 1983 until August 27, 1986.

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SECTION 5
LABORATORY INSPECTION

5.1 UNIVERSITY OF WASHINGTON LABORATORY INSPECTION

On August 7, 1986, Jacobs representatives accompanied Brian Pankow of RC, UW on the weekly collection of wastes. Six laboratories had requested waste removal: two laboratories for disposal of PPG wastes, three laboratories for disposal of liquid wastes and PPG, and one laboratory for disposal of scintillation wastes and PPG. The Jacobs representatives interviewed personnel from two laboratories which disposed of liquid waste. They indicated that their laboratories did not dispose of organic chemical wastes in the radioactive waste containers. The lab personnel indicated their radioactive waste consisted of rinse solutions and pH buffers (non-hazardous waste).

Due to time limitations, extensive interviews with the lab personnel were not conducted by the Jacobs representatives during the visit. The names of the laboratory contacts listed on the Waste Removal Request Forms which disposed of scintillation wastes were noted for later telephone contact.

In an August 21st telephone conversation, Jacobs personnel discussed laboratory activities concerning waste disposal with Dr. Richard Haschke who conducts biomedical research work. Dr. Haschke's laboratory was identified as being a generator of scintillation wastes during the August 7th laboratory inspection. In the preparation of the scintillation cocktails Dr. Haschke's lab uses premixed scintillation liquids manufacturered by New England Nuclear. Dr. Haschke stated that the radiation level of the isotopes in the scintillation cocktail during analysis is in the nanocuries per gram range. Labels on the containers collected by the RC indicates that carbon-14 (^{14}C) and hydrogen-3 (^{3}H) isotopes are used. The wastes generated by Dr. Haschke's lab are classified radioactive by RC. On September 9, 1986 Jacobs personnel visited Dr. Haschke to obtain documentation on the disposal of radioactive scintillation wastes. Dr. Haschke indicated then that the only documentation of scintillation readings indicating radioactivity were in laboratory notebooks. Photocopies of the laboratory notebooks were unavailable. Dr. Haschke did allow sampling of unused premixed scintillation liquids used by his laboratory. These scintillation liquids would be tested to determine hazardous waste characteristics. The scintillation liquids sampled consisted of:

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- o Aquasol (used from 1980 to 1985),
- o Hydroflour (used from 1985 to present), and
- o Econoflour (used from 1985 to present).

The sampling procedures are discussed in Section 5.

On August 21st, Dr. Mart Mannik was interviewed by telephone. Dr. Mannik's laboratory was identified as a generator of liquid wastes during the August 7th laboratory inspection. Dr. Mannik stated that no scintillation cocktails have been used at that laboratory during the past five years and that all liquid radioactive wastes are aqueous solutions containing no organic solvents.

5.2 WASHINGTON STATE UNIVERSITY LABORATORY INSPECTION

The Radioactive Waste Receipt review identified five laboratories that generated over 50 percent of all radioactive wastes. The personnel of these laboratories were interviewed in order to determine the composition of their wastes from 1980 to the present.

1) Dr. Estergreen: The interview with Dr. Estergreen indicated that two types of waste were being generated, PPG and scintillation liquids. PPG wastes consisted of solid laboratory wastes contaminated with low levels of radioactivity. The scintillation liquids were generated from radioimmunoassays and contained ^{14}C and ^{3}H isotopes. When scintillation counts were completed, the liquids were decanted into a larger bottle for consolidation until picked up by radiation control. The scintillation vials were washed and reused.

2) Dr. Jerry Reeves: The interview with Dr. Reeves indicated that three major types of wastes are generated within his lab:

   a) Dry waste: PPG waste contaminated with low levels of radioactivity.

   b) Liquid waste: phosphate buffer solutions, pH 7.0-7.6.

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c) Scintillation wastes: wastes containing ^{3}H and iodine-125 (^{125}I) isotopes in various amounts of microcuries were stored separate from all other types of liquid wastes for pickup by radiation control.

3) Dr. McGuire: The interview with Dr. McGuire indicated that his lab generated PPG and liquid aqueous wastes. Dr. McGuire stated that his liquid waste contained 1 to 2 percent chloroform and 50 to 180 ml trichloracetic acid.

The Radioactive Waste Receipt for the disposal of wastes from Dr. McGuire's lab indicates that all sulfur-35 (^{35}S) liquid wastes were incinerated and all ^{125}I liquid wastes were disposed at the US Ecology facility.

4) Dr. Gerald Edwards: The interview with Dr. Edwards indicated that a solid waste containing ^{3}H isotopes in a toluene/triton residue was disposed at the US Ecology landfill. This residue was disposed at US Ecology because Radiation Control was told that the container in which the residue was placed was left open which allowed the toluene/triton solution to evaporate, yielding a non-hazardous radioactive residue of plant material.

5) Dr. John Brown: The interview with Dr. Brown could not be arranged, but Jeff Millstern, a graduate student working for Dr. Brown, was contacted and interviewed. Mr. Millstein indicated that PPG and scintillation wastes are generated in Dr. Brown's lab. The PPG waste are disposed at the US Ecology landfill, and liquid scintillation wastes are recycled. In examining the PPG waste container a vial containing hexane was identified. Mr. Millstein indicated that the vial contained ^{14}C isotopes in picocurie levels.

5.3 VIRGINIA MASON RESEARCH CENTER LABORATORY INSPECTION

Of the five laboratories which generate radioactive waste only one generated the same type of waste stream that was being disposed at US Ecology during 1982 through August 1985. This laboratory is operated by Dr. John Gleisner. Dr. Gleisner indicated that he used ^{14}C, ^{3}H, and ^{35}S isotopes. Approximately 15 to 20 gallons of scintillation

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waste was generated on a yearly basis by his laboratory. Dr. Gleisner identified two types of premixed scintillation liquids used from 1982 through 1985:

- o Aquamix (Westerchem), and
- o Aquasol (New England Nuclear).

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SECTION 6

SAMPLING PROCEDURES, ANALYSIS AND RESULTS

INTRODUCTION

Sample handling protocol used in this sampling effort included procedures recommended by NEIC and the Contract Laboratory Program (CLP). Field notebooks were maintained by Jacobs personnel to log all relevant information including date, time, sampling method, sample description, sample location, preservatives, etc. Each daily entry was signed by Jacobs personnel, and the logbook is maintained in a project file.

SAMPLING PROCEDURES

On September 9th a 500 ml sample of Aquamix was obtained from Dr. Gleisner at Virginia Mason. Aquamix was used from 1980 until October 1984 when US Ecology stopped accepting mixed wastes.

On September 10th, 500 ml samples of Hydroflour, Econoflour and Aquasol was obtained from Dr. Haschke at the University of Washington. Hydroflour and Econoflour have been used as a scintillation liquid from 1985, and Aquasol was used from 1980 through 1985.

Sampling and QA/QC procedures as outlined in the Sampling Plan (Attachment 3) were followed. Identical samples were submitted to Montgomery Laboratory and EDA Laboratory to perform the analyses on the scintillation liquids.

SAMPLE ANALYSIS

The scintillation liquids were analyzed in varying concentrations. The samples were diluted with deionized water in order to represent the nature of the wastes generated by the research laboratories. When the scintillation cocktail was made up by the research facilities, research lab personnel varied the amount of aqueous liquids in the cocktail depending upon the type of research being conducted. The following are concentrations of the scintillation liquids that were analyzed by the testing laboratories:

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- o Undiluted sample,
- o 95% scintillation liquid/5% deionized water,
- o 90% scintillation liquid/10% deionized water,
- o 85% scintillation liquid/15% deionized water, and
- o 80% scintillation liquid/20% deionized water.

RCRA tests for ignitability were conducted by both laboratories, and one laboratory measured the pH (corrositivity) of the undiluted sample. EP toxicity and reactivity were not tested since pertinent information was obtained from the manufacturer of the scintillation liquids.

The following samples were taken and analyzed:

- o SAMPLE #1 - Aquamix, Westchem, sampled from Virginia Mason Research Center (Dr. Gleisner), 10/10/86.

- o SAMPLE #2 - Aquasol, New England Nuclear, sampled from University of Washington (Dr. Hashke), 10/10/86.

- o SAMPLE #3 - Hydroflour, New England Nuclear, sampled from University of Washington (Dr. Hashke), 10/10/86.

- o SAMPLE #4 - Econoflour, New England Nuclear, sampled from University of Washington (Dr. Hashke), 10/10/86.

In order to completely determine the hazardous properties of the undiluted scintillation liquids, Jacobs was able to obtain material safety data sheets on Aquasol and Econoflour from New England Nuclear (Attachment 4).

SAMPLE RESULTS

The analysis results are presented in Table 1 and Attachment 5. The results of the sample analyses from the two laboratories varied due to:

- o The scintillation liquid mixtures tended to burn slowly (not ignite) which made readings of ignitability measurements difficult; and

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TABLE 1

SAMPLE ANALYSIS RESULTS

Sample Number	Dilution (% Sample)	Ignitability °C EDA	J. Montgomery	pH (Corrosity Units) EDA
1	100	34	29.4	10.32
(Aquamix,	95	37	31.1	
Westchem)	90	39	43.3	
	85	39	53.3	
	80	39	> 60	
2	100	31	< 32.2	9.88
(Aquasol,	95	32	< 32.2	
New England	90	32	< 32.2	
Nuclear)	85	32	< 32.2	
	80	32	< 32.2	
3	100	33	43.3	9.92
(Hydrofluor,	95	34	44.4	
New England	90	35	46.1	
Nuclear)	85	37	46.1	
	80	37	48.9	
4	100	24	< 23.9	8.92
(Econofluor,	95	24	< 23.9	
New England	90	24	< 23.9	
Nuclear)	85	24	< 23.9	
	80	24	< 23.9	

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- At high concentrations of deionized water, the deionized water would not completely mix with the scintillation liquid thus forming a two phase mixture. Testing a two phase mixture for ignitability point would vary greatly depending on the degree of mixing conducted by the laboratory technician.

- Based on laboratory testing and MSDS information the wastes generated by the research facilities are hazardous wastes because RCRA ignitibility criteria are exceeded.

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SECTION 7
HAZARDOUS WASTE DISPOSAL AT US ECOLOGY

7.1 UNIVERSITY OF WASHINGTON DISPOSAL OF HAZARDOUS MATERIAL

Dr. Haschke indicated during the telephone interview on August 26, 1986 and during the laboratory inspection on September 9, 1986, that:

- He has used ^{14}C and ^{3}H isotopes almost exclusively from 1982 to the present.
- The radioactivity of these isotopes rarely exceeds 10 nanocuries per gram (nCi/g). (10 nCi/g = 1.00×10^{-3} uCi/g).
- These wastes were picked up by Radiation Control for disposal as radioactive waste at US Ecology during 1982 through 1985 (per Brian Pankow, UW).
- The composition of the waste streams is the same today as it was in 1982 through 1985.
- During 1982 through 1985 scintillation wastes were packaged in scintillation vials or absorbed by diatomaceous earth. This packaging did not effect the physical properties of the liquids.

7.2 WASHINGTON STATE UNIVERSITY HAZARDOUS WASTE DISPOSAL AT US ECOLOGY

In the course of conducting the Radioactive Waste Receipt and laboratory inspections, three hazardous waste disposals at US Ecology could have occurred:

1) Dr. McGuire: Wastes containing 1 to 2 percent chloroform, 100 ml trichloroacetic acid were generated in Dr. McGuire's lab. The Radioactive Waste Receipt Forms (Attachment 1) indicated that these materials were disposed at the US Ecology facility. It was not known if these compounds were radioactive when incorporated into the radioactive waste containers.

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2) Dr. Gerald Edwards: Waste containing a toluene/triton residue was listed on the Radioactive Waste Receipt form. This waste was disposed at the US Ecology landfill. Levels of radioactivity of the residue could not be determined.

3) Dr. John Brown: A small vial of hexane with ^{14}C, in picocurie levels was found in a PPG waste container. The PPG wastes are disposed at the US Ecology landfill. In questioning Don Elting (Radiation Control) he stated that the PPG containers were not inspected for mixed wastes. Thus, in the past, vials exhibiting hazardous or mixed waste characteristics placed in the PPG container could have been disposed at the US Ecology facility.

7.3 VIRGINIA MASON RESEARCH CENTER HAZARDOUS WASTE DISPOSAL

On June 4, 1986 and June 6, 1986, Dr. Gleisner took scintillation counts on samples using 90% to 99% aquasol and 1% to 10% aqueous solution with minute amounts of enzymes labeled with ^{3}H. The printout from the scintillation counter (Attachment 2) identifies the counts per minute (cpm) in the 100 cpm to 1000 cpm range, which corresponds to values ranging from 4.5×10^{-5} uCi/g to 4.5×10^{-4} uCi/g. (To convert the readings from count per minute (cpm) to microcuries at an 80% scintillation efficiency, the following calculation is made: $cpm/2.2 \times 10^{6} = uCi/g$). Numerous readings from this scintillation printout show levels of ^{3}H below the 0.05 uCi level. Based on these results, it can be assumed that these wastes are not radioactive.

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SECTION 8
GENERATOR STATUS

RCRA defines a small quantity generator as one which produces 2,200 pounds per month of hazardous wastes. Of the three facilities inspected only Washington State University and Virginia Mason Research Center could be classified as being small quantity generators. Approximate quantities of waste for each facility during FY 1985 are:

- University of Washington: 45,000 lbs.
- Washington State University: 15,065 lbs.
- Virginal Mason Research Center: 3,000 lbs.

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SECTION 9
CONCLUSIONS

This investigation documented instances of hazardous waste disposal at the US Ecology landfill. At each of the three sites investigated there was little difficulty in documenting the disposal of hazardous waste at the US Ecology landfill.

Laboratory personnel seemed unaware of the detailed federal regulations concerning the disposal of radioactive, hazardous, and mixed wastes. The personnel in charge of waste disposal (radiation control departments) did not fully inform the laboratory personnel on the federal regulations. In each case the laboratory personnel were responsible for the segregation of the radioactive and mixed wastes (i.e. the laboratory personnel were unaware that ^{14}C and ^{3}H isotopes below .05 uCi/g are hazardous wastes).

The laboratory personnel were, however, concerned with determining the level of radioactivity in their wastes. Laboratory personnel produced data showing that only low level radioactive wastes were disposed by their facility. When scintillation counts were run, the amount of radioactivity varied due to the nature of the research (plant and animal). In certain instances non-radioactive scintillation fluids (<.05 microcuries), which are hazardous wastes, were combined and then disposed with mixed wastes.

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SECTION 10
RECOMMENDATIONS

It is recommended that no additional site inspections be performed. The data collected during this task is sufficient and documents instances of hazardous waste disposal at the US Ecology landfill.

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ATTACHMENT 1

RADIOACTIVE WASTE RECEIPTS

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: V. L. EVERGREEN Date: 2-3-86

Department: ANIMAL SCIENCE

Building: CLARK HALL Room # 332

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{3}H	.005			$2\ ft^3$	181

9413286.0964

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	0.0X mR/hr	_____ mR/hr
Survey of containers at 3'	_____ mR/hr	_____ mR/hr

Pick-up by: _____ Date: 5 Feb

Date entered: FEB 23 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: Reeves 353 Date: 6/3/86

Department: Animal Science

Building: Clark Hall Room # 221

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	I^{125}	3mCi			$2 ft^3$	184
SW	I^{125}	3mCi			1 gal	185
					~~1 gal~~	
SW	I^{125}	" "			1 gal	185
SW	I^{125}	" "			1 gal	185

9413286.0965

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	<0.1 mR/hr	mR/hr
Survey of containers at 3"	<0.1 mR/hr	mR/hr

Pick-up by: [illegible] Date: 3 Jun 86

Date entered: JUN 29 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: JJ Reeves Date: 6/3/86

Department: Animal Science

Building: Clark Hall Room # 342

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	I^{125}	2mCi/box			2ft³	186
		2mCi/box			2ft³	186
SV	^{3}H	.025mCi/box			2ft³	6017
		.025mCi/box			2ft³	6018
LW	I^{125}	.027mCi/gal			1gal	I
		.028mCi/gal			1gal	I

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft³.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383

STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	0.04 mR/hr	0.03 mR/hr
Survey of containers at 8'	0.04 mR/hr	0.04 mR/hr

Pick-up by: [illegible] Date: 6-16

Date entered: JUN 29 1986

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RSO-04-85

RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: [illegible] Date: 6-16 [illegible]

Department: Animal Sciences

Building: Clark Hall Room # 342

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.						RSO use
Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	Location
SW	I^{125}	2mCi/box			2ft3	189
		2mCi/box			2ft3	V
		2mCi/box			2ft3	V
SW	H^{3}	.013mCi/box			2ft3	I
SV	H^{3}	.025mCi/box	toluene		2ft3	6027
~~LW~~	~~H^{3}~~	~~[illegible]~~			~~[illegible]~~	
LW	I^{125}	.124mCi/gal			1 gal	I
		.071mCi/gal			gal	I

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383

STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	.04 mR/hr	0.2 mR/hr
Survey of containers at 3'	.02 mR/hr	0.03 mR/hr

Pick-up by: Maria Lee Date: 12 June 89

Date entered: JUN 29 1989

9413286.0967

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: J. J. Reeves Date: 6/18/86

Department: Animal Science

Building: Clark Hall Room # 221

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{125}I	2 mCi			2 ft³	190
	^{125}I	3 mCi			2 ft³	190
SW	^{125}I	2 mCi			1 gal	190
						R
SW	^{125}I	2 mCi			1 gal	190
SW	^{125}I	2 mCi			1 gal	190
SW	^{125}I	2 mCi			1 gal	190
LW	^{125}I	.9125 mCi/liter			1 liter	C1

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft³.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	20.0 mR/hr	100 mR/hr
Survey of containers at 3'	4.0 mR/hr	mR/hr

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Date entered: JUL 27 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: T. Hucci Date: 1-16-86

Department: VET MICRO/IMMT

Building: Bustad 393 Room # 393

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
LW	^{125}I	19	aqueous		4bal	1:1 I .8 179
LW	^{125}I	1.3	aqueous		50ml	#179
SW	^{125}I	3			4 FT^3	#178

9413286.0969

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383

STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	10.0 mR/hr	15. mR/hr
Survey of containers at 3'	1.0 mR/hr	8. mR/hr

Pick-up by: [signature] Date: 13 Jan 86

Date entered: JAN 23 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: T. C. McGuire Date: 2-11-86

Department: VET Micro/Path

Building: Central Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
LW	^{125}I	5 mCi			5gal	183
SW	^{125}I	3.5 mCi			4 ft^3	182
LW	^{125}I	2 mCi			20 ml	183

9413286.0970

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	11.0 mR/hr	100.— mR/hr
Survey of containers at 3"	1.3 mR/hr	3.— mR/hr

Pick-up by: [signature] Date: 12 Feb 86

Date entered: FEB 23 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: J.C McGinnis Date: 2-18-86

Department: VET MICRO/PATH

Building: BUSTAD Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{125}I	2.5			4 ft^3	B4
LW	^{125}I	2.6			3 gal	B3
LW	^{125}I	0.5			30 ml	K3
LW	^{35}S	0.5			5 ml	I
SW	^{35}S	2.6			2 ft^3	I

9413286-0971

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	30.0 mR/hr	15.0 mR/hr
Survey of containers at 3'	2.0 mR/hr	0 k mR/hr

Pick-up by: [signature] Date: 19 FEB 86

Date entered: FEB 23 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: I-C. McGuire Date: 1-21-86

Department: VET MICRO/PATH

Building: Bustad Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{125}I	55Mci			4ft^3	180
LW	^{125}I	1.3Mci			40ml	179
SW	^{35}S	1.3Mci				

9413286.0972

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	50.0 mR/hr	40.0 mR/hr
Survey of containers at 3'	4.0 mR/hr	2.0 mR/hr

Pick-up by: [signature] Date: 23 Jan 86

Date entered: JAN 24 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: [illegible] Bruce 317 Date: 6-3-86

Department: UMP

Building: Bustad Room # 393

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
~~[illegible]~~	~~$^{3}H/^{35}S$~~	~~0.5/0.5~~	~~aqueous/[illegible]~~		~~2 cmb. jugging~~	
SW	^{125}I	0.6			2 ft^3	185
LW	^{125}I	0.55	aqueous		80 ml	183
LW	^{125}I	2.5	aqueous		3 gal	183
			plus one left from last time			

9413286.0973

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	1.5 mR/hr	6.0 mR/hr
Survey of containers at 3'	0.2 mR/hr	0.3 mR/hr

Pick-up by: Maria Lee Date: 4 June 86

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RSO-04-85

RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: [illegible] Date: 6-11-86

Department: VET MICRO/PATH

Building: BUSTAD Room # 393

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{125}I	1.0 Mu			2 ft^2	189
LW	^{125}I	125 Mu			2 gal	183
LW	^{125}I	0.5 Mu			4 oml	183
LW	$^{3}H/^{35}S$	from last receipt 6/4/86				I

9413286.0974

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	.04 mR/hr	.4 mR/hr
Survey of containers at 3'	.02 mR/hr	.02 mR/hr

Pick-up by: Maria Lee Date: 12 Jun 86

JUN 29 1986

Date entered: _____

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: Tim Bruni Date: 6.26.86

Department: Vet Med/Path

Building: Animal Building Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
LW	^{125}I	0.5Mci	aqueous		20ml	191
LW	^{125}I	2.35Mci	aqueous		3gal	C1
LW	^{35}S	1Mci	aqueous		5ml	I
SW	^{125}I	0.9Mci			4ft^3	190

9413286.0975

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383

STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	.2 mR/hr	12 mR/hr
Survey of containers at 3'	.04 mR/hr	.12 mR/hr

Pick-up by: Maria Lee Date: 23 June 86

Date entered: JUL 27 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: T-C [illegible] Date: 7-15-[illegible]

Department: [illegible]

Building: [illegible] Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
SW	^{125}I	1.25 mCi			2 ft^2	C7
LW	^{125}I	0.25 mCi			20 mL	C7
LW	^{125}I	3.4 mCi			4 gal	C7
LW	^{125}I	0.5			2 mL	C7

9413286-0976

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	.5 mR/hr	.6 mR/hr
Survey of containers at 3'	.09 mR/hr	.1 mR/hr

Pick-up by: [illegible] Date: [illegible]

Date entered: JUL 2[illegible]

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: C Mc Bruce Date: 1-2-86

Department: VET MICRO/PATH

Building: BUSTAD Room # 343

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling. RSO use

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	Location
SW	^{125}I	2.25			4FT^3	178
LW	^{125}I	1.5			2gal	177
LW	^{125}I	1.5	3.0		2gal	#177
LW	^{35}S	0.15			2gal	I

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383

STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	25.0 mR/hr	30.0 mR/hr
Survey of containers at 3'	2.4 mR/hr	3.0 mR/hr

Pick-up by: [signature] Date: 3 Jan 86

Date entered: JAN - 9 1986

9413286-0977

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RSO-04-85

RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: Gerald Edwards Date: Feb 10, 1986

Department: Botany

Building: Heald Room # 301A

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

	Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
1)	SV	^{3}H	30 μCi	Toluene / Triton	70/30	2ft^3	6007
2)	SV	^{3}H	28.62	Toluene / Triton		2ft^3	6007
3)	SW ~~LW~~	^{3}H	22.89	Toluene / Triton EVAPORATE FULL		sm amt in Gallon container	151

9003286.0978

1. TYPE: SW—Solid Waste, LW—Liquid Waste, AC—Animal Carcass, SV—Scintillation Vials
2. CHEMICAL FORM: Solid Waste is considered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.
3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid (Dry residue)
Survey of containers at 1"	0.00 mR/hr	0.00 mR/hr
Survey of containers at 3'	____ mR/hr	____ mR/hr

Pick-up by: [signature] Date: 12 FEB 86

Date entered: FEB 23 1986

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RADIOACTIVE WASTE RECEIPT

Washington State University

Authorized User: John Brown 335-5504 Date: 18 Dec. 1985

Department: Entomology

Building: Bldg. 111 – greenhouse Room # 10B

Do not combine nuclides except $^{3}H/^{14}C$ unless duel labeling.

Type[1]	Nuclide	Activity (mCi)	Chemical Form[2]	%	Vol[3]	RSO use Location
~~SV~~, SW	^{14}C	~~0.5~~ .49	aldicarb pesticide			178
			in soil; vials			
SV	^{14}C	.01				600?

5 pots 0.5 mCi

And each pot contains 1192 cm^3 soil

∴ Conc = 0.0139 μg Ci/cm^3 Soil

1. [illegible]/aste, AC—Animal Carcass, SV—Scintillation Vials

2. [illegible]dered to be paper, plastic, and glass used in normal lab operations; if other please state. List chemicals present in bulk liquid and scintillation cocktail with approximate percentage in the container.

3. VOLUME: Waste boxes furnished by Radiation Safety are 2 ft^3.

COMPLETE ABOVE INFORMATION—CALL RADIOACTIVE WASTE PICK-UP 335-7383
STATE AUTHORIZED USER, LOCATION OF WASTE, NUMBER AND TYPE OF CONTAINERS

	Solid	Liquid
Survey of containers at 1"	0.03 mR/hr	____ mR/hr
Survey of containers at 3"	0.02 mR/hr	____ mR/hr

Pick-up by: [signature] Date: 8 Jan 86

Date entered: JAN 23 '986'

9413286.0979

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ATTACHMENT 2

SCINTILLATION COUNTER PRINTOUT

Dr. Gleisner's Laboratory

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RADIONUCLIDE : 3
RATIO MODE, ODD/EVEN : 0
TIME : 5.00
%-SIGMA : .1
BACKGROUND - RED,GREEN : 0 0
COUNT MODE, ALL/ODD/EVEN : 0

upstairs 6/4 - 6/5

samples of 5/29

POSITIVE VID		TIME MIN.	RED GROSS	% DEV	GREEN GROSS	% DEV	DCR	RED CPM	GREEN CPM	EIR
										102
0 7535	1	5.00	102	9.9	36	17	.3529	20	7	
0 7536	2	5.00	92	10	31	18	.3370	18	6	
0 7537	3	5.00	87	11	38	16	.4368	17	8	
0 7538	4	5.00	113	9.4	33	17	.2920	23	7	
0 7539	5	5.00	4449	1.5	1246	2.8	.2801	890	249	
0 7540	6	5.00	2635	1.9	660	3.9	.2505	527	132	1554
0 7541	7	5.00	482	4.6	143	8.4	.2967	96	29	
0 7542	8	5.00	362	5.3	99	10	.2735	72	20	
0 7543	9	5.00	278	6.0	94	10	.3381	56	19	
0 7544	10	5.00	524	4.4	127	8.9	.2424	105	25	
0 7545	11	5.00	170425	.24	47606	.46	.2793	34085	9521	88920
0 7546	12	5.00	368080	.19	74327	.37	.2773	73616	14865	
0 7547	13	5.00	5754	1.3	1636	2.5	.2843	1151	327	93474
0 7548	14	5.00	264	6.2	69	12	.2614	53	14	
0 7549	15	5.00	100	10	35	[illegible]	.3500	20	[illegible]	
			1 VIALS MISSING							103
0 7550	17	5.00	107	9.7	31	18	.2897	21	6	
0 7551	18	5.00	98	10	40	16	.4082	20	8	
0 7552	19	5.00	108	9.6	32	18	.2963	22	6	
0 7553	20	5.00	187	7.3	58	13	.3102	37	12	
0 7554	21	5.00	8545	1.1	2423	2.0	.2836	1709	485	3841
0 7555	22	5.00	4299	1.5	1216	2.9	.2829	860	243	
0 7556	23	5.00	820	3.5	219	6.8	.2671	164	44	
0 7557	24	5.00	521	4.4	171	7.6	.3282	104	34	
0 7558	25	5.00	466	4.6	115	9.3	.2468	93	23	
0 7559	26	5.00	535	4.3	126	8.9	.2355	107	25	
0 7560	27	5.00	106821	.31	29344	.58	.2747	21364	5869	67115
0 7561	28	5.00	217145	.21	59856	.41	.2756	43429	11971	
0 7562	29	5.00	11254	.94	3045	1.8	.2706	2251	609	69956
0 7563	30	5.00	332	5.5	93	10	.2801	66	18	
0 7564	31	5.00	121	9.1	38	16	.3140	24	8	
			1 VIALS MISSING							104
0 7565	33	5.00	86	11	38	16	.4419	17	8	
0 7566	34	5.00	82	11	29	19	.3537	16	6	
0 7567	35	5.00	102	9.9	27	19	.2647	20	5	
0 7568	36	5.00	821	3.5	220	6.7	.2680	164	44	
0 7569	37	5.00	12123	.91	3296	1.7	.2719	2425	659	4435
0 7570	38	5.00	6504	1.2	1752	2.4	.2694	1301	350	
0 7571	39	5.00	1769	2.4	439	4.8	.2482	354	88	
0 7572	40	5.00	868	3.4	219	6.8	.2523	174	44	
0 7573	41	5.00	613	4.0	150	8.2	.2447	123	30	
0 7574	42	5.00	1477	2.6	413	4.9	.2796	295	83	
0 7575	43	5.00	79352	.35	21948	.67	.2766	15870	4390	40181
0 7576	44	5.00	107481	.31	29665	.58	.2760	21496	5933	
0 7577	45	5.00	12402	.90	3489	1.7	.2813	2480	698	44616
0 7578	46	5.00	613	4.0	189	7.3	.3083	123	38	
0 7579	47	5.00	117	9.4	44	15	.3761	23	9	
			1 VIALS MISSING							105
0 7580	49	5.00	89	11	40	16	.4494	18	8	

POSITIVE VID		TIME MIN.	RED GROSS	% DEV	GREEN GROSS	% DEV	DCR	RED CPM	GREEN CPM	EIR
0 7581	50	5.00	95	10	29	19	.3053	19	6	
0 7582	51	5.00	98	10	36	17	.3673	20	7	
0 7583	52	5.00	1205	2.9	297	5.8	.2465	241	59	
0 7584	53	5.00	21406	.68	6232	1.3	.2911	4281	1246	8274
0 7585	54	5.00	14008	.84	4051	1.6	.2892	2802	810	
0 7586	55	5.00	2735	1.9	785	3.6	.2870	547	157	
0 7587	56	5.00	1439	2.6	380	5.1	.2641	288	75	
0 7588	57	5.00	1144	3.0	292	5.9	.2552	229	58	
0 7589	58	5.00	3014	1.8	827	3.5	.2744	603	165	
0 7590	59	5.00	137893	.27	33393	.51	.2784	27579	7679	68197
0 7591	60	5.00	185839	.23	50667	.44	.2726	37168	10133	
0 7592	61	5.00	14214	.84	3940	1.6	.2772	2843	788	76471
0 7593	62	5.00	442	4.8	133	8.7	.3009	88	27	
0 7594	63	5.00	148	8.2	55	13	.3716	30	11	
0 VIALS COUNTED										

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ATTACHMENT 3
SAMPLING PLAN

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1.0 SAMPLING RATIONALE

The EPA has identified three generators who have disposed of wastes at the facility and who have notified EPA of hazardous waste generating activities. These generators possess both an EPA identification number and a radioactive material identification number. An inspection of these generators is necessary to determine if radioactive wastes having hazardous waste properties or listed hazardous wastes have been disposed of at the US Ecology facility.

Jacobs Engineering Group Inc. has been asked to inspect the following facilities:

- University of Washington - Seattle, Washington
- Virginia Mason Research Center - Seattle, Washington
- Washington State University - Pullman, Washington

Samples of wastes which are representative of those disposed of at US Ecology will be taken and analyzed to determine hazardous waste characteristics. A maximum of 30 samples (6 samples per site), including blanks, spikes and duplicates will be taken.

2.0 SAMPLING PROCEDURES

Since detailed descriptions of sampling locations are not readily available, sampling techniques and sampling locations will be field determined.

3.0 METHODS OF HANDLING, STORING AND TRANSPORTING SAMPLES

All samples are low hazard since samples of waste material less than 50m Cu/gm will be avoided. The samples will be shipped by air courier overnight to a Contract Laboratory Program analytical laboratory. All samples will be preserved and maintained on ice as necessary from the time they are taken until shipment. All necessary packaging and shipping items such as labels, custody forms, traffic forms, seals, coolers, and vermiculite will be available for shipment. Shipping containers will contain all custody and sample traffic forms and will be sealed with custody seals.

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4.0 QUALITY ASSURANCE

The purpose of duplicate samples is to validate the precision and accuracy of the laboratory data, including sampling, and to determine the adequacy of preservation techniques, container contamination and sample splitting techniques. A minimum of one duplicate sample per site will be submitted for analysis.

Sample handling protocol to be used in this sampling effort will include procedures recommended by the National Enforcement Investigations Center (NEIC) and the Contract Laboratory Program (CLP). Field notebooks will be maintained by site monitoring personnel to log all sample related information including date, time, samples, sampling method, preservatives, sample description, sample location, etc. Each daily entry will be signed by the monitoring personnel and the logbook will be maintained in a project file.

Appropriate forms will be completed to ensure custody and to properly ship the samples to National Contract Laboratories.

- Chain of Custody Record
- Custody Tags
- Custody Seals
- Regionally required forms, such as Samples Data Sheets. Each form will be completed according to the User's Guide to the Contract Laboratory Program.

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ATTACHMENT 4

MATERIAL SAFETY DATA SHEETS

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NEN RESEARCH PRODUCTS

DUPONT

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

Name
ECONOFLUOR™ Pre-Mixed Scintillation Solution

Synonyms
Not Applicable

CAS Name
Not Applicable

I.D. Nos./Codes
NEN Catalog # NEF-941

Manufacturer/Distributor DuPont
NEN Research Products

Address 549 Albany Street
Boston, MA 02118

Product Description Pre-mixed liquid scintillation solution for counting non-aqueous samples, and for use with PROTOSOL® Tissue and Gel Solubilizer in extraction applications.

Chemical Family
Mixture: Organic solvents and fluors.

CAS Registry No.
Not Applicable

Chemical Formula Not Applicable

Product Information and Emergency Phone Weekdays:
Massachusetts and International (617)482-9595
Continental US: (800)225-1572 Evenings & Weekends (617)667-9538

Transportation Emergency Phone
Chemtrec: (800)424-9300 [If in DC (800)483-7616]

HAZARDOUS COMPONENTS

Material(s)	CAS #	CAS #	Approximate %
Organic solvents: Pseudocumene (95-63-6), Toluene (108-88-3), Paraxylene (106-42-3)			> 90

The following are not formula components: chlorinated solvents, benzene.

PHYSICAL DATA

Boiling Point 760mm Hg
Range: Starts ≈ 140°C (284°F)

Freezing Point
< -10°C (14°F)

Specific Gravity (H_2O=1)
0.86

Vapor Pressure
Not Determined

Vapor Density (Air=1)
> 1

Solubility in H_2O
Immiscible.

% Volatiles by Vol.
> 90

Evaporation Rate (Butyl Acetate = 1)
Not Determined

Form Liquid

Appearance Clear

Color Colorless to slight blue fluorescence

Odor Aromatic

pH Information
Not Applicable

Octanol/Water Partition Coefficient
Not Determined

FIRE AND EXPLOSION DATA

Flash Point 23°C (74°F)

Method TCC

Autoignition Temperature
Not Determined

Flammable Limits in Air, % by Vol.

Lower Not Determined

Upper

Fire and Explosion Hazards Flammable Liquid. Keep away from heat, sparks and open flame. Vapor heavier than air.

Extinguishing Media
Dry chemical, CO_2, foam

Special Fire Fighting Instructions Use self-contained breathing equipment to protect against the hazardous effects of the normal products of combustion, oxygen deficiency and toxic vapors.

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NEN RESEARCH PRODUCTS

DUPONT

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

Name
AQUASOL® Universal LSC Cocktail

Synonyms
Not Applicable

CAS Name
Not Applicable

I.D. Nos./Codes
NEN Catalog # NEF-934

Manufacturer/Distributor DuPont
NEN Research Products

Address 549 Albany Street
Boston, MA 02118

Product Description Universal liquid scintillation counting solution.

Chemical Family
Mixture: Organic solvents; non-ionic surfactants; fluors; additives.

CAS Registry No.
Not Applicable

Chemical Formula Not Applicable

Product Information and Emergency Phone Weekdays:
Massachusetts and International (617)482-9595
Continental US: (800)225-1572 Evenings & Weekends (617)667-9538

Transportation Emergency Phone
Chemtrec:(800)424-9300[If in DC (800)483-7616]

HAZARDOUS COMPONENTS

Material(s)	CAS #	CAS #	Approximate %
Mineral Spirits (Mixture), Pseudocumene (95-63-6), Paraxylene (106-42-3)			>50
Non-ionic surfactants (ethoxylated alkyl phenols)			<50

The following are not formula components: chlorinated solvents, benzene.

PHYSICAL DATA

Boiling Point 760mm Hg
Range: Starts ≈ 150°C (302°F)

Freezing Point
≈ -25°C(-13°F)

Specific Gravity (H_2O=1)
0.94

Vapor Pressure
Not determined.

Vapor Density (Air=1)
> 1

Solubility in H_2O
Immiscible.

% Volatiles by Vol.
> 50

Evaporation Rate (Butyl Acetate = 1)
<1 (slower)

Form Liquid **Appearance** Clear **Color** Colorless to slight fluorescence **Odor** Aromatic

pH Information
6% + H_2O = Approx. 5.5
50% + H_2O = Approx. 5.5

Octanol/Water Partition Coefficient
Not Determined.

FIRE AND EXPLOSION DATA

Flash Point 34°C (94°F) **Method** TCC

Autoignition Temperature
Not Determined

Flammable Limits in Air, % by Vol. **Lower** Not Determined **Upper**

Fire and Explosion Hazards Flammable Liquid. Keep away from heat, sparks and open flame. Vapor heavier than air.

Extinguishing Media
Dry chemical, CO_2, foam

Special Fire Fighting Instructions Use self-contained breathing equipment to protect against the hazardous effects of the normal products of combustion, oxygen deficiency and toxic vapors.

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ATTACHMENT 5
SAMPLE ANALYSIS RESULTS

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EDA Instruments Inc.
5151 Ward Road
Wheat Ridge CO 80033
Telephone (303) 422 9112

Report of Analysis

To

Jacobs Engineering
251 S. Lake Avenue
Pasadena, CA 91101

ATTN: John Bourman

Client No	Log. No	Client P.O. No	Date Collected	Date Received	Date Reported
	6170	27-7724-P-86-0001		9/17/86	9/24/86

Sample Identification	Ignitability °C	(pH) Corrosivity units
1A-100%	34	10.32
1B- 95%	37	
1C- 90%	39	
1D- 85%	39	
1E- 80%	39	
2A-100%	31	9.88
2B- 95%	32	
2C- 90%	32	
2D- 85%	32	
2E- 80%	32	
3A-100%	33	9.92
3B- 95%	34	
3C- 90%	35	
3D- 85%	37	
3E- 80%	37	
4A-100%	24	8.92
4B- 95%	24	
4C- 90%	24	
4D- 85%	24	
4E- 80%	24	

Approved by Russell McCallister

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MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of Inorganic Analyses

Jacobs Engineers
251 S. Lake Ave.
Pasadena, CA 91101
Attn: Jerry Frizzell

Job#/PO#: 277724P860003
Workorder#: W08822
Report#: R35619
Phone #: 449-2171

Date Sampled: Not Available
Date Completed: 9/26/86

Date Received: 9/19/86

Lab#	Sample I.D.	Ig DegreeF
G99026	SAMPLE # 1-UNDILUTED	85
G99027	SAMPLE # 1-95% SAMP./5% D.I.	90
G99028	SAMPLE # 1-90% SAMP./10% D.I.	110
G99029	SAMPLE # 1-85% SAMP./15% D.I.	128
G99030	SAMPLE # 1-80% SAMP./20% D.I.	>140
G99031	SAMPLE # 2-UNDILUTED	<90
G99032	SAMPLE # 2-95% SAMP/5% D.I.	<90
G99033	SAMPLE # 2-90% SAMP./10% D.I.	<90
G99034	SAMPLE # 2-85% SAMP./15% D.I.	<90
G99035	SAMPLE # 2-80% SAMP./20% D.I.	<90
G99036	SAMPLE # 3-UNDILUTED	110
G99037	SAMPLE # 3-95% SAMP./5% D.I.	112
G99038	SAMPLE # 3-90% SAMP./10% D.I.	115
G99039	SAMPLE # 3-85% SAMP./15% D.I.	115
G99040	SAMPLE # 3-80% SAMP./20% D.I.	120
G99041	SAMPLE # 4-UNDILUTED	<75
G99042	SAMPLE # 4-95% SAMP./5% D.I.	<75
G99043	SAMPLE # 4-90% SAMP./10% D.I.	<75
G99044	SAMPLE # 4-85% SAMP./15% D.I.	<75
G99045	SAMPLE # 4-80% SAMP./20% D.I.	<75

NA: Not Analyzed

Approved by _____

APPROVED
SEP 26 1986
QC OFFICER

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WA 8967 4a
6·18·85
JUL 10 1985

US ECOLOGY RCRA INSPECTION

Prepared by: Wayne N. PIERRE

NARRATIVE REPORT

U S Ecology, whose corporate offices are in Louisville, Kentucky is a wholly owned subsidiary of American Ecology Corporation, 30423 Conwood 3t[illegible] Suite 201, Agoura Hills, Calif.. The Richland site is leased from the State of Washington who in turn leases the property from the U.S. Department of Energy. U S Ecology operates under a State of Washington license number WN-1019-2 (which expires November 30, 1985) for radioactive material. License conditions which pertain to the RCRA compliance inspection are:

#22. "If wastes contain both toxic chemicals (including pathogenic or infectious materials) and radioactive materials, the hazard of each shall be evaluated independently by the generator. If the chemical hazard exceeds the radioactive hazard, the waste shall not be burried at the licensee's Richland site, except as specifically approved by the Department. Records of the hazard evaluation of such wastes shall be kept by the generator and furnished to the department [i.e., the Washington State Department of Social and Health Services] upon request.

#27(b). "After December 31, 1984, liquid scintillation vials and fluids and other organics with similar chemical properties, containing 0.05 microcuries or less of hydrogen 3 or carbon 14 per gram of medium will not be accepted for burial. ..."

WA8967.009 1/6/94

#32. "The licensee shall maintain the capability for safely opening and inspecting the contents of waste packages received at the site, and overpacking damaged or leaking waste packages as required for disposal or return to shipper."

#47. "The license shall provide, at a minimum, a quarterly facility inspection program and a facility maintenance program to verify proper maintenance and upkeep of all fences, filled and capped trenches, caissons and all disposal areas. Record of inspections and any maintenance performed shall be maintained and submitted with the stabilization plan for final site closure. The records are to include, but not be limited to:

a) The date of the inspection and/or maintenance or repair.

b) The name of the inspector and/or individuals performing the maintenance.

c) Identification of fences, trenches, caissons or other disposal areas which have been inspected.

d) Identification and location (marked on a scaled map of the site) of fences, caissons, trenches, or other disposal areas needing repair. (For example, trenches needing repair would be those exhibiting erosion, shrinkage, subsidence, settling, cracking, gullying, or loss or thinning of the gravel cap.) Maintenance of fences shall include, but not be limited to clearing away any tumbleweeds and/or drifting sand.

e) A graphic description of the condition requiring repair. (For

example, details such as the depth of any sunken areas.)

f) A description of the repairs made to the fence, trench, caisson, or disposal area (including a list of time and materials required to make the repairs.)"

#51. "The licensee shall submit an update of the facility closure and stabilization plan and operational assessment as required in Conditions 50 for the Richland facility on or before November 30, 1985."

In addition to the conditions listed above, Condition #44 of the license requires that the facility sample five (5) off-site wells (i.e., 699-31-53B, 699-32-62, 699-33-56, 699-34-51, and 699-36-61B) quarterly or as performed by the U.S. D.O.E..

OPENING CONFERENCE

The meeting began at approximately 10:30 a.m. on June 18, 1985. The list of attendees is attached hereto as Appendix II. This morning session was devoted almost exclusively towards the Part B, RCRA process as concerns the requirements the facility would need to meet. It was the company's position that if scintillation fluids were the basis for U S Ecology becoming a RCRA facility, then

they would cease accepting this waste stream which comprises 2.3% of their volume. The company's position appeared to be based on economics where the cost of compliance with the RCRA requirements was greater than the profit gained from accepting these wastes. This position also applied to any other waste which may cause the company to become subject to the RCRA requirements. An example of this would be the lead containers used to shield radioactive material received at the facility. This material may be E.P. Toxic. However, it is questionable if this material qualifies as a solid waste as its purpose is to shield a non-hazardous waste and it continues that purpose through disposal.

As condition #27(b) of the state radioactive material license prohibits the company from accepting diminimus scintillation fluids as of January, 1985, the 2.3% estimate may be an over estimate of the potential "mixed waste" which will be received at the facility. (Scintillation wastes appear to be a good candidate for meeting the definition of mixed waste based on the Skinner memorandum of May 10, 1985.) However, based on information obtained through the University of Washington, the liquid scintillation media is typically 40% toluene, 40% xylene, 14% dioxane and the remaining percentage POPOP (1,4-bis[2-(5 phenyloxazolyl)]-benzene). This material would not qualify as a F003 or F005 listed hazardous waste since it is a mixed solvent. This may not be the case in the future as EPA has proposed correcting this loophole in the regulations. The material may be still be ignitable, however and therefore hazardous. A question on this issue would be if the generator qualifies as a small quantity generator. As the facility performs no testing it is not possible to determine ~~this~~ if the waste is hazardous (i.e., ignitable) without inquiring from the generators of this waste stream. Currently the state DSHS prohibits U S Ecology from accepting waste streams where the Chemical Form description on the

manifest indicates xylene, toluene or a mixture of both and a specified action limit is not exceeded. For example, a 55-gallon drum containing xylene as the Chemical Form would require an activity greater than 1.32 millicuries of C14 to be acceptable for disposal at the facility. (For a 30-gallon container: xylene - 0.704 millicuries; toluene 0.692 millicuries; and for a mixture of both - 0.698 millicuries C14). If the waste description does not stipulate xylene and/or toluene, DSHS is unable to determine if the shipment contains scintillation wastes.

Based on the morning discussions with facility personnel, it was evident that the facility had operated under the assumption that the radioactive license was by itself, sufficient and that they were not required to comply with RCRA. The compliance inspection, performed jointly with the Washington Department of Ecology, commenced after a short lunch break (at this time I presented my credentials) and although the facility had no records or documentation, exclusively developed for RCRA compliance (e.g.,Waste Analysis Plan, Inspection Schedule and log, Personnel Training Documentation), the facility did engage in some recordkeeping and monitoring in accordance with the state radioactive material license.

As this was this inspector's first visit to the site and facility personnel were unable to identify facility documents demonstrating compliance with the hazardous waste requirements, it was decided to first review U S Ecology's Facility Operations Manual and perform the field inspection prior to requesting facility records. This report, therefore, is preliminary to a record review. In fact, this report is preliminary to determining if the facility has managed hazardous and/or mixed waste. Toward this end it is recommended that a number of generators be contacted to determine if their wastes were hazardous. To further determine if the

'acility had accepted hazardous wastes, the list should be further refined to those wastes which probably contain less than 0.05 microcuries per gram media. Appendix I is such a listing of potential hazardous waste generators who have disposed of waste at US Ecology.

As observed on the day of the inspection, only two (2) trenches were in operation. However, 11 trenches are depicted in the Operations Manual with trenches one (1) through six (6) apparently closed. As required in the license, the dimensions of each trench are not to exceed a width of 150 feet, a depth of 45 feet or a length of 1000 feet. Photographs were taken by the on-scene state DSHS inspector. Safety precautions taken include the wearing of a hardhat and the use of personnel dosimeters provided by the company).

The attached inspection report checklist should be viewed in light of the

fact that it is unknown if the facility has accepted hazardous wastes.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

Region 10 Inspection Checklist

Purpose--This checklist is designed to serve as a guideline to the major points of the regulations adopted pursuant to RCRA for inspectors to use while visiting hazardous waste (HW) regulated facilities. This checklist should not serve as a substitute for a detailed knowledge of the relevant regulations. The following is the outline of the checklist.

I. General Information
II. Small Quantity Generator (SQG) Regulations (40 CFR 261.5)
III. Generator Regulations (40 CFR 262)
IV. Transporter Regulations (40 CFR 263)
V. Treatment, Storage, and Disposal (TSD) Interim Status Regulations (40 CFR 265)
VI. Treatment, Storage, and Disposal (TSD) Permit Status Regulations (40 CFR 264)

I. General Information (Date Revised March 8, 1983)

A. Inspection: Type of Inspection: Evaluation (X); Sampling ( ); Record Review ( ); Special ( ); Follow-up;
Date/Time Inspection commenced: June 16, 1985

B. Facility
EPA/State ID WAD 060048360
Name & Addresses U.S. ECOLOGY, INC.
1. Mailing: P.O. BOX 638
2. Location: located on Hanford Reservation
RICHLAND, Wa. 99352

Contact: Steve Carpenter
Telephone: (509) 377-2411

C. Compliance Summary

	IN	OUT	N/A
RCRA (Statute)	( )	( )	( )
40 CFR 270	( )	( )	( )
40 CFR 124	( )	( )	( )
40 CFR 261.5	( )	( )	( )
40 CFR 262	( )	( )	( )
40 CFR 263	( )	( )	( )
40 CFR 264 (Permit)	( )	( )	( )
40 CFR 265	( )	( )	( )

Specific Violations:

D. Inspector

Name (Print) Wayne N. Pierce Title: EPS
Signature Wayne N. Pierce
Organization U/S EPA X RCRA Compliance
Phone (206) 442-7261

E. Inspection Participants:

Name	Title	Phone #
Tim Nord	WDOE	(206) 459-6031
Roger Stanley	WDOE	(206) 459-6031
Jeff Webb	USEPA	(206) 442-1099
George Hofer	USEPA	(206) 442-2803

F. Notification/Permit Information

1. Started operation: 1965 Date:
2. Notification filed: (YES) NO Date: Nov 18, 1980
3. Part A application filed: YES NO Date: Nov 18, 1980
4. Part B called/Date Due YES NO Date: Nov 8, 1985
5. Part B application: YES (NO) Date:
6. Changes in Notification or Part A:
7. Facility's classified as:

Generator	( )
Transporter	(✓)
Treatment facility	( )
Storage facility	( )
Disposal facility	(✓)
Small quantity generator	( )
Recycler	( )
Less than 90 day storage	( )
Wastewater treatment unit exemption (WWTU)	( )
Elementary neutralization unit exemption (ENU)	( )

8. Does facility have a Part A withdrawal request in ?
YES (NO)

Status

Comments: handles radioactive waste & subject to NRC & OSHS. Co. claims they believed they were not subject to RCRA.

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(4) Are all hazardous wastes noted during inspection listed on the facility's RCRA notification/ Part A application? YES NO

If so explain. It was not possible to observe h.w. during inspection as everything treated as radioactive waste

2. Specific information
Provide the following information for each of the individual HW streams listed above. (Complete a separate form for each HW.)

a. EPA HW Code
b. HW description
c. Composition (including sampling requirements)
d. Process producing waste:
e. Rate of waste production
f. Time of storage
g. Waste handling prior to disposal
h. Waste disposal practice and manifest
i. Reporting and recordkeeping
j. Comments

H. Miscellaneous Notes:

It was not possible during the inspection to determine the quantity of dangerous waste received at the site as the facility does not perform any hazardous waste analyses nor does it determine (on any routine basis) if the scintillation fluids it receives are benign as this would involve opening the container. However, a review of the annual listings of US Ecology users show numerous users (e.g. hospital, research & university laboratories) which have shipped waste to the site containing less than 0.05 microcuries per gram. On this basis this inspection report is prepared. Note, additional information would be required of generators using the site prior to determining if the facility has received non-radioactive hazardous waste and that the generators do not qualify as small quantity generators. See Appendix I for a listing of potential generators from California, for example.

G. Hazardous Waste Generation (HW)and Management (List EPA Waste Code)

1. General information deminimus scintillation fluids ≤ 0.05 μcuries/g C^{14} or H^3

a. Characteristic HW (DXXX)?

(1) Ignitability scintillation fluids maybe
(2) Corrosivity —
(3) Reactivity —
(4) EP Toxicity ?

b. Listed HW?

(1) HW from non-specific sources (FXXX)
F005 from original Part A (U013, U019, U220, U239, P105)

(2) HW from specific sources (KXXX)
not probable

c. Discarded commercial chemical product(PXXX or UXXX)

(1) PXXX ?
(2) UXXX ?

d. Has facility petitioned to delist waste? YES (NO)

Date: Comments:

e. Does facility qualify for WWTU or ENU? YES NO N/A

Comments:

f. Has a determination been made for each waste generated that it is or is not a RCRA hazardous waste?

(1) What are the wastes generated? generated off-site

(2) How was the hazardous waste determination made for each waste (i.e., lab analyses, knowledge of waste streams or processes, waste listed in Part 261)?

Comments: US Ecology does not check the internal contents of shipments, the company relies completely on generator for waste identification on chemical hazard

(3) Are records available on the determination(s)? YES NO

facility notified as Transp. & TSDF

III. Generator Regulations 40 CFR 262 (Date Revised March 8, 1984)

A. Is the facility or does facility claim to be a small quantity generator? YES NO

Comments:_____

B. Does generator transport its own waste? YES NO

1. If NO, what is contractor's EPA ID, name, address, and phone?

2. If YES, see Transporter Regulations (Section III).

C. Does generator use the manifest system? YES NO

1. Does the Generator ever offer his hazardous waste to transporters or to TSD facilities which do not have an EPA ID number? YES NO

What transporters or TSD facilities?

2. A generator transporting or offering for transport hazardous waste for off-site TSD must first prepare a manifest.

3. If the waste is undeliverable to the primary or alternate facility, the generator must either designate another alternate facility or instruct the transporter to return the waste.

Does the manifest contain the following information:

a. Manifest document number YES NO

b. Generator's name, mailing address, phone number, and EPA ID number YES NO

c. Name and ID number of each transporter YES NO

d. Name, address and EPA ID number of the designated and alternate TSD facilities, if any. YES NO

e. Description of waste(s) required by DOT regulations in 49 CFR 172.101, 172.202, 172.203. YES NO

facility notified as transp. & TSDF
operations make it unlikely facility is generator.

II. Small Quantity Generator (SQG) Regulations 40 CFR 261.5 (Date Revised March 8, 1984)

A. General

1. Has the generator ever accumulated more than 1000 kilograms of D, F, K or U coded HW or 1 kilogram of P coded HW [261.5(f)]? YES NO

   a. If yes, is the waste stored in containers or tanks?

   b. Is any HW stored in waste piles or surface impoundments? YES NO

B. Small Quantity Generator (SQG) Regulations

1. Has generator determined if he generates a hazardous waste (262.11). YES NO

2. Which of the following describes the SQG's treatment and/or disposal of his HW?

   a. occurs on-site YES NO

   b. ensure delivery to an off-site facility, either of which is:

      (1) permitted under Part 270 YES NO

      (2) in interim status under Part 270 and 265 YES NO

      (3) authorized to manage HW by an authorized state YES NO

      (4) permitted, licensed or registered by a State to manage municipal or industrial solid waste; or YES NO

      (5) (a) facility which

         (a) beneficially uses, re-uses recycles or reclaims his HW YES NO

         (b) treats his waste prior to use, re-use, recycle, or reclamation YES NO

3. Does generator manifest his wastes (not required)? YES NO

6. Generators may store hazardous waste for less than 90 days without a permit or TSD status providing certain requirements have been met. YES NO

   a. Are the containers made of or lined with materials which will not react with and are compatible with the hazardous waste to be stored in them? YES NO

   b. Are the containers always closed, except to add or remove waste? YES NO

   c. Are container storage areas inspected weekly for leaks and container deterioration (40 CFR 265.174)? YES NO

   d. Are precautions taken to prevent accidental ignition or reaction of ignitable or reactive waste? YES NO

   e. Are containers holding ignitable or reactive waste located at least 50 feet from the facility's property line? YES NO

   f. Is the facility aware of and complying with the following requirements for incompatible wastes:

      (1) Incompatible wastes must not be placed in the same containers, unless in compliance with 265.17(b) YES NO

      (2) HW must not be placed in an unwashed container that previously held an incompatible waste YES NO

      (3) Are storage containers holding HW that are incompatible with any waste or other material stored nearby separated from or protected from them by means of a dike, berm, wall, or other device? YES NO

      Explain?

   g. Are containers marked or labeled in a manner equivalent to 40 CFR 172 subpart E? YES NO

   h. Comments:

7. a. Does the generator import or export HW? YES NO

b. If yes, has notification of this activity been submitted to the EPA Regional Administrator? YES NO

c. Is a copy of that notification available? (If yes, obtain copy). YES NO

d. If a copy is not available, or can not be obtained, determine: 1) when the notification was submitted; 2) for what waste type and; 3) for what foreign facility (name and address). YES NO

8. TANKS

Where tanks are used to store hazardous waste, the requirement of 40 CFR Part 265 Subpart J must be complied with (except 265.193), as follows:

a. Is storage in tanks conducted such that:

(1) It does not generated heat, pressure, fire, explosion or violent reaction? (If no, explain) YES NO

(2) It does not produce uncontrolled toxic mists, fumes, dusts, or gases? (If no, explain) YES NO

(3) It does not produce uncontrolled flammable fumes or gases? YES NO

(4) It does not damage the tank? YES NO

(5) It does not threaten the environment in other ways (i.e., leaks, spills)? YES NO

Comments:

b. Is 2 feet of freeboard maintained in uncovered tanks? YES NO

If no, is secondary containment used? YES NO

(Explain)

c. Is the tank(s) continuously fed? YES NO

If yes, is there a means to stop inflow? YES NO

Explain

d. Are inspections of the following conducted:

(1) Discharge control equipment? YES NO
How often?

(2) Waste feed cut-off systems? YES NO
How often?

(3) Data from tank monitoring equipment? YES NO
How often

(4) The level of waste in the tank? YES NO
How often?

(5) The structural integrity of tank? YES NO
How often?
How are inspections conducted?
What is observed (looked for)?

(6) The immediate area around the tank for signs of leaks and the integrity of secondary containment (if any)? YES NO

e. (1) Have any tanks once used for storage of hazardous waste been closed or their function changed? When?

(2) Were all hazardous wastes and/or residues removed? YES NO

(3) What was the disposition of the wastes or residues (i.e., where did it go)? YES NO

(4) When shipped?

f. Are ignitable or reactive wastes placed in tanks? YES NO

If yes, what measures are used to prevent ingnition or reaction?

g. Have wastes been placed in a tank which previously contained potentially incompatible waste or residue? YES NO

h. (1) If reactive or ignitable wastes are stored in covered tanks, are they in compliance with the National Fire Protection Association's buffer zone requirements? YES NO

(2) Are "No Smoking" signs posted? YES NO

(3) Have others measures been adopted to reduce hazards associated with storage of ignitable or reactive waste in tanks? YES NO

Explain

9. Preparedness and Prevention (265 Subpart C)

a. Is facility maintained and operated to minimize the hazards of fire, explosion, and sudden or non-sudden releases to the environment? YES NO

Explain:

b. Is internal emergency communication equipment or alarm systems installed? YES NO

What type?

c. Is a device (e.g., telephone) immediately available for summoning emergency assistance? YES NO

d. Are fire extinguishers or other emergency equipment immediately available on-site YES NO

e. Is emergency communications and response equipment tested? YES NO

How often?

f. Is aisle space adequate for emergency response? YES NO

What is aisle spacing?

g. (1) Have any arrangements been made with local emergency response organizations? YES NO

(2) Which organizations?

(3) If local organizations have declined to enter into response agreements, is this documented in the facility's operating record? YES NO

Explain:

10. Contingency Plan/Emergency Procedures

a. Has contingency plan been developed? (It may be a modified SPCC plan) YES NO

b. Have incidents occurred where the plan has been implemented? YES NO

c. Have incidents occurred where the plan should have been implemented but was not YES NO

Explain

d. A copy of the plan should either be obtained for post-inspection office review or it should be examined during inspection for the following:

(1) Does the plan describe actions to be taken by personnel in response to fire, explosion, or releases to the environment? YES NO

(2) Does the plan describe arrangements made with external emergency response organizations? YES NO

(3) Does the plan list those qualified to act as emergency coordinator including their name, address, and phone? YES NO

(a) Is the list current? YES NO

(4) Is all emergency equipment available at the facility listed in the plan? YES NO

(a) Is the location and a description of the equipment included? YES NO

(b) Are capabilities described for each piece or equipment unit? YES NO

(5) Does the plan include evacuation procedures including a description of signals to initiate evacuation (and routes and alternative routes)? YES NO

(6) Is a copy of the plan maintained at the active facility (versus main office)? YES NO

(a) Has a copy been supplied to appropriate off-site emergency response organizations? YES NO

To which?

(7) Is at least one designated person always available to respond to emergencies (i.e., of those on the coordinator list)? YES NO

How are they available

What are the limits of this person's authority to respond to emergencies?

(8) Has an emergency occurred? YES NO

Was the plan implemented? YES NO

(Describe the incident)

11. Personnel Training

a. Has a training program been developed? YES NO

What type? (Classroom? On-the-job Training?)

b. Does the program include contingency plan and response training? YES NO

c. Does the program include measures to familiarize personnel with emergency response equipment, procedures, and systems including:

(1) Procedures for using and maintaining equipment? YES NO

(2) Key parameters for automatic waste feed cut-off? YES NO

(3) Communications or alarm equipment? YES NO

(4) Response to fire and explosion? YES NO

(5) Response to ground water contamination incidents? YES NO

(6) Facility shut down? YES NO

d. Are records available at the facility for the following:

(1) Job title for each position related to hazardous waste management and maintaining equipment? YES NO

(2) Written job description for each job title? YES NO

(a) Does the job description include the skill, education or qualifications required for the position? YES NO

(b) The duties assigned to that position? YES NO

(3) A written description of the type and amount of training to be given to those in each job position? YES NO

(4) A record of training completed or experience obtained for each job position by employee? YES NO

(5) Was the required training obtained within 6 months of employment or by May 19, 1981, by each individual involved in hazardous waste management activities? YES NO

E. Is Generator familiar with Generator Reporting Procedures?

1. Annual Reports YES NO
2. Exception Reports YES NO
3. Spills and Discharges into the Environment YES NO
4. Comments

F. Is generator aware of and complying with regulations concerning the preparation of hazardous waste for transport? YES NO

1. Packaging 40 CFR 173, 178, 179, and with requirements of STATE YES NO
2. Labeling 49 CFR 172 YES NO
3. Marking 40 CFR 172 YES NO
4. Placarding 49 CFR 172 Subpart F YES NO
5. Containers with of hazardous waste must be marked with the following or essentially equivalent, words and in information, displayed in accordance with 40 CFR 172.304.

HAZARDOUS WASTE - State and Federal Law prohibits improper disposal. If found, contact the nearest police or public safety authority, and the U.S. Environmental Protection Agency.

Generator's Name and Address
Manifest Document No. _____

6. Comments"

G. Are any wastes generated at this facility being transported or stored prior to being recycled, reclaimed, or recovered?

YES NO

1. If yes, what are they_____

a. Sludge ( )
b. Characteristic HW ( )
c. Listed HW ( )
d. Comments

Wastes manifested in as radioactive not hazardous

IV. Transporter Regulations (40 CFR 263) (Date Revised March 8, 1984)

A. Transporter facility description.

1. Operates as a Transfer Facility — YES NO
2. Operates as a Storage Facility — YES NO
3. Operates as a Generator — YES NO
4. Imports Wastes — YES NO
5. Combines Manifested Shipments — YES NO

B. Does transporter have an EPA ID? — (YES) NO

C. Does the transporter comply with generator regulations under Part 262 if he imports hazardous waste or combines wastes of different DOT shipping descriptions into a single container? — YES / NO

due to question of radioactive wastes wastes received on US Ecology manifest for radioactive material

D. Does the transporter comply with storage regulations under Parts 270, 264, and 265 if he stores manifested shipments at a transfer facility for more than 10 days? — YES NO

E. Is transporter aware of and complying with manifest requirements under RCRA 263.20?

1. Before transporting HW is manifest dated and signed by generator? — YES NO
2. Does the transporter sign, date, and return a copy of the manifest to the generator before transporting waste off the generator's property? — YES NO
3. Does the transporter delivering hazardous waste to another transporter or the designated facility:
   a. Obtain a signed and dated (S/D) copy of the manifest? — YES NO
   b. Retain one copy of the manifest containing signatures of the generator, himself, next designated transporter or the designated TSD facility for 3 years from original manifest date? — YES NO
   c. Give remaining copies of the manifest to accepting transporter or designated facility? — YES NO

4. Does transporter deliver the entire quantity of HW accepted to:

   a. The designated facility listed on the manifest? or YES NO

   b. The alternate designated facility in the event the shipment cannot be delivered to the designated facility? or YES NO

   c. The next designated transporter? YES NO

5. If delivery is not possible, does the transporter contact the generator and revise the manifest according to instructions? YES NO

F. In the event of a spill or discharge during transport, does the transporter comply with the requirements set forth in 40 CFR 263.30? YES NO

1. Give notice to generator YES NO

2. Give notice to the National Response Center (800-424-8802) if required by 40 CFR 171.15?

3. Report in writing, as required by 40 CFR 171.16, to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, D.C. YES NO

4. Comments YES NO

V. TREATMENT, STORAGE and DISPOSAL (TSD) Interim Status Regulations Facilities, 40 CFR 265. (Date Revised March 8, 1984)

A. Type of Activity

1. Storage

a. Containers	( )
b. Tanks	
(1) Above ground	( )
(2) Below ground	( )
c. Surface Impoundments	( )
d. Waste Piles	( )
e. Other	( )

2. Treatment

a. Settling	( )
b. Evaporation	( )
c. Filtration	( )
d. Energy Recovery	( )
e. Incineration	( )
f. Thermal Treatment	( )
g. Recycling/Recovery	( )
h. Chem/Phys/Biological	( )
i. Other	( )

3. Disposal

a. Landfill	(1)
b. Land Treatment	( )
c. Surface Impoundment	( )
d. Incineration	( )
e. Other	( )

4. Comments:

5. Are hazardous wastes accepted from "outside" (off-site) sources(wastes not generated on site)? (YES) NO

   a. If YES, has a chemical and physical analysis of a representative sample been obtained in accordance with 40 CFR 265.13? YES (NO)

   b. Does the facility confirm that each hazardous waste received at the facility matches the identity of the waste on the manifest? YES (NO)

   c. How does the facility determine this?

B. Subpart B - General Facility Standards (40 CFR 265.10 - 265.17)

1. Does the facility obtain a detailed analysis of his waste prior to storing, treating, or disposing of it? YES (NO)

Describe:

2. Does the facility follow a Written Waste Analysis Plan Does the Plan include?

a. Parameters to be tested? YES (NO)
b. Methods of analysis? YES (NO)
c. Methods to get representative samples? YES (NO)
d. Testing frequency? YES (NO)

Comments:
no intrusive sampling of wastes performed

3. Did inspector collect a copy of the Plan for a thorough review of it at EPA's offices? YES NO

4. Security — see above

a. Have site owner/operators taken appropriate measures to ensure against unauthorized entry? (YES) NO

(1) Are signs posted at each entrance to active portion, and at other locations, in sufficient numbers to be seen by any approach? (YES) NO

(2) Are they legible from a distance of 25 feet or more? (YES) NO

(3) Does the facility have a 24-hour surveillance system or artificial or natural barrier/or combination of both, to control access to the active portion? (YES) NO

Comments:

5. Does the facility follow a Written Inspection Schedule (40 CFR 265.15? not in accord with RCRA YES NO
See Condition # 47 of license - no RCRA insp. sched f/a log

a. Does it include inspecting all:
Monitoring equipment? YES NO
Safety and emergency equipment? YES NO
Security devices? YES NO
Detecting equipment? YES NO

Dangerous waste storage areas? YES NO

b. Is this inspection schedule maintained at the facility? (YES) NO

c. Is an inspection log maintained? (YES) NO

(1) Is the log, or its summary, kept at the facility for at least three years from the date of inspection? YES NO

(2) Does the log include:

(a) date of time of inspection? (NO) YES NO

(b) inspectors name? (YES) NO

(c) observations? (YES) NO

(d) date and nature of repairs? (YES) NO

Comments:

6. Personnel Training (40 CFR 265.16)

a. Has a training program been developed? (YES) NO
What Type? (Classroom/on-the-job) both

b. Does the program include contingency plan and response training? YES NO
radiological emergencies only

c. Does the program include measures to familiarize personnel with emergency response equipment, procedures, and systems including: radiological related only YES NO

(1) Procedures for using and maintaining equipment? YES NO

(2) Key parameters for automatic waste feed cut-off systems. YES NO

(3) Communications or alarm equipment YES NO

(4) Response to fire and explosions YES NO

(5) Response to ground water contamination incidents? YES NO

(6) Facility shut down? YES NO

d. Are records available at the facility for the following: current employees - past employees retained @ Louisville, Ky

(1) Job title for each position related to hazardous waste management and maintaining equipment? YES NO

(2) Written job description for each job title? (YES) NO

(a) Does the job description include the skill, education or qualifications required for the position (YES) NO

(b) The duties assigned to that position? (YES) NO

(3) A written description of the type and amount of training to be given to those in each job position? (YES) NO

(4) A record of training completed or experience obtained for each job position by employee (YES) NO

as pertains To radiological

(5) Was the required training obtained within 6 months of employment or by May 19, 1981, by each individual involved in hazardous waste management activities? YES NO

trng. program oriented towards radiological not hazardous

C. Subpart C - Procedures and Preventions (40 CFR 265.30)

1. Is facility maintained and operated to minimize the hazards of fire, explosion, and sudden or non-sudden releases to the environment? YES NO

   Explain: cannot be determined as wastes received are not tested for RCRA characteristics

2. Is internal emergency communication equipment or alarm systems installed? YES NO

   What type? telephone in guard house

3. Is a device (e.g., telephone) immediately available for summoning emergency assistance? not observed directly - intrawaste handlers use a 2 way radio YES NO

4. Are fire extinguishers or other emergency equipment immediately available on-site? YES NO

5. Is emergency communications and response equipment tested? not discussed in license or facility Op. Manual although it is duty of chief Radiological Control & safety officer YES NO

   How often?

6. Is aisle space adequate for emergency response? N/A YES NO

   What is the aisle spacing?

7. Have any arrangements been made with local emergency response organizations? (YES) NO

8. Which organizations? radiological related OSHS, NRC, ~~etc~~. Hanford Fire Protection

9. If local organizations have declined to enter into response agreements, is this documented in the facility's operating record? _____ YES NO

   Explain:

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D. Subpart D - Contingency Plan and Emergency Procedures 40 CFR 265.50

1. Has contingency plan been developed? (It may be a modified SPCC plan) not for hazardous waste in accordance with regulations — YES (NO)

2. Have incidents occurred where the plan has been implemented? — YES (NO)

3. Have incidents occurred where the plan should have been implemented but was not — YES NO

Explain Unknown as hazardous waste emergencies would have been addressed as radiological

4. A copy of the plan should either be obtained for post-inspection office review or it should be examined during inspection for the following: plan not requested pending review of Facility Op. Pla

a. Does the plan describe actions to be taken by personnel in response to fire, explosion, or releases to the environment? — YES NO

b. Does the plan describe arrangements made with external emergency response organizations? — YES NO

c. Does the plan list those qualified to act as emergency coordinator including their name, address, and phone? — YES NO

(1) Is the list current? — YES NO

d. Is all emergency equipment available at the facility listed in the plan? — YES NO

(1) Is the location and a description of the equipment included? — YES NO

(2) Are capabilities described for each piece or equipment unit? — YES NO

e. Does the plan include evacuation procedures including a description of signals to initiate evacuation (and routes and alternative routes)? — YES NO

f. Is a copy of the plan maintained at the active facility (versus main office)? YES NO

(1) Has a copy been supplied to appropriate off-site emergency response organizations? YES NO
To which?

5. Is at least one designated person always available to respond to emergencies (i.e., of those on the coordinator list)? YES NO
How are they available

6. What are the limits of this person's authority to respond to emergencies?

a. Has an emergency occurred? YES NO

b. Was the plan implemented? YES NO

c. (Describe the incident)

activities addressed in part in Op. Plan & Safety manual but completion of this section should await specific request to facility to produce Contingency Plan pursuant to § 3007.

E. Subpart E - Manifest System, Recordkeeping, and Reporting 40 CFR 265.70

1. Manifest System

Facility uses radioactive waste shipment manifests not Uniform Manifest See Appendix III

a. Upon receipt of a manifested hazardous waste shipment, does the TSD facility:

(1) Sign and date each copy of manifest receipt of certifying waste? YES NO

(2) Note any discrepancies on each copy? YES NO

(3) Give delivering transporter one signed and dated copy of the manifest? YES NO

(4) Send a S/D copy of the manifest to the generator within 30 days after delivery and? YES NO

(5) Retain a copy of each manifest at the facility for 3 years from delivery? YES NO

b. If the TSD facility initiates a hazardous waste shipment, does it comply with generator requirements in Part 262? YES NO

c. Does the TSD facility examine manifests and wastes received to detect any significant discrepancies in quantity or type of waste, such as: YES NO

(1) Bulk waste-quantity variation of 10 percent or greater

(2) Batch waste - any variation in piece count

(3) Waste type - obvious differences discernible by inspection or waste analysis

d. If significant discrepancies are found, does the TSD facility:

(1) Reconcile discrepancies with generator or transporter within 15 days? or YES NO

(2) Immediately submit to EPA-RA a Discrepancy Report describing the discrepancy and attempts to resolve it and a copy of the manifest involved? YES NO

e. TSD facilities musy keep a written operating record documenting the following details:

(1) Waste description and quantity received

(2) Methods and dates of its treatment, storage, and disposal

(3) The location and quantity of each HW at the facility

2. Operating Record

a. Does the owner/operator of the facility maintain an operating record at the facility (40 CFR 265.73)? YES NO

b. Does the record contain the following information.

(1) A description of, and the quantity of each HW received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility?
manifests retained - no disposal record per RCRA requirements YES (NO)

(2) The location of each Hazardous Waste within the facility, and its quantity? YES (NO)

(3) A map showing disposal sites? (YES) NO
trenches only no 3D

(4) Summary reports and details of all incidents that require implementing the Contingency Plan?
radiological only - not requested of facility personnel during inspection Yes NO

(5) Records and results of inspections as required (need only be kept three years)? (YES) NO
pertaining to radiological

(6) All closure and post-closure cost estimates required for the facility? YES NO
license requirement #50 but not requested of facility personnel during inspection

(7) The results of testing and waste analysis?
no testing of waste YES (NO)

3. Facility Reporting Procedures

a. Has the owner/operator prepared and submitted a single copy of the Annual Report to EPA by March 1 of each year? YES (NO)

b. Is owner/operator familiar with procedures for emergencies? as pertains to RCRA YES NO
answer uncertain

c. If a TSD facility accepts a regulated hazardous waste shipment without the required manifest or shipping paper, does it file an "Unmanifested Waste Report" within 15 days or receipt? YES NO
does not utilize RCRA manifest

F. Subpart F - Ground-Water Monitoring (40 CFR 265.90)

1. Are ground-water (GW) monitoring regulations required at this facility? (YES) NO
If facility accepts hazardous waste

2. If YES, what is the relevant process unit?

a.	Surface impoundment	( )
b.	Waste pile	( )
b.	Land treatment	( )
c.	Landfills	(+)
d.	Other	( )

Describe:

3. Has the owner/operator implemented a ground water monitoring plan? YES NO
envir. monitoring at U.S. DOE has some relationship to US Ecology - no Subpart F equivalent monitoring

4. If NO, has the facility implemented one of the following:

a.	GW Waiver [265.90(c)]	( )
b.	Alternate GW Monitoring System [265.90(d)]	( )
c.	Neutralization Waiver (265.90(e)]	( )
d.	Describe:	

5. Does the ground water monitoring program consist of the following:

a.	At least 1 upgradient and 3 downgradient wells?	YES	NO
b.	GW Sampling and Analysis Plan	YES	NO
c.	GW sampling quarterly first year	YES	NO
d.	GW sampling semiannually after that	YES	NO
e.	Drinking Water Standards parameters	YES	NO
	Sampling frequency_____		
f.	GW Quality parameters	YES	NO
	Sampling frequency_____		
g.	GW Indicator parameters	YES	NO
	Sampling frequency_____		
h.	GW elevation parameters	YES	NO
i.	Outline GW Quality Assessment Program	YES	NO
j.	Statistical Analysis of Indicator parameters	YES	NO

Results:

6. Has the facility implemented GW Quality Assessment program? YES (NO)

   a. Date: _____
   b. Results:

7. Does the facility maintain the necessary records.

   a. Initial background parameter concentrations YES (NO)
   b. Subsequent parameters concentrations YES (NO)
   c. Statistical evaluations YES (NO)

8. Has the facility reported necessary information

   YES (NO)
   a. DW Standards for 1st year YES (NO)
   b. GW Indicator parameters annually YES (NO)
   c. Statistical evaluation YES (NO)

9. Comments:

Hanford is only now initiating a g.w. monitoring program. US Ecology's program is dependent on U.S. DOE's (i.e., Hanford's) monitoring efforts as the off-site wells are over 1000 feet away on U.S. DOE property to which US Ecology does not have access.

G. Subpart G - Closure and Post-Closure (40 CFR 265.110)

Closure — plan not reviewed as yet - will be requested if facility determined to be TSDF

1. Has the facility developed a closure plan which outlines all necessary steps to safely close the facility? (40 CFR 265.117)

   a. Description of how and when the facility will be partially closed (if applicable) and finally closed? YES NO

   b. Estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility? YES NO

   c. Description of the steps needed to decontaminate the facility equipment during closure? YES NO

   d. Comment:

Post-Closure — see closure

2. Has the facility developed a post-closure plan which contains the following steps to safely care for the facility after closure/post-close of the facility? (40 CFR 265.117)

   a. Description of how post closure will be carried out for the next 30 years. ( ) ( )

   b. Notice to the local land authority within 90 days after closure is completed? ( ) ( )

   c. Notice in deed to property? ( ) ( )

H. Subpart H - Financial Requirements 40 CFR 265.140

1. Liability not requested - see comments re. closure

a. (1) Does facility maintain liability insurance for sudden occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million? YES NO

(2) By what method did the owner/operator demonstrate sudden liability coverages to the RA?

(a) HW facility liability endorsement(s) ( )

(b) HW facility certificate(s) of liability insurance ( )

(c) financial test ( )

(d) corporate guarantee ( )

(e) multiple mechanisms (specify) ( )

b. (1) If a surface impoundment, landfill, or land treatment exist at the facility, does facility maintain liability insurance for nonsudden occurrence in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million? YES NO

(2) By what method did the owner/operator demonstrate non-sudden liability coverage to RA?

(a) HW facility liability endorsement(s)' ( )

(b) HW facility certificate(s) of liability insurance' ( )

(c) financial test ( )

(d) corporate guarantee ( )

(e) multiple mehcanisms (specify) ( )

c. Has owner/operator submitted an originally signed duplicate of liability coverage demonstration to RA?

d. Is wording of liability coverage instruments identical to that specified in 40 CFR 264.151?

YES NO

Comment:

2. Assurance

a. Closure

(1) Has facility prepared a written estimate of the cost of closing the facility in accordance with the closure plan (40 CFR 265.112)? Yes NO

(2) Has this cost estimate been adjusted annually for inflation? YES NO

(3) Has facility established financial assurance for the closure of the facility (40CFR 265.143)?

YES NO

(4) By what method has this been achieved:

a.	Trust dund	( )
b.	Surety bond (with standby trust)	( )
c.	Letter of credit (wiyh standby trust)	( )
d.	Insurance	( )
e.	Financial test	( )
f.	Corporate quarantee	( )
g.	Multiple mechanisms	( )

(5) Has facility submitted an originally signed duplicate of financial assurance to RA? YES NO

(6) Is wording of the financial assurance statement identical to that specified in 40 CFR 264.151.

YES NO

(7) Comment:

b. Post-Closure (Disposal Facilities)

(1) Has facility prepared a written estimate of the cost of post-closure monitoring and maintenance of the facility (40 CFR 265.144)? YES NO

(2) Has this cost estimate been adjusted annually for inflation? YES NO

(3) Has owner/operator established financial assurance for the post-closure care of the facility (40 CFR 265.145)? YES NO

(4) By what method has this been achieved:

(a)	Trust fund	( )
(b)	Surety bond (with standby trust)	( )
(c)	Letter of credit (with standby trust	( )
(d)	Insurance	( )
(e)	Financial test	( )
(f)	Corporate guarantee	( )
(g)	Multiple Mechanisms	( )

(5) Has owner/operator submitted an originally signed duplicate of financial assurance to Regional Administrator?

YES NO

(6) Is wording of the financial assurance statement identical to that specified in 40 CFR 264.151?

YES NO

I. Subpart I Use and Management of Containers (40 CFR 265.170)

1. Does this section apply to this facility? YES NO

2. Are the containers made of or lined with materials which will not react with and are compatible with the hazardous waste to be stored in them? YES NO

3. Are the containers always closed, except to add or remove waste? YES NO

4. Are container storage areas inspected weekly for leaks and container deterioration (40 CFR 265.174)? YES NO

5. Are precautions taken to prevent accidental ignition or reaction of ignitable or reactive waste? YES NO

6. Are containers holding ignitable or reactive waste located at least 50 feet from the facility's property line? YES NO

7. Is the facility aware of and complying with the following requirements for incompatible wastes:

   a. Incompatible wastes must not be placed in the same containers, unless in compliance with 265.17(b) YES NO

   b. HW must not be placed in an unwashed container that previously held an incompatible waste YES NO

   c. Are storage containers holding HW that are incompatible with any waste or other material stored nearby separated from or protected from them by means of a dike, berm, wall, or other device? YES NO

      Explain?

8. Are containers marked or labeled in a manner equivalent to 40 CFR 172 subpart E? YES NO

9. Comments:

J. Subpart J - Tanks (40CFR 265.190)

1. Does this section apply to this facility? YES NO

2. Do tanks on the facility hold hazardous waste? YES NO

   If so, what are their contents?

   _____

   _____

3. Is storage in tanks conducted such that:

   a. It does not generate heat, pressure, fire, explosion or violent reaction? (If no, explain) YES NO

   b. It does not produce uncontrolled toxic mists, fumes, dusts, or gases? (If no, explain) YES NO

   c. It does not produce uncontrolled flammable fumes or gases? YES NO

   d. It does not damage the tank? YES NO

   e. It does not threaten the environment in other ways (i.e., leaks, spills)? YES NO

   Comments:

4. Is 2 feet of freeboard maintained in uncovered tanks? YES NO

   If no, is secondary containment used? YES NO

   (Explain)

5. Is the tank(s) continuously fed? YES NO

   If yes, is there a means to stop inflow? YES NO

   Explain

6. Are Hazardous Waste storage tanks operated in a manner which minimizes the possibility of overfilling? YES NO

   How:

   Waste feed cut-off ( )
   Bypass system to another tank ( )
   High level alarm ( )
   Other _____

7. Are inspections of the following conducted:

   a. Discharge control equipment? YES NO
      How often?

   b. Waste feed cut-off systems? YES NO
      How often?

   c. Data from tank monitoring equipment? YES NO
      How often

   d. The level of waste in the tank? YES NO
      How often?

   e. The structural integrity of tank? YES NO
      How often?
      How are inspections conducted?
      What is observed (looked for)?

   f. The immediate area around the tank for signs of leaks and the integrity of secondary containment (if any)? YES NO

8. Have any tanks once used for storage of hazardous waste been closed or their function changed? When?

   a. Were all hazardous wastes and/or residues removed? YES NO

   b. What was the disposition of the wastes or residues (i.e., where did it go)? YES NO

   c. When shipped?

9. Are ignitable or reactive wastes placed in tanks? YES NO

10. If yes, what measures are used to prevent ingnition or reaction?

11. Have wastes been placed in a tank which previously contained potentially incompatible waste or residue? YES NO

12. If reactive or ignitable wastes are stored in covered tanks, are they in compliance with the National Fire Protection Association's buffer zone requirements? YES NO

13. Are "No Smoking" signs posted? YES NO

14. Have others measures been adopted to reduce hazards associated with storage of ignitable or reactive waste in tanks? YES NO

Explain

15. Waste Analysis and Trial Tests

Before treating and storing of hazardous waste in a tank is a detailed chemical and physical analysis of the waste obtained? YES NO

16. Does the company have and follow a written waste analysis plan? YES NO

a. Does the plan identify parameters used? YES NO

Explain

b. Sampling Method? YES NO

Explain

c. How frequent is analysis repeated? YES NO

d. Are results of waste analysis and trial tests placed in the facility's operating record.

17. Are waste analyses done when a tank is used to treat or store a HW which is substantially different or treated differently from waste previously treated or stored in the tank? YES NO

K. Subpart K - Surface Impoundments (40 CFR 265.220)

1.	Does this section apply to this facility?	YES (NO)
2.	Does the surface impoundment maintain enough freeboard to prevent any overtopping of the dike by overfilling, wave action, or a storm?	YES NO
3.	Are the surface impoundments designed and operated to allow two feet of freeboard?	YES NO
4.	Do earthen dikes have a protective cover which minimizes erosion (grass, rock, shale)?	YES NO
5.	Is a waste analysis or trail test conducted whenever a surface impoundment is used to chemically treat a HW which is substantially different or treated differently from waste previously treated in the surface impoundment?	YES NO
6.	Are results of waste analyses documented in the facility's operating record?	YES NO
7.	Are the surface impoundments inspected on a routine basis? How often?	YES NO
8.	Are ignitable or reactive wastes held in a surface impoundment (40 CFR 265.229)?	YES NO
9.	Comments:	

The following 40 CFR Subparts do not have a specific checklist prepared because few of these types of facilities exists in Region X. Inspection made at facilities which operate any of the following would require the inspector to prepare an inspection checklist prior to the site visit.

L. Subpart L - Waste Piles (40 CFR 265.250)
M. Subpart M - Land Treatment (40 CFR 265.270)
N. Subpart N - Landfills (40 CFR 265.300)
O. Subpart O - Incinerators (40 CFR 265.340)
P. Subpart P - Thermal Treatment (40 CFR 265.370)
Q. Subpart Q - Chemical, Physical, and Biological Treatment (40 CFR 265.400)
R. Subpart R - Underground Injection (40 CFR 265.430)

Landfill

- no 3 D grid system in place (see §265.309)
- if facility accepts ignitables - then US Ecology is in violation of §265.312 as nothing is done to waste received
- By not opening drums & not utilizing an x-ray device facility cannot determine if it is accepting containerized free-liquids
- no run on control system nor run off control system is present. The angle of the base with wall nearly vertical promoting ~~slot~~ sloughing and providing material for wind dispersal.

APPENDIX I

Potential non-Radioactive Dangerous Wastes From California Generators

GENERATOR #	# SHIPMENTS	Cu. Ft.	MILLICURIES
CAR 99-001-4201	1	4.01	1.559
CAD 00-796-5007	24	1800.0	588.317
CAR 99-001-5604	1	30.0	8.323
CAD 09-561-5027	10	435.0	82.232
CAR 99-000-5352	2	187.5	378.280
CAR 99-000-6264	6	720.0	986.000
CAR 99-000-6728	1	37.5	2.247
AR 99-000-6892	9	180.0	103.027
AR 99-000-7106	3	637.5	357.641
AR 99-000-7171	1	120.0	84.234
AR 99-000-8799	1	30.0	4.900
AR 99-000-9564	4	600.0	74.136
AR 99-000-9912	1	37.5	0.050
Ar 99-001-7469	1	90.0	16.530
CAR 99-001-7642	2	45.5	0.065
CAR 99-000-9581	1	15.0	12.000
AR 99-000-6298	1	22.5	16.700
CAR 99-000-6314	6	180.0	2.912
CAR 99-000-9789	5	157.5	56.440
AR 99-001-3732	1	107.1	13.595
CAR 99-001-7329	1	15.0	0.600
AR 99-001-7972	1	30.0	0.341
CAR 99-000-6801	1	37.5	3.115
CAR 99-000-8211	1	322.5	12.159
CAR 99-000-8617	2	52.5	14.942

CAR 99-000-8708	2	30.0	25.000
CAR 99-001-0803	1	7.5	0.065
CAR 99-000-8294	8	82.3	19.010
CAR 99-001-4698	2	45.0	16.500
CAR 06-912-1572	1	4.0	0.007
CAR 99-000-9052	1	22.5	3.000

This listing was compiled from the 1984 users listing for the U S Ecology site. This is not an exhaustive listing.

APPENDIX II

US Ecology. June 18 1985

Roger Stanley WDOE Olympia Wa.

John Dodd USE Reld.

Wayne N Pierre USEPA Region X (206)442-7261

Alan Harrington US Ecology Louisville, Ky.

Jim Montgomery USNRC Region V

DAVE FETTER US ECOLOGY LOUISVILLE, Ky.

SID WRIGHT US ECOLOGY LOUISVILLE, KY

STEVE ROMANO USNRC - HQ WASHINGTON, DC

Elmer D. MacIver US Ecology Louisville, Ky.

George Hofer US EPA Seattle

Tim L. Nord WDOE Olympia (206) 459-6050

Nancy Kirner DSHS Oly (206) 753-3459

9413286.1040

Rev 1/94

RADIOACTIVE WASTE SHIPMENT & DISPOSAL MANIFEST

US ECOLOGY, INC.

EXECUTIVE OFFICE: (502) 426-7160
P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207

PAGE 1 OF _____ USE THIS NO ON ALL CONTINUATION PAGES ➡ 53075

GENERATOR NUMBER ☐☐☐-☐☐☐-☐☐☐☐

(1) GENERATOR NAME _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
CONTACT _____ PHONE _____
USER PERMIT # _____ SHIPMENT # _____

(2) BILL DISPOSAL CHARGES TO _____
NAME _____ PURCHASE ORDER # _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

(3) AGENT/BROKER _____
BROKER'S US ECOLOGY # ☐☐☐☐☐☐☐☐
ADDRESS _____
CITY _____ STATE _____ ZIP _____
CONTACT _____ PHONE _____
BROKER SHIPMENT # _____ BROKER USER PERMIT # _____
Broker's Authorized Signature Acknowledging Waste Receipt _____ Date _____

(4) CONSIGNED TO
☐ P.O. BOX 638 Hanford Reservation Richland, WA 99352 509 377 2411
☐ P.O. BOX 578 HWY 95, 12 m. So of Beatty, NV 89003 702 553 2701
☐ OTHER
CONTACT _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE _____

(5) CARRIER _____ SHIPPING DATE _____
CARRIER EPA # (If any) ☐☐☐☐☐☐☐☐
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE _____
CASK TYPE _____ CASK SURFACE EXPOSURE RATE _____ mR/hr

Fig. 4-1

TOTAL FOR EACH CLASS		PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172 101)	ID NUMBER
# OF PACKAGES	WEIGHT (Pounds)		
		Radioactive Material, empty packages	UN2908
		Radioactive Material, fissile, n.o.s. – Radioactive Material	UN2918
		Radioactive Material, low specific activity, n.o.s. – Radioactive Material	UN2912
		Radioactive Material, n.o.s. – Radioactive Material	UN2982
		Radioactive Material, limited quantity, n.o.s. – Radioactive Material	UN2910
		Radioactive Material, special form, n.o.s. – Radioactive Material	UN2974
		Radioactive Material, instruments and articles – Radioactive Material	UN2911
		Thorium Nitrate – Radioactive Material	UN2978
		Uranyl Acetate (RQ-5000/2270) – Radioactive Material	NA9180
		Uranyl Nitrate, solid (RQ-5000/2270) – Radioactive Material	UN2981

(7) SHIPMENT TOTALS (DO NOT WRITE IN SHADED AREAS)

VOLUME (cu ft)	TOTAL # OF PACKAGES	SOURCE MATERIAL (kgs)	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	PLUTONIUM	TOTAL

ACTIVITY

ACTIVITY TOTALS ☐ Curies ☐ Millicuries (10CFR20.311)	TRITIUM	C-14	Tc-99	I-129	ALL ISOTOPES

(8) THIS IS TO CERTIFY THAT THE HEREIN-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND ARE IN COMPLIANCE WITH ALL REQUIREMENTS APPLICABLE AT THE DESIGNATED DISPOSAL SITE AND THAT THE MATERIALS ARE CLASSIFIED AND DESCRIBED IN ACCORDANCE WITH THE REQUIREMENTS OF 10 CFR PART 61 AND PART 20.311 OR EQUIVALENT STATE REGULATIONS.

Authorized Signature _____ Title _____ Date _____

TERMS AND CONDITIONS

A. TITLE: Upon inspection and acceptance at the disposal site by US Ecology and all appropriate regulatory authorities, title to the Waste which conforms to Company's representations herein shall thereupon transfer from the Customer and be vested in US Ecology.

B. WASTE PRODUCTS: Customer represents and warrants that data set forth in this Radioactive Waste Shipment & Disposal Manifest is true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and the designated facility thereto.

C. INDEMNIFICATION: Customer agrees to indemnify US Ecology, its officers, employees and agents against all loss and liability whatsoever if such loss or liability results from the failure of the Waste to conform in all material respects to the data supplied on the Radioactive Waste Shipment & Disposal Manifest or this shipment fails to meet the standards prescribed by the Department of Transportation or any other governmental agency having jurisdiction over such matters.

FOR US ECOLOGY'S USE ONLY

TYPE OF CONTAINER	CONTAINER VOLUME CU FT	# OF PKGS	CU FT PER CONTAINER TYPE
DRUMS			
OVERPACK			
55	7 89		
30	4 91		
5	0 87		
OTHER			
BOXES			
1st SIZE			
2nd SIZE			
3rd SIZE			
CASK LINERS			
OTHER			
OTHER			
SHIPMENT TOTALS			

LOAD EVALUATION

CHECK ALL THAT APPLY TO THIS LOAD OR NOTE ANY DISCREPANCIES IN COMMENT SECTION

☐ Manifest Waste Description Inadequate
☐ Contamination or Leakage Detected
☐ Unreported Exposure Rates Detected
☐ No Violations Detected on this Load
☐ Packaging Inadequate
☐ Labels Markings etc Inadequate
☐ Container Integrity Inadequate
☐ Other

COMMENTS (If any) ON THE LOAD AS NOTED ABOVE AND THE CORRECTIVE ACTION TAKEN

☐ CHECK HERE IF A SUPPLEMENTAL REPORT IS ATTACHED

BURIAL DATA

CONTAINER DISPOSITION ☐☐,☐☐,☐☐

If sub pt (a) does not apply to this load:
(1)(A) Dim. per (1)(B) _____ (1)(C) pounds (1)(D) _____ #
(2)(A) Container weight exceeds (Curies) _____ #
(2)(B) Lead shielding against ____ % by volume _____ #
Other _____ # No requirement _____ #

DEPTH IN FEET	CLASS A	CLASS B	CLASS C

Date Received _____
Date Disposed _____
Trench No _____
☐ This material meets licensed limits
☐ This material was disposed of in accordance with license
AUTHORIZED INITIALS _____

US ECOLOGY INVOICE # ☐☐☐☐☐☐☐☐
US ECOLOGY CUSTOMER # ☐☐☐☐☐☐☐☐ (Must agree with Agent named in Block 3)
US ECOLOGY INVOICE DATE ☐☐ MO ☐☐ DY ☐☐ YR
DISCREPANCY CODE(S) ☐☐,☐☐,☐☐,☐☐,☐☐

BATES #

CONSIGNEE ORIGINAL COPY

(MUST ACCOMPANY WASTE IN TRANSIT)

APPENDIX III

9413286.1041

GENERATOR NO. ____________________

GENERATOR NAME: ____________________

AGENT/BROKER: ____________________

US ECOLOGY, INC.

CONTINUATION SHEET

REV 1/84

MANIFEST # ____________

PAGE _____ OF _______

(8) Item No.	(10) Container Type	(11) Container Volume (Cu. Ft.)	(12) Container Weight	(13) Physical Form	(14) Waste Description Code	(15) Solidification or Absorbent Media	(16) Chemical Form/ Chelating Agent (10CFR20.311)	Check Below if > 0.1% Chelating Agent by Weight	(17) Radionuclide Info (10CFR20.311)	(18) Activity ☐ Curies ☐ Millicuries (10CFR20.311)	(19) D.O.T. Sub Type (A1, A2, LSA etc.)	(20) Special Nuclear Material (grams)	(21) Source Material (kilograms)	(22) Waste Form Class 10CFR 61.55	(23) Stability Class (See Note #3) 10CFR 61.56	Radiation Levels mR/hr (24) Disposal Container Surface	(25) Required for US Ecology Use Only	(26) Disposal Container at 1 Meter	(27) Transport Index	(28) Fissile Class	(29) D.O.T. Label 49CFR172
																					Radioactive -
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				(30) PAGE TOTALS																	

NOTE #1 Waste Description Codes

- 2 Dry Solid
- 3 Solidified Liquid
- 4 Biological
- 7 Filter Media
- 8 Dewatered Resins
- 9 Solidified Resins
- 10 Absorbed Aqueous Liquid
- 11 Absorbed Organic Liquid
- 12 Scintillation (or organic) Liquid in Vials in Absorbent
- 13 Aqueous Liquid in Vials in Absorbent
- 14 Animal Carcasses in Absorbent
- *99 Other

NOTE #2 - Solidified or Absorbent Media Codes

- 2 Speedi Dry
- 3 Celatom (MP 78)
- 4 Floor Dry/Super Fine
- 5 Hi Dri
- 6 Florco or Florco X
- 7 Instant Dri
- 8 Safe T Sorb
- 9 Oil Dri (Safe n Dri)
- 10 Zeolite Grades 2 3 4
- 11 Dow Media
- 12 Cement
- 13 Asphalt
- 14 Delaware Custom Media
- 15 Envirostone
- 16 [illegible]
- *99 Other

NOTE #3 - NRC Stability Class

_______ Code _______

- S Stable
- U Unstable

* ANY USE OF "OTHER" AS A DESCRIPTION MUST INCLUDE A WRITTEN AND SIGNED EXPLANATION ATTACHED TO THIS MANIFEST

CONSIGNEE ORIGINAL COPY

(MUST ACCOMPANY WASTE IN TRANSIT)

Fig. 4-1 Cont'd

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HANFORD SITE HAZARDOUS WASTE

COMPLIANCE INSPECTION

WITH

WASHINGTON DEPARTMENT OF ECOLOGY

AND

U. S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 11 - 14, 1985

- COMPLIANCE PROCESS

- AGENDA - DOE

- FACILITIES
  - INTERIM STATUS
  - OTHER

COMPLIANCE INSPECTION PROCESS

- Scope of Inspection
  - Non-rad facilities and operations
- Documentation Review
  - Waste analysis, personnel training, contingency, inspection, closure and post-closure plans
  - Groundwater monitoring plan
- Information on Hanford Activities
  - Candidate mixed waste streams
- Facility Tours/Operating Record Review
  - Generating facilities
  - Treatment, storage and disposal facility

HANFORD SITE HAZARDOUS WASTE COMPLIANCE ASSESSMENT INSPECTION

WASHINGTON DEPARTMENT OF ECOLOGY
Roger Stanley, Tim Nord

U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X
Jeff Webb, Wayne Pierre, George Hofer

June 11, 12, 13, and 14, 1985

AGENDA

June 11 - FEDERAL BUILDING, RICHLAND - Room 780

10:00 a.m. Introduction

- Compliance Inspection Process
- Expected Outcome

10:30 a.m. Part B Permit Application Discussion

- Overview of Part B process - WDOE/EPA
- Regulated wastes and units - EPA/WDOE
- Past Practices - EPA

2:00 p.m.

- Review of documents and compliance dates

June 12 - FEDERAL BUILDING, RICHLAND - Room 170

8:00 a.m. - 12:00 noon

- Complete document review

1:00 p.m. - 4:00 p.m.

- 100 Areas
  - UNC activities at 100-N and 183-H solar evaporation basin
  - View operating records (manifests)
  - Solar evaporation basin site tour (183-H)
  - 105-DR Alkali Burn Facility

June 13 - LEAVE FEDERAL BUILDING

8:00 a.m. - Rockwell activities in the 200 Area

- Review 200 Area contributing hazardous waste streams (mixed waste/hazardous waste)
- Summary of actual and estimated past and present generation (all mixed waste/hazardous waste streams)

10:00 a.m. - 200 Area Facility Tour

- PUREX
  - View operating records
  - Site tour*
- B Plant
  - View operating records
  - Site tour
- 221 T
  - U.O.R.
  - Site Tour
- U Plant
  - View operating records
  - Site tour*
- S Area Laboratory/Waste Facilities
  - View operating records
  - Site tour*
- 2727 S Facility
  - View operating records
  - Site tour*
- Z Plant
  - View operating records
  - Site tour*
- Cribs/Ponds/Ditches
  - Discussion of active vs. inactive (numbers and location, wastes received, sampling efforts)
  - Site tour
- Central Landfill
  - View operating records
  - Site tour

June 14 - LEAVE FEDERAL BUILDING

8:00 a.m.

- Activities of WHC, UNC, and PNL in the 300 Area
  - Incinerators (sodium/lithium and biological)
    - View waste-related operating records
    - Site tour*
  - Process Trench
    - View operating records
    - Site tour*
  - Source site tour (300 Area Facilities)

12:00 noon

- 400 Area
  - View operating records
  - Site tour

3:00 p.m. - Federal Building Room 170

- Closeout Discussion

* Includes Sample Collection Sites

SQA:DRE
2085S/1056S
6/7/85

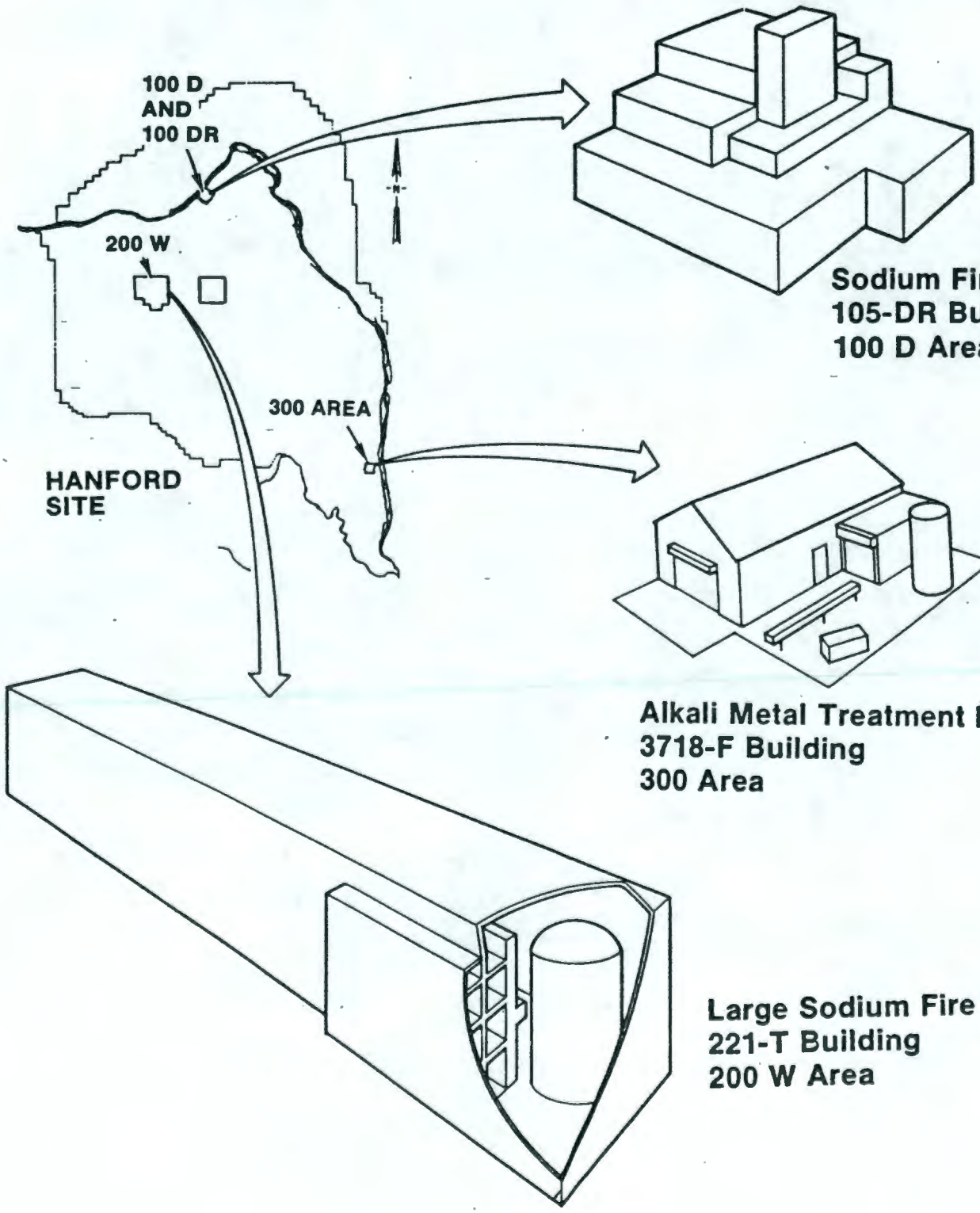
DANGEROUS WASTE ACTIVITIES AT HANFORD as of 6-1-85

Management Contractor	Generating Facilities	Transportation Functions	Treatment Facilities	Storage Facilities	Disposal Facilities
BCS Richland, Inc. (BCSR)	0				
Hanford Environmental Health Foundation (HEHF)	1				
J.A. Jones Construction Services (JAJ)	9				
Kaiser Engineers Hanford (KEH)	5				
Pacific Northwest Laboratory (PNL)	25				
Rockwell Hanford Operations (Rockwell)	25	1		1	1
UNC Nuclear Industries (UNC)	10				
Westinghouse Hanford Company (WHC)	23		5	1	

FACILITY	TREATMENT METHOD	STORAGE METHOD	DISPOSAL METHOD
Alkali Metal Treatment and Storage Facility, 3718-F Building (WHC)	Incineration and Chemical/ Physical Treatment	Container Storage	
Sodium Fire Facility, 105-DR Building (WHC)	Incineration and Chemical/ Physical Treatment		
Large Sodium Fire Facility 221-T Bldg. (WHC)	Incineration Chemical/Physical Treatment		
Nonradioactive Dangerous Waste Storage Facility 2727-S Bldg. (Rockwell) → to be replaced		Container Storage	
Nonradioactive Dangerous Waste Landfill (Rockwell)			Landfill in Trenches

HANFORD TREATMENT FACILITIES

Westinghouse Hanford Company



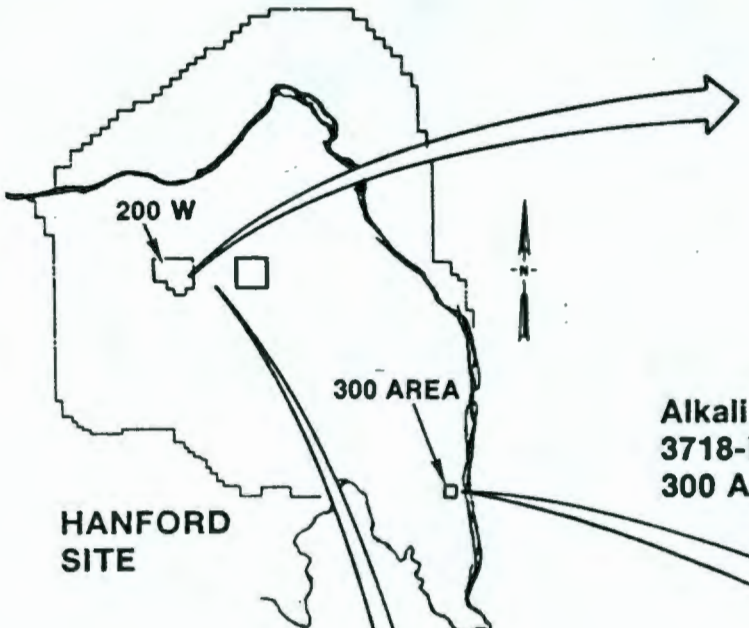
Sodium Fire Facility
105-DR Building
100 D Area

Alkali Metal Treatment Facility
3718-F Building
300 Area

Large Sodium Fire Facility
221-T Building
200 W Area

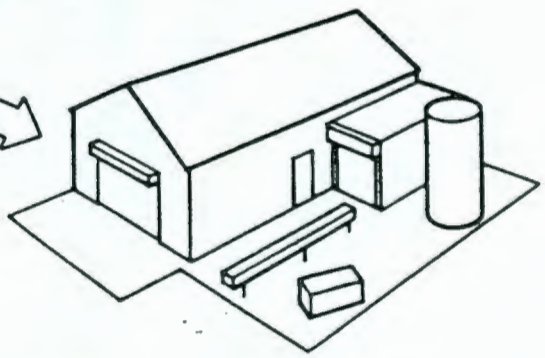
HANFORD STORAGE FACILITIES

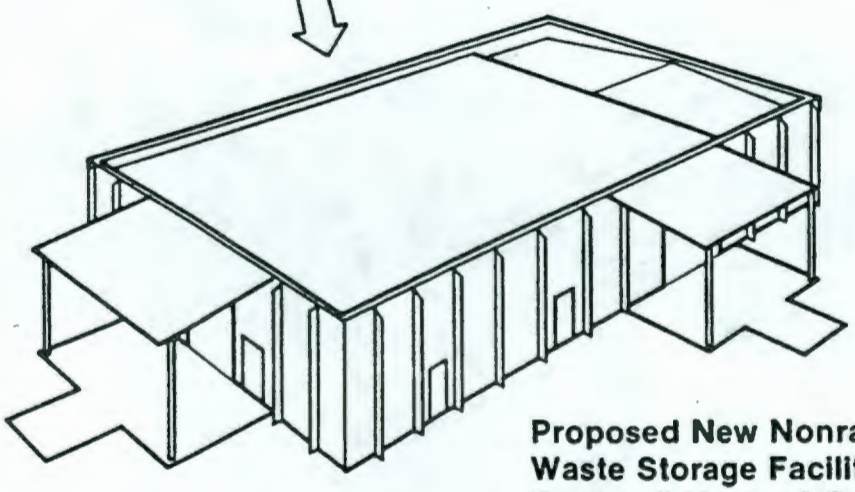
Rockwell Hanford Operations and Westinghouse Hanford Company



Nonradioactive Dangerous Waste
Storage Facility 2727-S,
Rockwell Hanford Operations
200 W Area

Alkali Metal Treatment and Storage Facility
3718-F Building, Westinghouse Hanford Company
300 Area

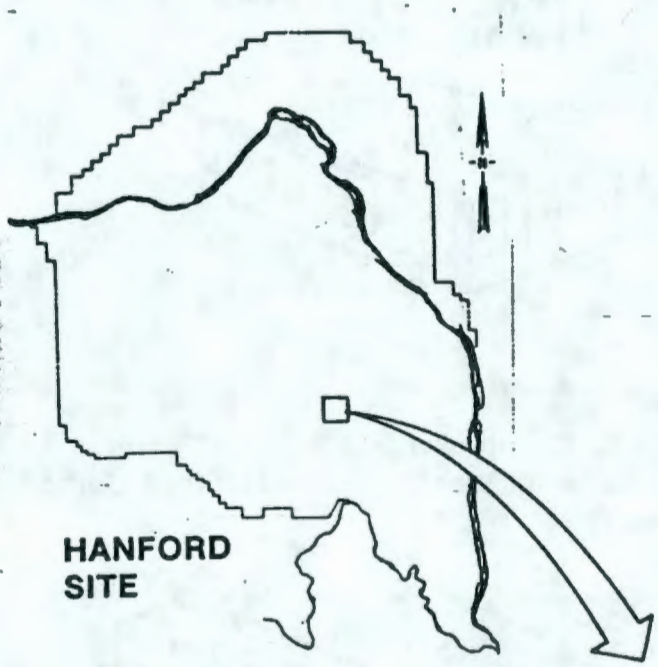




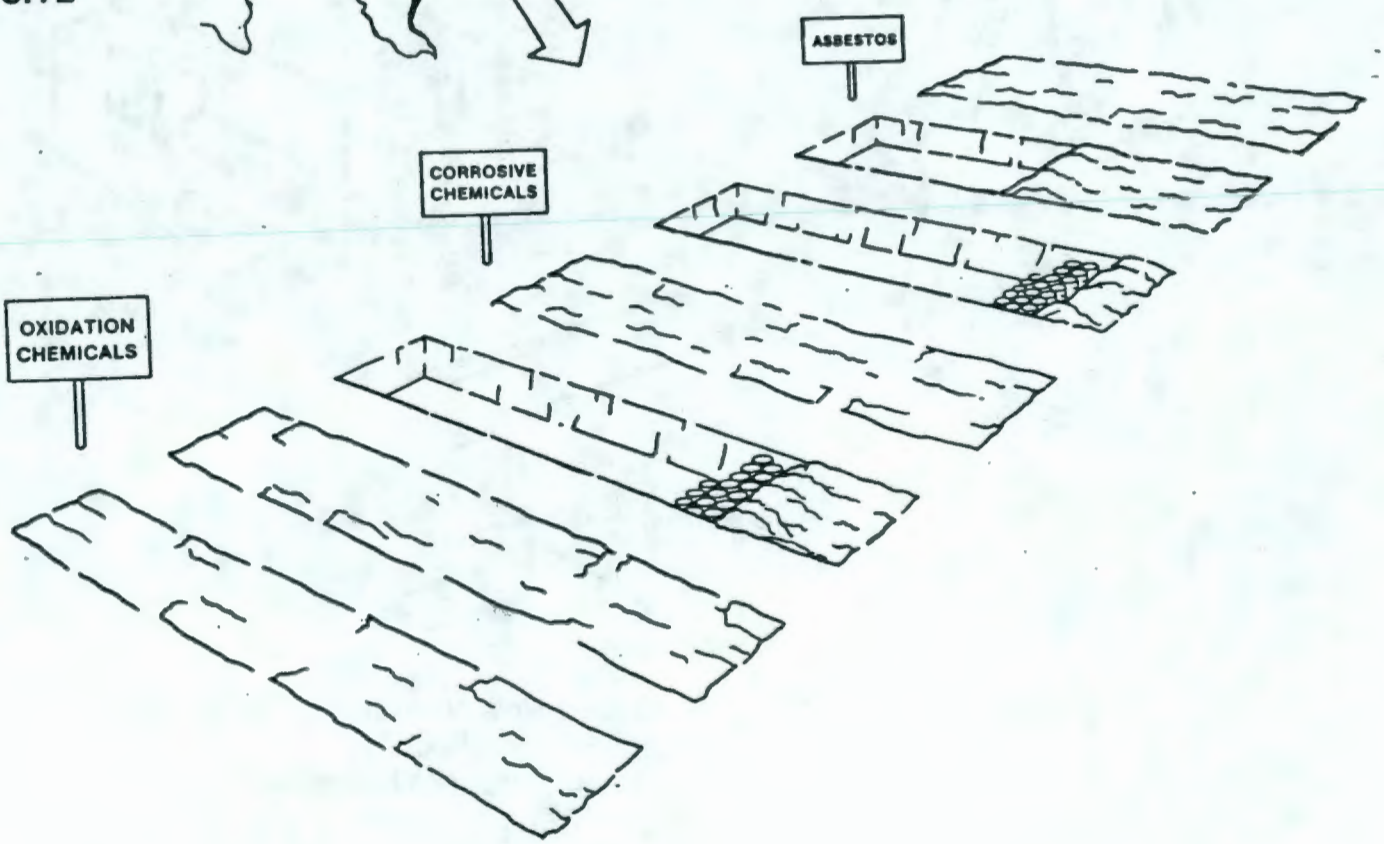
Proposed New Nonradioactive Dangerous
Waste Storage Facility,
Rockwell Hanford Operations
Project B-526
600 Area

HANFORD DISPOSAL FACILITY

Rockwell Hanford Operations

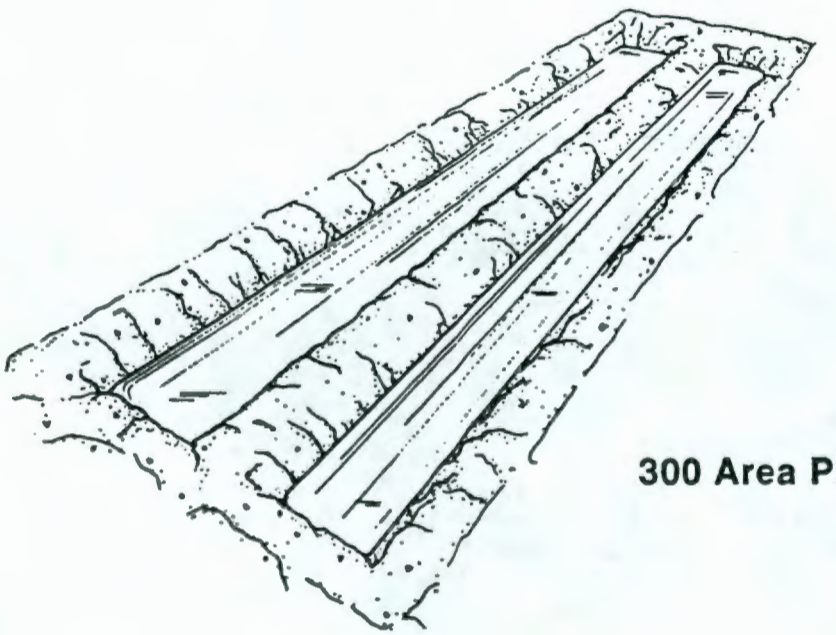


Nonradioactive Dangerous Waste
Landfill
600 Area



HANFORD INACTIVE FACILITY

Westinghouse Hanford Company



300 Area Process Trenches

Energy's version

Pasco Airport
T850
C2
4-41

WA 8967
6-11-85
4a

WA 8967

HANFORD SITE HAZARDOUS WASTE COMPLIANCE ASSESSMENT INSPECTION

WASHINGTON DEPARTMENT OF ECOLOGY
Roger Stanley, Tim Nord

U. S. ENVIRONMENTAL PROTECTION AGENCY, REGION X
Jeff Webb, Wayne Pierre, George Hofer

June 11, 12, 13, and 14, 1985

AGENDA

June 11 - FEDERAL BUILDING, RICHLAND - Room 170

10:00 a.m. Introduction

- Compliance Inspection Process
- Expected Outcome

10:30 a.m. Part B Permit Application Discussion

- Overview of Part B process - WDOE/EPA
- Regulated wastes and units - EPA/WDOE
- Past Practices - EPA

2:00 p.m.

- Review of documents and compliance dates

June 12 - FEDERAL BUILDING, RICHLAND - Room 170

8:00 a.m. - 12:00 noon

- Complete document review

1:00 p.m. - 4:00 p.m.

- 100 Areas
  - UNC activities at 100-N and 183-H solar evaporation basin
  - View operating records (manifests)
  - Solar evaporation basin site tour (183-H)
  - 105-DR Alkali Burn Facility

0111

June 13 - LEAVE FEDERAL BUILDING

8:00 a.m. - Rockwell activities in the 200 Area

- Review 200 Area contributing hazardous waste streams (mixed waste/hazardous waste)
- Summary of actual and estimated past and present generation (all mixed waste/hazardous waste streams)

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  - View operating records
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  - U.O.R.
  - Site Tour
- U Plant
  - View operating records
  - Site tour*
- S Area Laboratory/Waste Facilities
  - View operating records
  - Site tour*
- 2727 S Facility
  - View operating records
  - Site tour*
- Z Plant
  - View operating records
  - Site tour*
- Cribs/Ponds/Ditches
  - Discussion of active vs. inactive (numbers and location, wastes received, sampling efforts)
  - Site tour
- Central Landfill
  - View operating records
  - Site tour

June 14 - LEAVE FEDERAL BUILDING

8:00 a.m.

- Activities of WHC, UNC, and PNL in the 300 Area
  - Incinerators (sodium/lithium and biological)
    - View waste-related operating records
    - Site tour*
  - Process Trench
    - View operating records
    - Site tour*
  - Source site tour (300 Area Facilities)

12:00 noon

- 400 Area
  - View operating records
  - Site tour

3:00 p.m. - Federal Building Room 170

- Closeout Discussion

* Includes Sample Collection Sites

SQA:DRE
2085S/1056S
6/7/85

C111 4

STATUS UPDATE

RCRA/WDWR

PART B
MIXED WASTE

PROGRAM STATUS

Non-Radioactive

- Part A Application revised for June 1 submittal
- Part B Application being prepared for November 1 submission to EPA and WDOE
- EPA/State Compliance Inspection Scheduled June 11 - 14

Mixed Wastes

- EPA/DOE Rule Making not published
- April 30 (WDOE) and May (EPA) letters requested the Part B and included mixed waste
  - Data on continuing releases and past activities also requested
- Significant Resource Impacts to Address this request
  - Additional staff and analysis in FY 1985
- Steps to meet November 1 Part B submission
  - Identify Mixed Waste Streams (not byproduct streams)
  - Define groundwater monitoring requirements
  - Identify funding to meet identified dates

MIXED WASTE - PART B APPLICATION

To comply with EPA/WDOE direction, funds in addition to those already allocated in FY-85 are necessary. In general, these are as follows:

TASK	FUNDS	CONTRACTOR
Part B documentation and preparation	500K	Rockwell
Waste Analysis	100K	Rockwell
Consultant Support in Part B preparation	250K	Rockwell
Continuing Release/Inactive Waste Site	130K	PNL
Ground Water Planning, monitoring, analysis, well drilling	700K	PNL/Rockwell
TOTAL:	1780K	

COMPLETION OF PART B
(MIXED WASTES)

DOE-RL INTENT

- SAFE AND ENVIRONMENTALLY SOUND OPERATION
- FULFILL THE DOE MISSION
- DEMONSTRATE WILLINGNESS AND INTENT TO COMPLY WITH REGULATIONS

DOE-RL OPTIONS

- COMPLETE SCHEDULED ACTIVITY AND ESTABLISH A SCHEDULE FOR PART B COMPLETION IN FY-86
- PROVIDE LIMITED PART B SUBMISSION
  - PART A BY SEPTEMBER 1 can do by 7/1
  - PART B DATA TO BE REVISED
- COMPLETE PART B (MIXED)
  - SUBJECT TO FUNDS AVAILABLE
  - SUBJECT TO RESOLUTION OF TECHNICAL ISSUES (WASTE STREAMS, GROUND WATER, ETC.)
- RETURN TO DOE-HQ FOR RESOLUTION OF ISSUES AND QUESTIONS

US Ecology, Inc.
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

WA 8967 (1)
12·20·85 46
[redacted]
7 7 18

USEcology

December 20, 1985

Mr. Kenneth D. Feigner, Chief
Waste Management Branch (M/S 533)
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Feigner:

As noted in a conversation between Mr. Wayne Pierre of your staff and Mr. Patrick Segers of US Ecology on December 12, 1985, US Ecology submitted all but a portion of the information as requested in 4(a) of your letter dated November 20, 1985 with US Ecology's submittal dated December 12, 1985. It was agreed that US Ecology would compile the remaining information and submit it under separate cover. Please find the remaining information attached.

Should you have any questions or wish to discuss this matter further, please contact me.

Sincerely,

David R. Fetter
Director, Regulatory Compliance

DRF:jt

Attachment

Trench	Date Opened	Date Waste Receipts Ceased	Total Volume Possible Haz. Waste*	Average Vol. Per. Month*
8	5/5/80	5/22/81	231,747	18,441
10	5/5/81	12/20/82	181,050	9,285

*Volume is in cubic feet.

KDF D-16-1985 46
Rich
Hafer

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

DEC 1985

December 16, 1985

Mr. Kenneth D. Feigner, Chief
Waste Management Branch
M. S. 533
U. S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Feigner:

REQUEST FOR INFORMATION UNDER SECTION 3007 RCRA

Your November 20, 1985, letter to T. R. Fitzsimmons requested information regarding land disposal units on the Hanford Site. The following information is provided in response to the request:

1) RCRA Land Disposal Units -

   Non-Radioactive Dangerous Waste Landfill
   300 Area Process Trenches
   Low-Level Burial Ground
   Solar Evaporation Basins

2) RCRA Land Disposal Units Not Permitted -

   300 Area Process Trenches
   Solar Evaporation Basins

3) Closure Plans -

   300 Area Process Trenches (11-7-85, EPA Region 10)
   Solar Evaporation Basins (11-7-85, EPA Region 10)

4) RCRA Land Disposal Units Not Addressed -

   None

Topographic maps will be forwarded to your office by December 20, 1985, per P. J. Krupin's phone conversation with Wayne Pierre of your office. If additional information is required on this matter, please let me know on FTS 444-7387.

Very truly yours,

Ronald E. Gerton, Director
Environment, Safety and Health
Division

ES&H:PJK

Enclosure

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ATTACHMENT II A

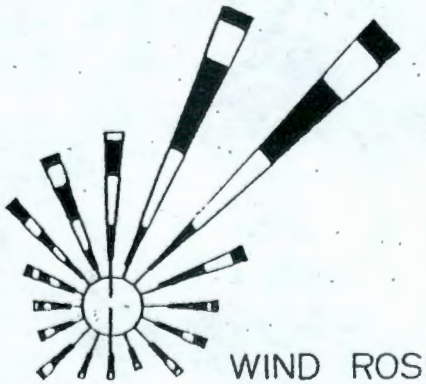
E 2,238

PREPARED FOR

U S ECOLOGY INC.

LOW-LEVEL RADIOACTIVE WASTE FACILITY

RICHLAND WASHINGTON



WIND ROSE

No.	Description	By	Approval	Date
	REVISIONS and NOTATIONS			

N442,000

WN-074

3798

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E 2,236,000 E 2,236,500 E 2,237,000 E 2,237,500 E 2,238,000

2. WELLS 004, 006, 008, 009, 011, 012, AND 014 ARE SHOWN IN PROPOSED LOCATION.

CAISSON 00

CHEMICAL TRENCH

RESIN TANKS

WASTE STORAGE MONUMENTS

I, RICHARD A. ROGERS, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF WASHINGTON, HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL GROUND CONTROL ESTABLISHED FOR THIS MAP IS CORRECT.

RICHARD A. ROGERS P.L.S.
WASH. REG. NO. 12365

10/24/85
DATE

CONTROL BY
ROGERS SURVEYING

MAPPING BY
WALKER AND ASSOCIATES, INC.
9054 STANLEY AVENUE SO. P.O. BOX C-81430 SEATTLE, WA 98108
(206) 763-9858
AERIAL PHOTOGRAPHY DIGITAL MAPPING CARTOGRAPHY
PHOTOGRAMMETRY PHOTO LAB SERVICES SURVEYING

The horizontal control data is based on N.G.S. North American datum of 1927, adjusted 1947, Lambert Grid system, Washington South Zone. The reference points used were station "PUG" (Quad 46119 4, Station No 1047) and "GABLE" (Quad 46119 1, Station No. 1011)

The vertical control is based on U.S.C.&G.S. datum, 1947 adjustment of second-order leveling from B.M. No. J-317.

SCALE 1" = 100'
0 100 200 300 400
CONTOUR INTERVAL 1'

PHOTOGRAPHY 8-27-85
PHOTOGRAPHY TIME 10:12 A.M.

LATITUDE N46°32'17"
LONGITUDE W119°33'29"

W UNDERGROUND WATER LINE
E UNDERGROUND ELECTRICAL LINE
T UNDERGROUND TELEPHONE CABLE
PROPERTY LINE
TRENCH OUTLINE
TRENCH MONUMENT
⊕ 014 MONITORING WELL
SIGN
POWER POLE

DIRECTION (% OF TIME)
2 4 6 8 10 20
WINDSPEED GROUPS
1-3 4-7 8-12 13-18 19-24 >24 mi/hr
THE POINTS OF THE ROSE REPRESENT DIRECTION FROM WHICH THE WIND COMES.
ADAPTED FROM DOE/EA-0211

WIND ROSE

PREPARED FOR
U S ECOLOGY INC.
LOW-LEVEL RADIOACTIVE WASTE FACILITY
RICHLAND WASHINGTON

No.	Description	By	Approval	Date
	REVISIONS and NOTATIONS			

WN-074

3798

ATTACHMENT II A

9413286.1064

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

UNITED STATES
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
(HANFORD)

RICHLAND QUADRANGLE
WASHINGTON
15 MINUTE SERIES (TOPOGRAPHIC)

HANFORD SITE KEY MAP

MAINTENANCE AND STORAGE FACILITY (437)

400 AREA

300 AREA PROCESS TRENCHES

300 AREA SOLVENT EVAPORATOR FACILITY

ALKALI METAL TREATMENT FACILITY (3718-F)

300 AREA

324 SODIUM REMOVAL PILOT PLANT

HANFORD PATROL ACADEMY DEMOLITION SITE

H A N F O R D W O R K S (A E C)

Mapped by the Geological Survey for the Army Map Service

Edited and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods and by plane-table surveys
Aerial photographs taken 1948. Field check 1951

Polyconic projection. 1927 North American datum
10,000-foot grid based on Washington coordinate system, south zone

Red tint indicates areas in which only landmark buildings are shown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue
To place on the predicted North American Datum 1983 move the projection lines 19 meters north and 86 meters east

There may be private inholdings within the boundaries of the National or State reservations shown on this map

SCALE 1:62500

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1951 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

WASHINGTON
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty — 4 LANE, 6 LANE — Light-duty
Medium duty — 4 LANE, 6 LANE — Unimproved dirt
U. S. Route State Route

This area is also covered by 7.5-minute 1:24 000-scale maps Horn Rapids Dam 1977, Benton City 1974, Richland 1978, and Wooded Island 1978

RICHLAND, WASH.
N4615—W11915/15

1951

DMA 2176 IV—SERIES V791

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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US Ecology, Inc.
9200 Shelbyville Road, Suite 526
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

WA 8910 7
12-12-85
41
Rico

[redacted]

1985

USEcology

December 12, 1985

Mr. Kenneth D. Feigner, Chief
Waste Management Branch (M/S 533)
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

9417286.1065

Dear Mr. Feigner:

Your letter dated November 20, 1985, was received by US Ecology, Inc., on November 25, 1985. In that letter you requested the company to submit information pertaining to the land disposal units located at our Richland, Washington low-level radioactive waste disposal facility. That request was made in conjunction with the loss of interim status provision contained in the Hazardous and Solid Waste Amendments of 1984 (HSWA) and pursuant to Section 3007 of RCRA, 42 U.S.C. Section 6927. While the company is herein complying with that request, we would again like to point out that this submittal as well as our previous Part B submittal for a post closure permit and the interim status closure and post closure plans may not be required in regards to the Richland facility.

RCRA and HSWA pertain to land disposal facilities which have been subject to regulations promulgated in 40 CFR 261-265 regarding management of RCRA designated hazardous waste. In the case of the Richland facility, the scope of subject waste concerned has been identified as scintillation vials containing toluene, xylene and benzene materials which when disposed in sufficient quantities and liquid form would undoubtedly possess the RCRA hazardous characteristic of ignitability. However, the receipt of such materials at the Richland facility as small quantity generator produced wastes, as well as their designation and/or shipping configurations, raise serious questions as to the appropriateness of their inclusion as RCRA regulated substances; and thereby the regulation of the Richland facility as a RCRA facility. This assessment is presented in more detail in the transmittal letter accompanying the October 29, 1985 protective submittals of the Facility's Part B Application for a post closure permit and the interim status closure and post closure care plans. That letter is being included herein as Attachment I.

Although questionable as to the applicability of RCRA and even though most of the information you have subsequently requested was contained in the Part B Permit Application submitted on October 29, 1985, we are herein including as Attachment II, complete independent responses to the four items contained in your November 20, 1985 letter. The items have been restated along with the appropriate response to each.

Per a conversation with Wayne Pierre of your office with Patrick Segers on December 12, 1985, US Ecology will be submitting all but a small portion of the information as requested in 4(A) of your letter. In order to avoid delay with the entire submission, it was agreed that US Ecology submit the information available. The remaining information is being compiled and will be sent to your office under separate letter within 10 days from the date of this letter.

Should you have any questions or wish to discuss the matter further, please refer to our Part B application or contact me.

Sincerely,

For David R. Fetter
Director, Regulatory Compliance

US Ecology, Inc.
9200 Shelbyville Road, Suite 526
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

ATTACHMENT I

USEcology

Mr. Charles E. Findley, Director
Hazardous Waste Division
U. S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

October 29, 1985

Mr. Richard A. Burkhalter, P.E.
Supervisor, Industrial Section
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Gentlemen:

Enclosed is US Ecology, Inc's Part B Application and Closure/Post Closure Plans for the Richland, Washington facility. This facility, located on federally owned property, is a commercial low-level radioactive waste site, licensed by the State of Washington and the Nuclear Regulatory Commission (NRC). Its daily operations are supervised on a full time basis by on site State inspectors and all activities are also monitored by the Nuclear Regulatory Commission and its Agreement State program audits. The facility has also been the subject of considerable State and Federal legislative scrutiny and, as such, its operations have been closely monitored by the public.

As you are aware, in November, 1980, US Ecology, Inc. (then known as Nuclear Engineering Company, Inc.), the site operator, made a protective filing for a Resource Conservation and Recovery Act (RCRA) Part A application in order to preclude any issuance of noncompliances regarding its receipt of scintillation vials which items may have been interpreted as falling within the RCRA-sphere of regulation. Since that initial filing in 1980, the company has drafted various letters and has met on numerous occasions with federal and state regulatory officials as well as Congressional representatives in order to try and resolve the potential conflicts which exist between the RCRA and 10 CFR 61 regulatory schemes. The present situation of dual statutory jurisdiction places the company under the regulatory purview of the NRC, EPA, Washington State Departments of Ecology and Social and Health Services, as well as interfacing with the Department of Energy. The company has repeatedly sought

to have but one regulatory agency or single-line of authority tasked with the overall responsibility for regulating the site. Such a designation will avoid the potential for conflicting enforcement policies or philosophies, and in turn will assure a coordinated, appropriate and timely response to specific regulatory demands.

However, during the pendency of these activities dedicated to resolving this issue, the company received an April 30, 1985 letter from US EPA, Region X, requesting that the company submit a RCRA Part B application for the Richland facility. While the company is complying with this request by filing the previously referenced documents, it also wishes to point out that it believes that the attached Part B filings may not be required in this specific instance. Specifically, the Part B filings are allegedly being mandated due to the company's receipt of mixed waste -- in this case being confined to the constituents of scintillation vials received at the site. These vials contain substances of toluene, xylene, and benzene, some of which were previously thought to be potential subjects of RCRA regulation. However, their receipt at the site as small quantity generator produced items, as well as their designations and/or shipping configurations, now casts serious questions as to the appropriateness of their inclusion as RCRA regulated substances.

While the presence at the facility of scintillation vials with chemical constituents is known, whether such materials are RCRA regulated is a separate issue. Small quantity generators of hazardous wastes are not RCRA regulated and are not required to use an EPA Uniform Hazardous Waste Manifest form. Since the facility has not received any such forms and the generators have contractually warranted to US Ecology that they will comply with all applicable laws and have indemnified US Ecology for any failure to do so, it can be assumed that the generators do not believe the waste to be RCRA regulated. Even though the company has substantial reservations regarding this material's classification as RCRA regulated, the company took the added precaution of advising its customers via a September 13, 1985 letter (See Attachment B), that effective October 28, 1985, US Ecology will no longer accept scintillation liquids contining toluene, or xylene in any physical form for disposal at its low-level radioactive waste facility in Richland, Washington. Obviously, such prohibition was confined solely to RCRA regulated substances. For a further discussion of the company's position on this matter, see Attachment A, "Scintillation Vials".

US Ecology has limited its discussion solely to the contents of scintillation vials as it believes that this is the only material received at the site which could potentially be RCRA regulated. This position is predicated on the fact that US Ecology is the only company disposing of commercial low-level radioactive waste to have filed a Part A or Part B application and the only waste item which it receives at Richland which is different from that received

at other facilities is scintillation vial materials. Therefore, to conclude otherwise would be contrary to existing facts and regulatory enforcement posture and would give rise to serious constitutional questions regarding equal protection.

The company believes that although there exists some question as to the regulation of this material, its present action was necessary in order to obtain a formal ruling from the agencies regarding this material, and thus requests a formal response as soon as practical. The desire for a formal response is necessary in that the Richland site is the only commercial low-level radioactive waste landfill which currently accepts this waste. Although scintillation vials constituted less than three per cent of the waste received at the facility, we believe this issue has national significance because of the potential impact on medical applications. The issue thus warrants a quick resolution by the Agency as to whether the vials are RCRA regulated in order to avoid a material disruption in the nation's medical and research communities.

For your information, and as set forth in the Part B, US Ecology will complete by November 8, 1985, the installation of five site-associated monitoring wells and thus will be able to conduct RCRA monitoring if it is determined to be applicable. Previous monitoring (in accordance with the company's existing licenses) utilized DOE wells which were located in the vicinity of the site.

US Ecology is submitting its Part B and Closure/Post Closure applications as a protective filing. As such, the company does not, by submitting these documents, admit to the applicability of RCRA to the Richland low-level radioactive waste disposal facility, nor does it waive its rights to supplement or withdraw such documents or request administrative or judicial relief on this matter.

Please be advised that US Ecology, Inc. intends that this letter and attachments be incorporated as an integral part of our Part B and Closure/Post Closure applications.

Very truly yours,

Sidney V. Wright, Jr.
Vice President, Radiological Division

SVW/sw 251

Attachment

ATTACHMENT A

SCINTILLATION VIALS

Scintillation vials contain low-level radioactive materials and toluene, benzene, and xylene. Such vials are produced for use in such settings as hospitals and medical research facilties throughout the United States as a part of medical and other scientific testing performed at those institutions. Laboratory procedures that use these vials perform such vital functions as determining the levels of hormones, vitamins or drugs in a patient, diagnosing pregnancy, and detecting cancers and other diseases such as hepatitis. These materials in the vial are often referred to as the "scintillation cocktail".

A scintillation cocktail is often composed of a scintillating material, a surfactant that serves as an emulsifier, and a solvent to serve as a suspension for the scintillation materials and surfactant. The solvent also has the important function of absorbing the energy produced by the radioactive materials, and transferring that energy to the scintillating material. This function of the solvent is vital to the usefulness of the scintillation vial.

Typical solvent materials for these scintillation vials are xylene, toluene, benzene or other similar organic materials. When these solvents are included in a scintillation cocktail formulation, they constitute an integral part of a usable product not intended for discard. That is, those solvents are a part of the vials as a product. The solvents never separately become waste before they become a part of the scintillation cocktail, nor are they mixed with any hazardous waste either before or after their addition to the cocktail.

At the time when the scintillation formulation is prepared and placed on the shelf for future use, the resultant mixture is a product and not a solid waste as defined in RCRA. At the time that the vial is used, thereby becoming a waste (though not a hazardous waste), the solvent is nothing more than part of that used product.

As outlined in greater detail below, the mere fact that the used scintillation vial may contain a solvent as a part of its content is irrelevant in determining whether the scintillation vial and its contents taken as a whole should be classified as a "hazardous waste". Instead, one must look at the vial and its contents at the time it becomes (or is intended to become) discarded in order to determine whether it is classifiable as hazardous waste. The xylene, toluene, benzene, or similar materials contained in the scintillation cocktail were not placed into the mixture in order for that organic constituent to be disposed of. The fact that the organic component in question was added to the formulation in preparation of a product, and was not in fact added to a solid waste, is important in a final determination of the applicability of RCRA to scintillation cocktails.

40 CFR 261.1(a) outlines the scope of the different Subparts A through D that make up Part 261, as follows:

> (1) Subpart A defines the terms 'solid waste' and 'hazardous waste," identifies those wastes which are excluded from regulation under Parts 262 through 265, 270, 271 and 124 and establishes special management requirements for hazardous waste produced by small quantity generators and hazardous waste which is used, re-used, recycled or reclaimed.
>
> (2) Subpart B sets forth the criteria used by EPA to identify characteristics of hazardous waste and to list particular hazardous wastes.
>
> (3) Subpart C identifies characteristics of hazardous wastes.
>
> (4) Subpart D lists particular hazardous wastes.

In order for a waste to be characterized as "hazardous waste," it must either fall within a list in Subpart D or contain one of the four characteristics outlined in Subpart C. (There is a provision in Subsection 261.1(b) which allows alternative methods for declaring a material a hazardous waste, but those are not relevent to this discussion, since there has been no action regarding the materials covered here as is contemplated in that section. See 40 CFR 261.1(b).

As outlined further below, the scintillation vials do not fall within any of the lists contained in Subpart D. Likewise, they do not possess any of the characteristics contained in Subpart C. (The sole exception to the absence of a hazardous characteristic is the possibility that vials might be ignitable. Even if the vials are ignitable, this is not sufficient to allow their classification as a hazardous waste because the Company continues to express its willingness to require that the material be placed in absorbent material or otherwise handled to eliminate its ignitability, and, thus, no longer provide a basis for its classification as a hazardous waste.)

Subpart D Lists

Subpart D contains four lists of specific waste. See 40 CFR 261.30 thorugh Section 261.33, and the Appendices thereto. Those lists are as follows:

- F-codes, which list specific hazardous waste from non-specific sources;
- K-codes, which cover generic process waste from specific sources (no specific chemicals); and

- P- and U-codes, which apply to discarded commercial chemical products when intended for discard.

First consider the list of P- and U-code waste.

The P-code and U-code Lists

Both P-code and U-code lists contain specific chemicals which are designated hazardous when they are:

(1) discarded or intended to be discarded as commercial chemical products; or

(2) manufacturing chemical intermediates having the generic names listed in those tables; or

(3) any off-spec (off specification) commercial chemical products; or

(4) manufacturing chemical intermediates; or

(5) containers or inner liners removed from containers being used to hold one of those products; or

(6) residues or contaminated soil or water from a cleanup of a spill of one of those commercial chemical products.

In a comment contained in 40 CFR 261.33 immediately preceding the P- and U-code list, EPA explains the meaning of the phrase "commercial chemical products or manufacturing chemical intermediate having the generic name" as referring:

> ...to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of a commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as the manufacturing process waste that contains any of the substances listed in paragraph e or f. (Emphasis added.)

In the background document for Subtitle C, Section 3001, Section 261.33 issued by EPA Office of Solid Waste on April 30, 1980, the Agency by way of the following comments makes the intent of the applicability of those P- and U-code lists quite clear. On page 5 of that background document EPA states:

> in the development of the proposed rules, a number of persons pointed out that the important part of the hazardous waste generated throughout the country were commercial chemicals that are normally not discarded but, for a variety of reasons, are occasionally discarded.

> Examples given were reduction of inventory, changes in product line, cancellation of pesticides, no further use of remaining stocks and residuals from batch processing manufacturing or formulating operations. In particular, operators of solid waste management facilities indicated that some 'wastes' which they receive are discarded pure chemicals as opposed to typical waste from manufacturing or other activities. These same persons also indicated that off specificaiton chemicals are sometimes discarded. The agency recognized that some of these chemicals and off specification materials were toxic and, even though discarded, only occasionally (and usually in small amounts), could pose a substantial hazard to human health or the environment.

In response to concerns or questions from the regulated community as to whether any solid waste which contained one of those listed chemicals in the P- or U-code list was a hazardous waste, EPA responded on page 9 of the background document:

> A number of commentators misunderstood the proposed rules and assumed that any waste, including manufacturing process waste, containing any of the chemicals listed in the Appendices III, IV, V, and XII would be a hazardous waste. This led several of these commentators to urge that a quantity or concentration level below which the waste would not be hazardous be established for each chemical listed in the appendices. Other commentators urged that, if the appendices only applied to pure chemicals and then only apply when they are discarded, these points should be emphasized. The agency recognizes the language of the proposed rules may have been confusing. Consequently it has substantially rewritten the provision, currently in Section 261.33 of the final rule, and has added an extensive comment to clarify the point raised by these commentators.

The comment referred to in the previous quotation is the comment previously cited on the previous page of this memo. EPA further stated on page 10 of that same document that:

> A few commentators seemed to suggest that Appendices III, IV, V and XII should be used to cause waste containing any of the listed chemicals to be a hazardous waste. This would essentially change the list into a 'characteristic' with its attendant responsibilities for the generator. The agency did not intend such a result. However, the

agency has revised its criteria for listing hazardous waste (See Section 261.11 of the final rules) to include this concept. The agency has developed a list of hazardous constituents, Appendix VIII, and will presume that a waste containing any of those constituents is a hazardous waste unless consideration of other factors, such as quantity of the waste, concentration of the toxic agent or mobility of the toxicant etc., causes the Agency to conclude that the waste does not pose a substantial threat to human health or the environment. This criteria requires the agency to make a determination to list such waste; it is not the responsibility of the regulated community to designate unlisted waste as hazardous waste, because they contain materials on Appendix VIII. Appendix VIII does in fact contain the toxic substances listed in 261.33(e) of the final rule. (Emphasis added.)

Finally, in that background document, EPA concluded on page 20:

> In addition, the agency substantially modified the final list of chemicals. First it has listed only commercial chemical products from manufacturing chemical intermediates, chemicals that are not normally discarded. The reason for this is that Section 261.33 is exclusively designed to regulate these materials in the event they are discarded or intended to be discarded, or discarded as off specification materials, or discarded as residuals in containers or in liners of the containers or spilled. Where the agency's interest in a chemical is because it is a hazardous constitutent of a solid waste, the agency will list the waste or classes of waste that typically or frequently contain such chemicals, in Section 261.33 261.32. The principal effect of this approach has been to eliminate as a class the chemicals listed in appendix which derive from a list of toxic chemicals that are typically found in industrial wastewaters, or its constituents of hazardous waste. (Emphasis added.)

Concurrent with the initial promulgation of 40 CFR 261 in 180, US EPA pulbished a "Guide to the Regulations". In that publication EPA answered the very basic question, "What is Section 261.33?" In answer the agency stated the following:

> Section 261.33 contains a listing of 361 commercial chemical products that are hazardous waste if and when they are discarded, because these are valuable commercial products, that normally are not discarded. For various reasons, however, they are occasionally discarded and when this occurs EPA believes these products may pose a present or potential hazard to human health or the environ-

ment. Thus Section 261.33 brings these commercial products under hazardous waste regulations if and when they are discarded or intended to be discarded. (Emphasis added.)

Additionally, EPA responded to the question "Is a waste a hazardous waste if it contains a commercial product listed in Section 261.33(f) but does not exhibit any of the four characteristics?", EPA's response was that:

> It is probably not a hazardous waste. If the waste is not listed as a hazardous waste, is not a mixture containing a listed hazardous waste, and does not exhibit any of the four characteristics it is not a hazardous waste by virture of containing a commercial product listed in Section 361.33(e) or (f) unless the commercial product was discarded by mixing into the waste. (Emphasis added.)

Also answered in the document was the question "Is a facility that stores the commercial products listed in Section 261.33 prior to their sale subject to the regulations?" EPA's response was:

> No. The commercial products listed in Section 261.33 are subject to regulation only when they are discarded or intended to be discarded. (Emphasis added.)

Even as late as May 9, 1985, John Skinner by issuance of a memorandum regarding the statutory interpretative guidance on treatment of bulk hazardous waste acknowledged the distinction between mixing of materials with product and mixing of materials with waste. Mr. Skinner stated that:

> Section 3004(C)(1) prohibits the placement in a landfill of bulk liquid waste to which absorbents have been added, but does not ban the landfilling of absorbed materials if the absorbent was added before the material became a waste. Hence, the ban applies to a spill of commercial chemical product or manufacturing chemical intermediate listed in Section 261.3 if the absorbent was added after the product became a waste.

Having now established that scintillation cocktails when disposed of are not a commercial chemical product listed as a P- or U-code, it must be determined if the solid waste generated by the use of that scintillation cocktail is contained as an F- or K-code.

K-code List

As stated in Section 261.32, the K-code list includes solid wastes that are listed as hazardous wastes from specific sources. This section's requirement that hazardous waste be derived from specific sources quite

clearly results in the exclusion of liquid scintillation cocktails from the list of hazardous waste by virtue of absence from that table. Clearly the process of using scintillation cocktails in any manner is not contained in the K-code list.

Consideration must now be given to the inclusion of liquid scintillation cocktails in which organics are a component on the list of F-codes.

F-code List

Section 261.31 provides that the F-codes cover hazardous wastes that come from nonspecific sources. F001 through F005 do contain specific solvents which are considered hazardous by virtue of the F-codes when they are spent and intended for discard. Benzene is not included in any of these F-code lists. Xylene and toluene are mentioned in these lists; however, this fact does not require or determine that scintilaltion vials containing xylene or toluene are, therefore, to be classified as listed hazardous wastes. Consideration must be given to the application of the term "spent solvents" as contained in Section 261.31 to see that the scintillation vials are not covered by any of these F-code lists.

On page 31 of the 40 CFR 261.31 background document dated May 2, 1980, EPA explains the following basis for listing substances (including solvents) in the F-code lists:

> Waste resulting from usage of organic solvents typically contains significant concentrations of the solvent. Examples of waste from usage of organic solvents include still bottoms from solvent recovery and spent solvents from dry cleaning operations and maintenance and repair shops.

This basis of the listing of the solvents under F001 through F005 codes does not contemplate the use of solvents in scintillation cocktails and for the purposes for which scintillation cocktails are used, as a source of hazardous waste. This is further evidenced in the analysis in the above noted background document relative to the sources of the waste in typical disposal practices. As stated by EPA:

> [t]he primary solvent-using industries and the quantities of solvents they use annually are as follows: ...paint and allied products or industrial operations, surface cleaning, pesticide production, laundry and dry cleaning operations, pharmaceutical manufacture, solvent recovery operations. Id at p. 36.

This list clearly does not include use of the solvents in scintillation formulations. The only point of contention may be use in the pharmaceutical industry. However, this point is clarified on page 42 of the doucment, in the explanatory material relating to the production of pesticides, pharmaceuticals and other organic chemicals:

> Solvent applications in the production of pesticides, pharmaceuticals and other organic chemicals include usage as a reaction (synthetic) medium, and the usage in equipment cleaning. The solvents used are primarily non-halogenated and are typically selected for compatibility with the production process. Toluene is the most widely used solvent in pharmaceutical manufacture, methanol is used as the reaction solvent in nylon 66 production, and acetone is used as the solvent in the production of cellulose acetate.
>
> Waste from solvent usage in these industries take the form of off-specification product material, equipment cleaning waste, and solvent recovery still bottoms. The destination of all solid waste is not known, but a large percentage is either reclaimed in house or by contract recovery operation.

Absent from all of the above explanantions about the application of F001 through F005 codes to spent solvents is any implicit or explicit reference to use of organic solvents in formulation of scintillation cocktails. In the "Guide to the Regulations" published by US EPA in 1980, the following question and response are contained regarding the application of the term "spent solvents":

> Q. Are the spent solvents listed in Section 261.3 generated by specific processes or any materials that contain these solvents considered hazardous?
>
> A. The spent solvents listed in Section 261.31 covers spent solvents generated by any and all processes; hence they are not limited to spent solvents derived from specific processes.
>
> These listed spent solvents themselves are hazardous waste. Also any <u>solid waste</u> with which these listed spent solvents are mixed are hazardous waste. Solid waste that may contain some amount of solvents from the manufacturing or other activity in which the solvents are used are <u>not</u>, however, hazardous waste by virtue of their solvent content; they may, however, be hazardous waste for other reasons. (Emphasis added.)

EPA does not view discarded scintillation cocktails, including those containing solvents, in the same that EPA views spent solvents under F-code or K-code lists. This view by EPA is evidenced by the answer to another question contained in that Guideance Document involving hazardous wastes generated by hospitals. In answering that question about hospitals, EPA excluded any mention of some wastes and included others, but most importantly, in making the analysis, EPA specifically <u>excluded any mention of the F-code or K-code</u>

lists. These lists were excluded, because EPA does not view their classifications as including any activities performed at hospitals. Hospitals use and discard scintillation vials. Thus, EPA does not believe that used scintillation vials fall within the F-code or K-code list classificaitons of Subpart C.

Clear from the above discussion is the apparent intent on the part of the Agency that the spent solvents referred to in the F-code list include solvents which have been used in processes normally associated with solvents, such as paint stripping, degreasing, etc. All of these indications on the part of the Agency as to the applicability of spent solvent and F-codes indicate that products in which one of the listed solvents is one of several ingredients are not intended to be categorized as spent solvents when disposed of merely by virtue of the content of the solvent.

In summarizing the non-applicability of RCRA Subpart D codes to scintillation cocktails, one can draw analogy to paints that were manufactured with solvents as one of their constituents. The waste from such paint after its use will contain high levels of the solvents which were included as one of the paint's constituents. EPA has stated that the treatment of such paint waste under RCRA should be through an examination for possible applicability of one of the four subtitle C characterisitics (as opposed to the Subpart D lists). As in the case of scintillation cocktails, the product paint contains solvent as an ingredient. The residue paint is not included in a P- of U-code list as a discarded commercial chemical product. In evaluating the waste paint scenario, EPA has stated that the F-code spent solvents are intended to encompass solvents which have been spent by their use in a traditional solvent process, such as degreasing, stipping, and the like. They were not intended to encompass paint product wastes which contain a solvent by virtue of the solvent content of the original product, nor paint product waste which has had solvent added as a product in order to act as a thinning agent to facilitate easier use of the paint.

Applying the paint analogy above, scintillation cocktails are purchased or provided as product formulations containing a solvent along with a scintillator and surfactant or detergents. Most of these scintillation formulations purchased from manufactures have already been formulated prior to their purchase by the eventual user. Like the resultant paint product waste, the discarded scintillation cocktail contains the solvent by virtue of the use of the solvent in the original product formulation, and not the use of the solvent in a traditional or classic sense.

Thus, discarded scintillation vials or scintillation cocktails, while including organic chemicals as part of their formulation, are in no way included in any Subpart D list (i.e., P-code, U-code, K-code and F-code lists). Consideration must be given to the possible applicability of one of the four Subpart C characteristics (i.e., ignitability, reactivity, corrosivity and EP toxicity).

Subpart C

To determine if the resultant waste scintillation vial is hazardous under such guidelines, one must examine whether the materials are ignitable, reactive, corrosive or EP toxic. The only characteristic of the four contained in Subpart C which might possibly be applicable is that of ignitability (D001).

Many scintillation cocktails containing organic materials have liquid flash points of less than 140 degrees Fahrenheit. If the small-quantity-generator exemption does not apply, the resultant liquid might be classified as an ignitable waste under the D001 code.

Having found the "hazardous characteristics" of the liquid scintillation cocktails as it is contained in the vial in liquid form, the form in which the material will be received must be examined.

Assuming that the scintillation cocktail might be treated as a RCRA hazardous waste by virtue of the characteristic ignitability (D001), when the cocktail is received in solid form (suitably absorbed), the determination for ignitability of a solid must be applied. The solid waste characteristic as stated in Section 261.21(2) is that the waste:

> ...is not a liquid and is capable under standard temperature and pressure, of causing through friction, absorption or moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creats a hazard.

EPA has concurred in this assessment via a request to EPA through its RCRA hotline. Therefore, the scintillation cocktails suitably absorbed and received by US Ecology would not be RCRA regulated hazardous wastes, even if they could otherwise be classified as ignitable hazardous waste without such absorption.

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ATTACHMENT II

November 20, 1985
US EPA Information Request
US Ecology
Richland, Washington
EPA ID# WAD060048360

INFORMATION REQUEST

Request: Identify each RCRA land disposal unit at your facility, whether or not a certification was submitted for each, by stating the common name or identifier used by the facility and type of units, and by identifying the unit on a photocopied (or original) topographic map attached to your response.

Response: A copy of the topographic map originally included in the post closure permit application and the interim status closure and post closure plans have been included as Attachment II-A hereto. Identified on that map and listed below are the possible RCRA land disposal units located at the facility along with the dates of operation and volume of possible RCRA waste for each. Only landfill cells have been utilized at the site. Land treatment units, surface impoundments, waste piles nor UIC wells have ever been utilized.

Trench	Date Opened	Date Waste Receipts Ceased	Total Volume Possible Haz. Waste *	Average Vol. Per. Month*
8	5-5-80	5-22-81	**	**
10	5-5-81	12-20-82	**	**
4 A	4-30-82	6-18-82	1280	768
7	10-29-82	10-12-83	46,759	3897

Trench	Date Opened	Date Waste Receipts Ceased	Total Volume Possible Haz. Waste..*	Average Vol. Per. Month*
9	9-9-83	11-30-84	53,203	3549
7A	6-3-85	7-16-85	0	0
4B	7-9-84	8-23-85	0	0
11 A	10-29-84	11-8-85	32,070	2607

Part B Reference: Part "B" Post Closure Permit Application Attachment 2-3, Attachment 2-7- Section 4.5.2.

* Volume is in cubic feet.
** Data being compiled. To be forwarded within 10 days from date of this letter, immediately upon receipt.

Request: Identify each RCRA land disposal unit at your facility which was not the subject of a certification of compliance with all applicable groundwater monitoring and financial responsibility requirements and a Part B permit application, transmitted to EPA by November 8, 1985. Indicate for each the common name or identifier used by the facility. Each unit must be identified on the topographic map in response to information request number 1 above.

Response: Certification of compliance with all applicable groundwater monitoring and financial assurance requirements was made by November 8 for none of the units listed in item one above. However, the Part "B" application for a post closure permit, and proposed interim status closure and post closure plans were submitted on October 29, 1985.

Part B reference: N/A

Request: For each RCRA land disposal unit at your facility which was not the subject of a certification of compliance with all applicable groundwater monitoring and financial responsible requirements and a Part B permit application transmitted to EPA by November 8, 1985, state when and to whom a closure plan was submitted.

Response: The above referenced closure and post closure plans along with the Part "B" application for a post closure permit were submitted to both Mr. Charles E. Findley, Director Hazardous Waste Division, USEPA Region X, and Mr. Richard A. Burkhalter, Supervisor Industrial Section, WDOE. Those submittals were dated October 29, 1985.

Part B reference: Transmittal letter.

Request: For each RCRA land disposal unit at your facility which was not the subject of a certification of compliance with all applicable groundwater monitoring and financial responsibilty requirements and a Part B permit application transmitted to EPA by November 8, 1985.:

a. State the type and average quantity of hazardous wastes placed in each on a daily (or monthly) average during the year prior to November 8, 1985.

b. State when the unit ceased receiving hazardous waste.

c. State whether hazardous waste was placed in the unit at any time between November 8, 1985, and December 15, 1985.

d. State how the hazardous waste introduced into the unit before November 8, 1985, has been treated, stored, or disposed of between November 8, 1985, and December 15, 1985.

   If waste is stored on-site, report:

   (i) The type of storage,

   (ii) The quantity presently in storage, and

   (iii) The rate of generation.

e. State how you intend to treat, store, or dispose of that hazardous waste (identified in "d") henceforth, including the identity of any off-site facility to which you intend to ship it.

Response: a) The scope of possible RCRA hazardous waste disposed of at the Richland facility to date has been identified as only scintillation vials containing solutions in which benzene, toluene and xylene may be an ingredient. Only these types of RCRA waste have been received between 1980 and 1985. Volumes received are shown in the table in item one above.

Part B reference: Part B post closure permit application Attachment 2-6, Section 4.5.1.

b) See table in item 1 above.

c) Receipt of possible RCRA wastes ceased prior to November 8, 1985. Since no RCRA wastes have been generated on site nor were any contained in storage as of that date no alleged hazardous waste disposal has taken place since November 8, 1985.

Part B reference: Transmittal letter.

d) All waste placed in the land disposal units prior to November 8, 1985 were placed there for ultimate disposal. No subsequent handling has been necessary.

Part B reference: All

e) Not applicable.

WAD [redacted] 89607

4B

11.20.85

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

NOV 20 1985

REPLY TO ATTN OF: M/S 533

P 133 055 275

CERTIFIED MAIL -- RETURN RECEIPT REQUESTED

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

P.O. 1984-446-014
Sent to S.V. Wright U.S. Ecology
Street and No. 9200 Shelbeyville Rd. Suite 526
P.O., State and ZIP Code Louisville, KY 40207

Sydney V. Wright, Jr., Vice President
Radiological Division
U.S. Ecology Inc.
9200 Shelbeyville Road, Suite 526
Louisville, Kentucky 40207

9413286.1084

Re: Request for Information Pursuant to Section 3007 of the Resource Conservation and Recovery Act, 42 U.S.C. Section 6927

Dear Mr. Wright:

This is to advise you that the Resource Conservation and Recovery Act (RCRA) has been amended by the Hazardous and Solid Waste Amendments of 1984 (the Amendments), and in particular to inform you of a new provision known as the loss of interim status (LOIS) provision. The purpose of this letter is to provide guidance relative to the LOIS provision and to request information regarding your operations before and after November 8, 1985.

The loss of interim status provision provides:

(1) In the case of each land disposal facility which has been granted interim status under this subsection before the date of enactment of the Hazardous and Solid Waste Amendments of 1984, interim status shall terminate on the date twelve months after the date of the enactment of such Amendments unless the owner or operator of such facility:

(A) Applies for a final determination regarding the issuance of a permit under Subsection (c) for such facility before the date twelve months after the date of the enactment of such Amendments; and

(B) Certifies that such facility is in compliance with all applicable groundwater monitoring and financial responsibility requirements.

The Environmental Protection Agency's interpretation of the requirements under this provision is published at 50 Federal Register (September 25, 1985), a copy of which is enclosed. Please read this closely. In order for you to continue to place hazardous waste in land disposal units at your facility on and after November 8, 1985, by that date you must have (1) submitted a Part B operating permit application, and (2) a certification of compliance with all applicable groundwater monitoring and financial responsibility requirements. Certification is authorized on a unit-by-unit basis. The Part B application should have been mailed or delivered before November 8, 1985, to both this office of EPA and to Washington Department of Ecology headquarters office. The certification should also have been mailed or delivered before November 8, 1985 to these same offices.

No certification was received by EPA from your facility. Therefore, your facility has lost interim status for land disposal activities. Please note that the loss of interim status does not relieve your facility from the responsibility and obligation to comply with interim status requirements but does prohibit continued hazardous waste land disposal activity.

Certification of compliance may have only been made if the facility or unit(s), for which interim status was desired, was in physical compliance by November 8, 1985. Because this is a provision of federal law, an order by any agency that has a compliance date on or beyond November 8, 1985, does not relieve the owner/operator of the obligation to have been in physical compliance by the statutory date when the certification was due. You may not interpret or rely on an order or compliance schedule therein as an extension of the November 8, 1985 deadline. Moreover, difficulties in achieving compliance, such as obtaining insurance, were not grounds for filing a certification if you were not in physical compliance.

Since you did not certify compliance with groundwater monitoring and financial responsibility requirements and/or you did not submit a Part B permit application by November 8, 1985, the facility was to cease the placement of hazardous wastes in the land disposal unit(s) in question by that date and you must comply with all closure and post-closure requirements. This follows by operation of law and does not require notice from EPA.

Request for Information

You are hereby requested, pursuant to the authority of Section 3007 of RCRA, 42 U.S.C. Section 6927, to report to EPA information regarding hazardous waste land disposal units that had interim status on or before November 8, 1985, and/or received or contained (i.e., stored) hazardous waste after November 19, 1980. In particular, you are to submit the information specified in Paragraphs 1 through 4 of Enclosure I by

December 15, 1985. The submission must: identify the facility by name, address, and RCRA identification number; refer to the information request paragraph number or repeat the request; be a self-explanatory and complete response; and be dated and signed.

You may, if you desire, assert a business confidentiality claim covering part or all of the information requested, in the manner described by 40 CFR Section 2.203(b). You should read the above-cited regulations carefully before asserting a business confidentiality claim, since certain categories of information are not properly the subject of such a claim. Information covered by such a claim will be disclosed by EPA only to the extent, and by the means of the procedures, set forth by 40 CFR Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to you.

Please forward the information requested to:

Kenneth D. Feigner, Chief
Waste Management Branch (M/S 533)
U.S. Environmental Protection Agency
1200 Sixth Ave.
Seattle, WA 98101

Failure to comply with the above request within the timeframe specified may result in an enforcement action by EPA under the authority of Section 3008 of RCRA, including the assessment of penalties. You should also be aware that knowing falsification of any information provided pursuant to this request is a criminal violation under Section 3008(d) of RCRA, and other provisions and may result in fines and imprisonment.

If you have any questions with regard to the above, or should you need further clarification regarding your response to this letter, please contact Charles Rice or Wayne Pierre of my staff at (206) 442-0695 or (206) 442-7261, respectively.

Sincerely,

Randall F. Smith

For Charles E. Findley, Director
Hazardous Waste Division

Enclosure

cc: C. Gaulding, WOO (w/enclosure)
J. Whitworth, WDOE (w/enclosure)

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WA8967
11·19·82
[redacted]
4B

M/S 533
NOV 19 1982
CERTIFIED MAIL--RETURN RECEIPE REQUESTED

T. S. Baer, Vice President
U. S. Ecology, Incorporated
9200 Shelbyville Road
Suite 526
Louisville, Kentucky 40207

RE: Facility #WAD060048360

Dear Mr. Baer:

On April 7, 1982, the Environmental Protection Agency publisned regulations applicable to owners and operators of hazardous waste treatment, storage and disposal facilities requiring such facilities to acquire and make evidence of financial assurance for facility closure (40 CFR 265.143) and, if applicable, post-closure care (40 CFR 265.145). Additional requirements for liability coverage for bodily injury and property damage to third parties resulting from facility operations (40 CFR 265.147) were published on April 16, 1982. Submittals required under 40 CFR 265.143 and 145 were due on July 6, 1982 and the submittals required under 40 CFR 265.147 were due on July 15, 1982. Because you filed a Part A application and initially qualified for continued operation under Interim Status, pending further review of your Part A application, you were notified of these financial and liability requirements, and the compliance dates, in a letter from this office dated May 17, 1982. To date these submittals have not been received by our office for the above referenced facility.

The purpose of this letter is to request that you submit information, pursuant to the authority of Section 3007 of RCRA, that will allow EPA to determine whether these financial and liability assurance requirements are applicable to the above facility and, if so, to determine whether your facility has complied with the requirements and may be subject to including administrative civil penalties, under
EPA is aware that some facilities may have unnecessarily filed Part A applications on November 19, 1980, to assure continued operation under Interim Status Standards (40 CFR Part 265). Such facilities may have discovered, subsequent to submitting a Part A application, that they did not actually meet the definition of a treatment, storage or disposal facility as defined in RCRA regulations. With the promulgation of financial and liability regulations, which are applicable to facilities operating under Interim Status, it has become necessary for facilities that filed Part A applications for protective coverage to determine if

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EPA Form 1320-1 (12-70)

OFFICIAL FILE COPY

they indeed meet the definition of a treatment, storage or disposal facility. If so, they must comply with financial and liability regulations.

In order to resolve the status of the above referenced facility and comply with RCRA, one of the following two options must be taken by your firm:

1. If your firm should have submitted evidence of financial and liability coverage, do so now. In this case you should also submit a revised Part A application if the Part A previously submitted does not accurately reflect current facility activities.

2. If you believe that the above referenced facility is not treating, storing or disposing of hazardous wastes, as provided in 40 CFR Part 265, EPA requests that you revise your Notification of Hazardous Waste Activity Form by filling out the highlighted portions of the enclosed blank form. EPA requests that you provide the information indicated below, so that we may review your determination:

   (a) Verification of the description of hazardous waste handled (designated by EPA waste identification codes submitted on the Part A application).

   (b) The maximum quantities of hazardous waste generated in any calendar month and the maximum quantities accumulated on-site at any time.

   (c) Duration of storage time on-site for any hazardous waste and the process utilized for storage (i.e. are all hazardous wastes stored in containers or tanks for less than 90 days).

   (d) Description of means by which hazardous wastes are managed - whether shipped off-site or whether treated, stored or disposed on-site.

The submittal referred to in No. 1, or the information requested in No. 2, is to be provided in writing within 30 days of your receipt of this letter, to the attention of Kenneth D. Feigner, Chief, Waste Management Branch. A handler of hazardous waste who fails to provide the information requested under Section 3007 violates the law and may be subject to enforcement action, including administrative civil penalties, under Section 3008 of RCRA. Additionally, if it is determined that the firm is in violation of Sections 265.143, 265.145 and 265.147 of the RCRA regulations for failure to submit the required documents for financial assurance for closure, post-closure and liability coverage, this would constitute separate violations under Section 3008 of RCRA.

EPA is aware that your company may have made a proper determination that it was not subject to the financial and liability requirements. Submission of the information requested under No. 2 above or other information to support your conclusion will allow EPA to review and confirm the company's determination.

If you wish to discuss the applicability of the financial and liability requirements, please feel free to call Carrie Adams at (206) 442-2806.

Sincerely,

Alexandra B. Smith, Director
Air & Waste Management Division

Enclosures

cc: Vernon Apple, U.S. Ecology, Inc.
Tom Cook, Department of Ecology
Dennis Bowhay, Department of Ecology

bcc: ~~Judy Fey~~

CAdams:nay:10-29-82

Hofer Feigner Findley

9413286.1089

No. 0310327
RECEIPT FOR CERTIFIED MAI
NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Daez
STREET AND NO.
9200 Shelbyville
P.O., STATE AND ZIP CODE
Louisville, Ky 40207
POSTAGE $
CERTIFIED FEE
SPECIAL DELIVERY
RESTRICTED DELIVERY
OPTIONAL SERVICES
RETURN RECEIPT SERVICE
SHOW TO WHOM AND DATE DELIVERED
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY
CONSULT POSTMASTER FOR FEES
TOTAL POSTAGE AND FEES $
POSTMARK OR DATE
PS Form 3800, Apr. 1976

CONCURRENCES

SYMBOL	Holt	B				
SURNAME	Hofer	Feigner	Findley			
DATE		11/12/82	out 11/5			

EPA Form 1320-1 (12-70)

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US Ecology, Inc.
9200 Shelbyville Road, Suite 526
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

WA 8967 4d
12.2.85
[redacted]
8 of 18

USEcology

December 2, 1985

Ms. Nancy Kirner
State of Washington
Department of Social and Health Services
Airdustrial Park, Building 6
Mail Stop LE-13
Olympia, WA 98504

Dear Ms. Kirner:

US Ecology has received a corrected report of analysis from Controls for Environmental Pollution, Inc. on samples analyzed in September, 1985.

This report corrects a typographical error. The original report listed sodium twice. This report corrects the typographical error from sodium to silver. (See attached).

Sincerely,

E. D. Martinez
Acting Chief Radiological
Control and Safety Officer

Enclosure

EDM/dlr

U.S. Ecology
ESS P.O. Box 638
CITY Richland, WA 99352
TENTION S.A. Carpenter cc; Elmer Martinez
VOICE NO. 509146

REPORT OF ANALYSIS

SAMPLES RECEIVED	CUSTOMER ORDER NUMBER
TYPE OF ANALYSIS ICP Scan	"CORRECTED REPORT"

CEP #		Element	Result
85-9-162	Tank # 1	Nickel	Positive
	Tank # 2	Nickel	Positive
	Tank # 3	Nickel	Positive
85-9-162	Tank # 1	Zinc	Positive
	Tank # 2	Zinc	Positive
	Tank # 3	Zinc	Positive
85-9-162	Tank # 1	Barium	Negative
	Tank # 2	Barium	Positive
	Tank # 3	Barium	Negative
85-9-162	Tank # 1	Chromium	Positive
	Tank # 2	Chromium	Positive
	Tank # 3	Chromium	Positive
85-9-162	Tank # 1	Selenium	Negative
	Tank # 2	Selenium	Positive
	Tank # 3	Selenium	Negative
85-9-162	Tank # 1	Silver	Negative
	Tank # 2	Silver	Negative
	Tank # 3	Silver	Negative
85-9-162	Tank # 1	Mercury	Negative
	Tank # 2	Mercury	Negative
	Tank # 3	Mercury	Negative
85-9-162	Tank # 1	Cadmium	Negative
	Tank # 2	Cadmium	Positive
	Tank # 3	Cadmium	Negative
85-9-162	Tank # 1	Arsenic	Negative
	Tank # 2	Arsenic	Negative
	Tank # 3	Arsenic	Negative
85-9-162	Tank # 1	Lead	Positive
	Tank # 2	Lead	Negative
	Tank # 3	Lead	Negative

9413286.1091

APPROVED BY James J. Mueller, President
11/27/85

Controls for Environmental Pollution, Inc.
P.O. Box 5351 • 1925 Rosina • Santa Fe, New Mexico 87502

4 1/3* NO DATE

FIELD SAMPLE DATA SHEET 9113286.1092

Date Samples Received: Yr Mo Dy Time

Project Code: AWD-013A Account: AGDD3A ☒ Enforcement/Custody

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous

Coordinator: Keith Brown x2652 ☐ Data Confidential

☐ Data for Storet

Notes:

Received by:

Samplers: Michael Brown / Dave Alley

Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER Yr	Wk	Seq	STATION NUMBER	DATE Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
								84	24	075	well # 36-61	84	06	14	1046						GW Monitoring well for RCRA compliance
										076											well # 36-61A pH 6.9 Sp Cond 425
										077											Temp 22.2°C
								84	24	078	well # 34-5				1229						
										079											
										080											
								84	24	081	well # ~~33-56~~ 33-56				1137						
										082											
										083											

LAB NUMBER Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	075							22.2		6.9	425				
		076														
		077									7.15					
84	24	078							21.1		7.1	425				
		079														
		080														
84	24	081							21.5		6.9	460				
		082														
		083														

Field or Office Copy | Project Officer Copy | Laboratory Copy

FIELD SAMPLE

2/2

FIELD SAMPLE DATA SHEET

5H5286.1093

Date Samples Received
Yr Mo Dy Time

Project Code: 1WD - 013A Account: AGDD3A ☒ Enforcement/Custody Notes: Received by:

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous Samplers: Michael Brown

Coordinator: Mike Brown x2852 ☐ Data Confidential

☐ Data for Storet Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE: Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
								84	24	004	[illegible]	84	06	13	1215						GW boundary well in RCRA compliance
										005			↓		↓						↓
										006											

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	004							Not		Not	Not				
		005							Time		Time	Time				
		006														

Field or Office Copy — Project Officer Copy — Laboratory Copy

ply)
eral)
Pond
chate
eit

80 Oil/Solvent (General)
81 Oil (Transformer/Capacitor)
82 Oil/Solvent (Drum/Tank)
83 Oil/Solvent (Spill Area)
84 Oil/Solvent (Waste Pond)

90 Commercial Product Formulation

95 Well Drill Water
96 Well Drill Mud
97 Well Sealing Material
98 Gravel Pack Material

25 Well Point Sampler (Pump)
26 Stainless Steel Bailer (Hand)

30 Dredge (Unspecified)
31 Dredge (Peterson)
32 Dredge (Van Dorn)
33 Dredge (Van Veen)
34 Core
35 Freeze Core

40 Biological (Unspecified)
41 Picked by Hand
42 Kick Net
43 Rock Basket
44 Glass Slides (Periphyton)
45 Net Haul
46 Surber
47 Fish (Shocking)

M Meters

Type	Description
-	Regular (blank)
V	Vertically Integrated
B	Sample at Bottom

★ Quality Assurance Codes ★

Code	Description
FBLK	Field Blank Sample (Dist H2O)
FXFR	Field Transfer Blank Sample
FTRS	Field Transport Blank Sample
FRXS	Field Reagent Sample
FRNS	Field Rinse Water Sample

4/89 G WAD [redacted] 8967
4D No date

9413286.1094

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

REPORT NO: ECF845
RUN DATE: 03/18/85

01/01/84 THRU 12/31/84

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
ALD 05-157-6957	ALABAMA UNIV OF B'HAM	9	1,425.70	1,873.212	
		9	1,425.70	1,873.212	*COUNTY = JEFFERSON
ALR 99-000-7924	TENN VALLEY AUTHORITY	85	73,763.65	79,414.477	
		85	73,763.65	79,414.477	*COUNTY = LIMESTONE
		94	75,189.35	81,287.689	**STATE = ALABAMA
ARR 99-001-9887	US PUBLIC HEALTH SERVICE	1	127.50	25,873.000	
		1	127.50	25,573.000	*COUNTY = JEFFERSON
ARR 99-000-6306	ARKANSAS POWER & LIGHT CO	54	33,107.50	1,349,018.537	
		54	33,107.50	1,349,018.537	*COUNTY = POPE
ARR 99-001-4938	ARK MED SCIENCE, UNIV OF	1	195.00	62.496	
		1	195.00	62.496	*COUNTY = PULASKI
		56	33,430.00	1,374,954.033	**STATE = ARKANSAS
AZR 99-000-9696	RADIATION SAFETY ENG	2	532.50	38,284.772	
AZR 99-002-0646	ARMOUR RESEARCH	1	15.00	44.250	
		3	547.50	38,329.022	*COUNTY = MARICOPA
		3	547.50	38,329.022	**STATE = ARIZONA
CAA 17-009-0027	NAVAL SUPPLY CENTER	5	217.50	1,582.383	
CAD 00-005-6069	HEXCEL CORP	1	0.54	0.089	
CAD 05-391-4206	GENERAL ELECTRIC CO	27	8,440.00	644,612.999	
CAD 07-166-3940	KAISER ALUMINUM & CHEM	1	15.00	2.556	
CAR 99-000-7320	NAVAL REG MEDICAL CENTER	6	1,125.00	111.174	
CAR 99-000-7981	NUCLEPORE CORP	5	110.00	0.014	
CAR 99-000-8237	CALIFORNIA STATE UNIV	2	15.00	6.900	
CAR 99-000-8377	HANA BIOLOGICS	2	19.01	25.700	
CAR 99-000-9235	CETUS CORPORATION	11	600.00	534.000	
CAR 99-000-9540	PATHOLOGY INSTITUTE	1	7.50	0.100	
CAR 99-000-9696	CHIRON CORP	7	150.00	393.467	
CAR 99-001-0191	CALIF UNIV OF BERKELEY	3	765.00	4,000.965	
CAR 99-001-0258	KAISER REGIONAL LAB	27	649.53	440.000	
CAR 99-001-0977	ARCO SOLAR INDUSTRIES	1	60.00	3,266.651	
CAR 99-001-2577	GUTTER LABORATORIES	5	52.50	4.113	
CAR 99-001-3344	ICLR - WESTERN	1	7.50	0.020	
CAR 99-001-4599	KAISER PERMANENTE MED CTR	1	7.50	5.000	
CAR 99-001-7493	CHILDREN'S HOSPITAL	3	45.00	26.871	
CAR 99-001-8996	AMERICAN BIO-NUCLEAR	2	8.02	4.595	
CAR 99-001-9226	US ECOLOGY INC	31	27,105.95	3,613,861.324	
CAR 99-001-9325	BERKELEY ANTIBODY CO	1	7.50	0.500	
CAR 99-001-9523	ADVANCED GENETIC SCIENCES	3	45.00	15.609	
		146	39,453.05	4,268,895.029	*COUNTY = ALAMEDA
CAD 08-070-9553	STAUFFER CHEMICAL CO	4	150.00	145.552	
CAR 99-000-7654	CONTRA COSTA COUNTY	2	8.02	1.580	
CAR 99-000-8039	BIO-RAD LABORATORIES	16	897.55	7,689.700	
CAR 99-000-8906	EAL CORPORATION	1	60.00	5.700	
CAR 99-000-9003	CHEVRON RESEARCH CO	1	30.00	1,005.610	
CAR 99-001-4201	MUIR JOHN HOSPITAL	1	4.01	1.559	
CAR 99-001-9366	MICROGENICS CORPORATION	1	7.50	3.146	
CAR 99-001-9739	DOW CHEMICAL CO	2	11.51	260.481	
		28	1,198.59	9,116.325	*COUNTY = CONTRA COSTA
CAT 08-001-1562	PACIFIC GAS AND ELEC. CO.	3	2,315.00	7,293.109	
		3	2,315.00	7,293.109	*COUNTY = HUMBOLDT

9413286.1095

REPORT NO: ECF845
RUN DATE: 03/18/85

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

01/01/84 THRU 12/31/84

GENERATOR	GEN NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
CAD 00-796-5007	BIO-SCIENCE LABORATORIES	24	1,800.00	586.317	
CAD 00-836-8987	ROCKWELL INTERNATIONAL	1	135.50	0.310	
CAD 00-958-4210	CALIF INSTITUTE OF TECH.	5	847.50	2,267.568	
CAD 04-038-4075	CLMG INC.	17	547.50	51.100	
CAD 04-223-1431	CALIFORNIA UNIV AT LA	3	1,515.00	1,524.852	
CAD 07-960-5366	HARBOR/UCLA MED CTR	3	607.50	1,523.031	
CAD 09-561-5027	LAD USC MEDICAL CENTER	10	435.00	82.232	
CAD 09-944-0254	COUNTY OF LOS ANGELES	1	22.50	9.000	
CAR 99-000-5019	AEROJET ORDNANCE CO.	9	4,540.50	28,865.000	
CAR 99-000-5159	CEDARS SINAI MED CTR.	2	180.00	134.205	
CAR 99-000-5233	DIAGNOSTIC PRODUCTS CORP.	9	4,125.00	7,204.194	
CAR 99-000-5352	V A WADSWORTH MEDICAL CTR	2	187.50	378.280	
CAR 99-000-5944	ORGANON DIAGNOSTICS	1	11.51	11.355	
CAR 99-000-6173	ISOTOPE PRODUCTS LABS	2	94.01	4,797.480	
CAR 99-000-6231	PHYTOGEN	2	16.04	54.000	
CAR 99-000-6264	RADIO ASSAY SYSTEMS LABS	6	720.00	986.000	
CAR 99-000-6553	HUNTINGTON INSTITUTE OF	4	172.50	442.310	
CAR 99-000-6728	WHITE MEMORIAL MED CTR	1	37.50	2.247	
CAR 99-000-6892	CHILDRENS HOSP. L.A.	9	180.00	103.027	
CAR 99-000-7106	HOPE CITY OF MEDICAL CTR	3	637.50	357.641	
CAR 99-000-7171	VA MEDICAL CENTER	1	120.00	84.234	
CAR 99-000-8799	RANCH O LOS AMIGOS HOSP	1	30.00	4.900	
CAR 99-000-9564	SO CALIF PERM MED GRP	4	600.00	74.136	
CAR 99-000-9755	VA MEDICAL CENTER	6	180.00	115.281	
CAR 99-000-9912	HYLAND THERAPEUTICS	1	37.50	0.050	
CAR 99-001-2569	KAISER LABORATORY	11	795.00	180.200	
CAR 99-001-2791	RACHELLE LABS INC	1	15.00	35.000	
CAR 99-001-4292	HAWTHORNE TOWER MED LAB	3	67.50	3.971	
CAR 99-001-4581	INT'L GENETIC ENGINEERING	1	60.00	138.100	
CAR 99-001-7469	CALIFORNIA STATE UNIV	1	90.00	16.530	
CAR 99-001-7642	ALPHA THERAPEUTIC CORP	2	45.52	0.065	
CAR 99-001-7840	KAISER RESEARCH LAB	4	30.00	34.050	
CAR 99-001-9440	SOUTHERN CA UNIV OF	3	2,497.50	2,550.968	
CAR 99-001-9499	TRW ELECTRONICS & DEFENSE	1	30.00	10,912.811	
CAR 99-001-9721	VESTAR RESEARCH INC	2	52.50	24.440	
CAR 99-002-0174	TORRANCE MEMORIAL HOSP	1	0.54	45.000	
CAR 99-002-0414	INST-CANCER & BLOOD RSCH	1	7.50	8.250	
CAR 99-002-0585	GULF NUCLEAR INC	3	517.50	268.769	
CAR 99-002-0737	JACOBS ENGINEERING GROUP	1	11.60	240.000	
CAR 99-002-0976	LANTERMAN STATE HOSPITAL	1	7.50	17.304	
CAR 99-002-1032	NEVADA ENGINEERING & TECH	2	62.74	346.350	
CAT 00-061-7589	SOUTHERN CALIF UNIV OF	1	15.00	6,165.000	
		166	22,085.46	70,637.618	*COUNTY = LOS ANGELES
CAR 99-000-9581	QUEEN OF THE VALLEY HOSPT	1	15.00	12.000	
		1	15.00	12.000	*COUNTY = NAPA
CAD 06-310-9243	HUGHES AIRCRAFT CO	1	7.50	10.041	
CAD 07-360-6279	AMERICAN MC GAW	2	67.50	1.100	
CAR 99-000-5054	BECKMAN INSTRUMENTS INC	1	45.00	22.400	
CAR 99-000-5274	CAL ST. UNIV. FULLERTON	2	176.51	44,094.275	
CAR 99-000-5589	MONOBIND INC	2	60.00	136.750	
CAR 99-000-5688	RADIO IMMUNE ASSAY LAB	1	15.00	1.600	
CAR 99-000-6298	NEWPORT PHARMACEUT INT'L	1	22.50	16.700	

US ECOLOGY INC 9413286.1096
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
CAR 99-000-6314	CENTRAL LAB OF ORANGE CO	6	190.00	2.912	
CAR 99-000-6603	NICHOLS INSTITUTE	9	1,455.00	1,123.262	
CAR 99-000-6629	ROCHE-DIAGNOSTIC SYSTEMS	1	76.04	12.000	
CAR 99-000-9557	PERKIN ELMER CORP.	1	4.01	193.000	
CAR 99-000-9706	THOMAS GRAY & ASSOCIATES	8	73.27	113,097.144	
CAR 99-000-9789	ALLERGAN PHARMACEUTICALS	5	157.50	56.440	
CAR 99-001-3732	BECKMAN INSTRUMENTS INC	1	107.08	13.595	
CAR 99-001-4342	ICN PHARMACEUTICALS INC	2	2,243.30	8,424,568.252	
CAR 99-001-7329	EDWARDS AMER LABS	1	15.00	0.600	
CAR 99-001-7972	BECKMAN INSTRUMENT INC	1	30.00	0.341	
CAR 99-001-8509	MORAVEK BIOCHEMICALS INC	1	7.50	96,000.000	
CAT 00-062-5293	CALIFORNIA, UNIV OF	1	592.50	847.423	
		47	5,335.21	8,680,197.901	*COUNTY = ORANGE
CAD 07-313-4777	CALIF UNIV OF, RIVERSIDE	1	300.00	5,643.168	
CAR 99-000-6801	DESERT HOSPITAL	1	37.50	3.115	
		2	337.50	5,646.303	*COUNTY = RIVERSIDE
CAR 99-000-5746	SMUD RANCHO SECO PWR PLT	30	15,006.10	44,146.894	
CAR 99-001-3179	ROCHE BIOMEDICAL LABS INC	2	150.00	56.800	
CAR 99-001-9465	OFFICE OF EMERGENCY SER	1	15.00	7,944.607	
		33	15,171.10	52,148.301	*COUNTY = SACRAMENTO
CAR 99-000-5985	LOMA LINDA VA HOSPITAL	1	90.00	88.062	
CAR 99-001-5034	AEROJET ORDNANCE CO.	3	1,320.00	170.760	
CAT 08-003-0877	LOMA LINDA UNIVERSITY	1	67.50	153.078	
		5	1,477.50	411.920	*COUNTY = SAN BERNARDINO
CAD 00-005-7109	SCRIPPS CLINIC & RES FDN	25	3,517.50	7,496.064	
CAD 02-021-0407	CALIFORNIA UNIV OF	4	2,629.53	3,744.205	
CAD 06-763-8957	GA TECHNOLOGIES INC	31	23,282.60	2,375.382	
CAD 07-373-1668	SALK INSTITUTE	3	877.50	1,345.620	
CAR 99-000-5107	CTR. FOR NEUROLOGIC STUDY	1	7.50	15.000	
CAR 99-000-5423	LA JOLLA CANCER RES FND	2	157.50	1,087.990	
CAR 99-000-5738	SCRIPPS MEMORIAL HOSPITAL	3	30.00	157.150	
CAR 99-000-5761	SO. CALIFORNIA EDISON CO.	30	19,426.50	460,457.796	
CAR 99-000-5337	VA MEDICAL CENTER	3	360.00	790.855	
CAR 99-000-6371	HYBRITECH INC	3	555.00	2,305.422	
CAR 99-000-5872	IRT CORPORATION	1	90.00	24,063.318	
CAR 99-001-2346	HELICON FOUNDATION	3	60.00	19.063	
CAR 99-001-4110	WHITTIER INSTITUTE	4	150.00	120.717	
CAR 99-001-4031	GUIDEL/MEI	12	465.00	752.426	
CAR 99-001-5208	MOLECULAR BIOSYSTEMS INC	5	60.00	15.796	
CAR 99-001-7014	CUTTER BIOLOGIC	6	360.52	10.050	
CAR 99-001-7394	BECKMAN INSTRUMENTS INC	1	15.00	0.055	
CAR 99-001-8426	IMMUNETECH INC	8	202.50	300.869	
CAR 99-001-8434	PACIFIC BIOTECH INC	1	15.00	20.000	
CAR 99-001-9762	LILLY RESCH LABS	3	127.50	55.449	
CAR 99-001-9938	J & J BIOTECHNOLOGY INC	3	97.50	453.000	
CAR 99-002-0539	D. KOHNE INC	2	90.00	39.900	
CAR 99-002-0869	GEN-PROBE INC	2	15.00	0.110	
		156	52,531.65	505,626.239	*COUNTY = SAN DIEGO
CAR 99-000-7957	VETERANS ADMINISTRATION	7	465.00	15,749.077	
CAR 99-000-8211	LETTERMAN ARMY MED CTR	1	322.50	12.159	
CAR 99-000-8617	MEDICAL RESH INST OF S.F.	2	52.50	14.942	
CAR 99-000-8708	MT ZION MEDICAL CENTER	2	30.00	25.000	

GENERATOR#	GEN NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
CAR 99-000-8880	FRENCH HOSPITAL	2	11.51	0.671	
CAR 99-000-9326	GLADSTONE FOUNDATION LABS	2	300.00	251.310	
CAR 99-000-9599	CALIFORNIA, UNIV OF S.F.	24	1,650.00	2,299.221	
CAR 99-001-0803	PRESBYTARIAN HOSPITAL	1	7.50	0.065	
CAR 99-001-0811	CA UNIV OF SAN FRANCISCO	11	337.50	167.101	
CAR 99-001-4698	CHILDREN'S HOSPITAL OF SF	2	45.00	16.500	
CAR 99-001-7048	CALIFORNIA UNIVERSITY OF	2	97.50	19.407	
CAR 99-001-9481	US NAV. SUP. FORCE ANTAR.	1	105.00	72.100	
CAT 08-001-9128	PACIFIC BELL	16	238.07	325.540	
		73	3,602.08	18,953.093	*COUNTY = SAN FRANCISCO
CAR 99-000-8070	UNIVERSITY OF PACIFIC	1	15.00	0.055	
		1	15.00	0.055	*COUNTY = SAN JOAQUIN
CAD 09-445-5102	CAL-POLY STATE UNIVERSITY	1	64.00	0.010	
CAR 99-002-0141	STATE OF CALIFORNIA	4	1,304.00	34.800	
		5	1,368.00	34.810	*COUNTY = SAN LUIS OBISPO
CAD 00-009-7238	SRI INTERNATIONAL	2	120.00	519.650	
CAD 03-012-9000	GENENTECH INC	4	322.50	831.640	
CAR 99-000-7213	CODON	5	60.00	35.453	
CAR 99-000-7270	RAD PHARM, INC.	2	82.50	118.000	
CAR 99-000-9037	DNAX RESEARCH INSTITUTE	9	337.50	119.003	
CAR 99-001-0951	PENISULA LABORATORIES	2	37.50	35.000	
CAR 99-001-1132	US GEOLOGICAL SURVEY	1	82.50	38.989	
CAR 99-001-3716	INT'L PLANT RESEARCH INST	1	15.00	23.020	
CAR 99-001-3765	SMITH KLINE CLINICAL LABS	2	15.00	0.200	
CAR 99-001-7550	COOPER-LIPOTECH, INC	2	22.50	8.200	
CAR 99-001-9267	EAGENICS, INC	1	7.50	12.000	
CAR 99-001-9507	CARCINEX	2	15.00	2.800	
		33	1,117.50	1,744.155	*COUNTY = SAN MATEO
CAR 99-000-9052	ORTHO DIAGNOSTICS SYSTEMS	1	22.50	3.000	
CAT 00-062-4130	CALIFORNIA UNIV OF	1	292.50	216.271	
		2	315.00	219.271	*COUNTY = SANTA BARBARA
CAT 80-000-5034	NAT'L AERONAUTICS & SPACE	1	52.50	6.654	
CAD 00-193-8826	BARNES-HIND INC.	1	15.00	4.000	
CAD 00-921-4214	STANFORD UNIVERSITY	2	435.00	1,440.733	
CAD 00-923-3411	SYNTEX INC.	11	690.00	878.000	
CAD 02-797-6919	STONER LABORATORIES INC	1	7.50	10.000	
CAD 04-486-9295	ZOECON CORPORATION	2	45.00	9.100	
CAD 04-923-1541	ALZA CORP	1	30.00	12.006	
CAD 06-912-1572	INT DIAGNOSTIC TECHNOLOGY	1	4.01	0.007	
CAR 99-000-5373	MAST IMMUNOSYSTEMS INC	8	79.01	18.980	
CAR 99-000-7288	SMITH KLINE INSTRUMENTS	2	52.50	5.500	
CAR 99-000-8138	STAUFFER CHEMICAL CO	5	270.00	20.496	
CAR 99-000-8296	INT. IMMUNOASSAY LABS INC	5	82.30	19.010	
CAR 99-000-9607	SAN JOSE STATE UNIV	1	82.50	2.843	
CAR 99-001-0357	NWT CORPORATION	4	37.50	1.345	
CAR 99-001-0878	BECTON-DICKINSON CTR.	2	41.51	36.518	
CAR 99-001-3393	ADDICTION RESEARCH FDN.	6	52.50	24.018	
CAR 99-001-5604	CETUS IMMUNE CORP	1	30.00	8.323	
CAR 99-001-6545	SYVA COMPANY	2	67.50	35.800	
CAR 99-001-7634	LOCKHEED MISSILES & SPACE	2	180.40	21,000.500	
CAR 99-001-7659	INST FOR MEDICAL RESEAPCH	1	15.00	3.035	
CAR 99-001-8251	CALIFORNIA-BIOTECHNOLOGY	4	75.00	218.019	
		66	2,344.73	23,755.087	*COUNTY = SANTA CLARA

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
CAD 04-789-2948	UNIV. OF CALIFORNIA	1	105.00	106.475	
		1	105.00	106.475	*COUNTY = SANTA CRUZ
CA7 17-002-4775	US NAVY	1	405.00	103.358	
CAD 06-300-1770	EXXON CO USA	3	1,072.50	1,649.641	
		4	1,477.50	1,752.999	*COUNTY = SOLANO
CAD 02-569-0311	SHELL DEVELOPMENT CO	2	412.50	260.200	
CAT 03-001-1828	NUCLEAR SPECIALTIES	3	694.74	2,856.489	
		5	1,107.24	3,116.689	*COUNTY = STANISLAUS
CAR 99-000-6181	APPLIED MOLECULAR GENETIC	9	540.00	329.500	
		9	540.00	329.500	*COUNTY = VENTURA
CAD 04-712-0084	CALIFORNIA, UNIV OF	5	1,867.50	7,925.283	
CAR 99-000-7825	CALGENE, INC.	2	82.50	0.037	
		7	1,950.00	7,925.320	*COUNTY = YOLO
		793	153,922.11	13,657,922.202	**STATE = CALIFORNIA
COD 98-071-8985	RAMP INDUSTRIES INC	2	1,335.00	56,684.048	
		2	1,335.00	56,684.048	*COUNTY = ARAPAHOE
COD 00-743-1505	COLORADO, UNIVERSITY OF	2	292.50	597.300	
		2	292.50	597.300	*COUNTY = BOULDER
COD 04-109-0314	COLORADO UNIV OF	8	532.50	836.149	
		8	532.50	836.149	*COUNTY = DENVER
COR 99-002-0034	COTTER CORPORATION	12	6,427.50	1,823.923	
		12	6,427.50	1,823.923	*COUNTY = FREMONT
		24	8,587.50	59,941.420	**STATE = COLORADO
CTR 99-000-7528	BOEHRINGER INGELHEIM LTD.	1	7.50	0.410	
CTR 99-001-3492	NORWALK HOSPITAL	1	19.01	6.300	
		2	26.51	6.710	*COUNTY = FAIRFIELD
CTD 06-924-9472	CONNECTICUT, UNIV OF	1	129.06	66.965	
CTR 99-001-3516	STAUFFER CHEMICAL CO	2	24.06	19.897	
		3	153.12	86.862	*COUNTY = HARTFORD
CTR 99-000-8013	WESLEYAN UNIVERSITY	3	30.00	0.010	
		3	30.00	0.010	*COUNTY = MIDDLESEX
CTD 04-320-7562	YALE UNIVERSITY	3	346.19	219.763	
CTR 99-000-6736	VA MEDICAL CENTER	1	40.10	20.134	
		4	386.29	239.907	*COUNTY = NEW HAVEN
CTD 00-114-7495	PFIZER INC CENTRAL RES	4	292.50	2,297.341	
CTR 99-000-8435	NORTHEAST NUCLEAR ENERGY	6	4,920.30	159,355,560.710	
		10	5,212.80	159,357,858.051	*COUNTY = NEW LONDON
CTR 99-000-7080	CONNECTICUT, UNIV OF	1	93.64	39.821	
		1	93.64	39.821	*COUNTY = TOLLAND
		23	5,902.36	159,358,231.361	**STATE = CONNECTICUT
DC4 21-002-1156	REED WALTER ARMY MED CTR	2	1,031.00	773.297	
DCR 99-000-7783	GEORGETOWN UNIV MED CTR	1	34.80	3.732	
DCR 99-000-8351	GROUP HEALTH ASSOC INC	10	76.19	0.955	
DCR 99-000-8542	RAD/IRID INCORP.	2	23.02	13,420.000	
DCR 99-000-8658	GEORGETOWN UNIVERSITY	5	172.50	119.549	
DCR 99-000-8724	GEO WASH UNIV MED CTR	4	190.00	75.303	
DCR 99-000-8804	CATHOLIC UNIV OF AM	1	67.50	45.793	
DCR 99-001-2783	HOWARD UNIVERSITY	1	150.00	177.026	
DCR 99-001-2916	V A MEDICAL CENTER	1	7.50	21.320	

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
DCR 99-001-3369	NAVAL RESEARCH LABORATORY	2	476.00	65.650	
DCR 99-002-0042	AMERICAN UNIVERSITY	1	19.53	24.176	
		30	2,238.84	14,726.831	*COUNTY = DISTRICT OF COLUMBIA
		30	2,238.84	14,726.831	**STATE = DISTRICT OF COLUMBIA
DED 00-082-0399	ICI AMERICAS	2	52.50	283.530	
DED 00-393-0807	DE PONT EI DE NEMOURS	3	150.00	38.649	
DER 99-000-8083	STINE LABORATORY	9	330.00	124.537	
DER 99-000-8922	DU PONT EI DE NEMOURS	12	292.50	101.394	
DER 99-001-8921	DUPONT E I DE NEMOURS	7	352.50	43.009	
		33	1,177.50	591.119	*COUNTY = NEW CASTLE
		33	1,177.50	591.119	**STATE = DELAWARE
FLD 00-073-3683	FLORIDA POWER & LIGHT CO.	17	17,850.00	4,379.924	
FLR 99-000-8074	SMITH KLINE CLINICAL LAB	1	105.00	7.958	
FLR 99-001-4102	VA MEDICAL CENTER	1	90.00	0.480	
FLR 99-001-5547	MIAMI UNIVERSITY OF	3	75.70	607.602	
		22	18,120.70	4,995.964	*COUNTY = DADE
FLR 99-001-7816	IMMUNO MED	1	30.00	0.786	
		1	30.00	0.786	*COUNTY = HILLSBOROUGH
FLR 99-001-4391	CIBA GEIGY CORPORATION	1	240.00	22.091	
		1	240.00	22.091	*COUNTY = INDIAN RIVER
FLD 00-080-7479	FLORIDA POWER & LIGHT CO.	21	26,878.00	14,741.943	
		21	26,878.00	14,741.943	*COUNTY = ST LUCIE
FLR 99-002-0299	OH MATERIALS	1	15.00	30.000	
		1	15.00	30.000	*COUNTY = SEMINOLE
		46	45,283.70	19,790.784	**STATE = FLORIDA
GAR 99-000-8484	GEORGIA POWER CO	71	61,433.00	85,530.325	
		71	61,433.00	85,530.325	*COUNTY = APPLING
GAR 99-002-1156	MERCER UNIVERSITY	1	135.00	52.055	
		1	135.00	52.055	*COUNTY = BIBB
GAR 99-001-3682	CEN FOR DISEASE CONTROL	2	22.50	341.300	
		2	22.50	341.300	*COUNTY = DE KALB
GAR 99-001-7857	SENTROL SYSTEMS INC	2	6.01	101,524.507	
		2	6.01	101,524.507	*COUNTY = FULTON
		76	61,596.51	187,448.187	**STATE = GEORGIA
HIR 99-001-0720	US NAVY	3	2,597.06	319.795	
HIR 99-001-8277	QUEENS MEDICAL CENTER	2	135.00	0.653	
		5	2,732.06	320.448	*COUNTY = HONOLULU
		5	2,732.06	320.448	**STATE = HAWAII
IAR 99-001-1421	IOWA UNIVERSITY OF	8	1,605.00	279.106	
		8	1,605.00	279.106	*COUNTY = JOHNSON
IAR 99-001-4359	IOWA ELECTRIC LIGHT & PWR	3	2,814.00	1,412.597	
		3	2,814.00	1,412.597	*COUNTY = LINN
IAT 20-001-0601	IOWA STATE UNIVERSITY	1	435.00	2,985.200	
		1	435.00	2,988.200	*COUNTY = STORY
IAD 06-521-8737	WELLMAN DYNAMICS CORP	2	825.00	61.550	
		2	825.00	61.550	*COUNTY = UNION
		14	5,679.00	4,741.453	**STATE = IOWA

GENERATOR ID	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
ID4 89-000-8952	[redacted]	[redacted]	[redacted]	26,255,221.573	
		38	5,572.50	28,255,221.573	*COUNTY = BONNEVILLE
		38	[redacted]	28,255,221.573	**STATE = [redacted]
ILD 04-530-8426	AMERSHAM CORPORATION	3	540.00	59,273.126	
ILD 08-293-9067	TRAVENOL LABORATORIES	3	203.54	25.071	
ILR 99-000-5506	MEDI PHYSICS INC	2	180.00	309.630	
ILR 99-000-5696	MICHAEL REESE HOSPITAL	10	1,393.16	78.683	
ILR 99-001-0480	HONEYWELL INC	1	105.00	5.480	
ILR 99-001-1249	LUTHERAN GENERAL HOSPITAL	2	22.50	2.550	
ILR 99-001-1322	EVANSTON HOSPITAL	2	37.50	92.450	
ILR 99-001-1637	ADCO SERVICES INC	26	14,934.18	340,566.627	
ILR 99-001-1678	BIO SCIENCES LABS	3	22.50	1.148	
ILR 99-001-1710	CHICAGO UNIVERSITY OF	12	429.90	9,399.251	
ILR 99-001-1728	CHILDREN'S MEMORIAL HOSP	1	11.51	0.530	
ILR 99-001-1850	ILLINOIS PSYCHIATRIC HOSP	2	15.00	1.521	
ILR 99-001-1868	LOYOLA MEDICAL CENTER	5	97.50	138.041	
ILR 99-001-1959	NW MEMORIAL HOSPITAL	5	45.00	6.674	
ILR 99-001-1967	NORTHWESTERN UNIVERSITY	9	330.00	292.104	
ILR 99-001-2031	RUSH PRESBYTERIAN ST LUKE	4	62.69	27.097	
ILR 99-001-2247	VA HOSPITAL	7	338.02	24.571	
ILR 99-001-3310	AMOCO (STANDARD OIL)	1	7.50	0.500	
ILR 99-001-7147	CANBERRA RMC	1	37.50	1.560	
ILR 99-001-8418	SIEMENS GAMMASONICS INC	1	37.50	218.153	
		100	18,849.50	410,464.767	*COUNTY = COOK
ILR 99-001-5059	NORTHERN IL UNIV	1	7.50	0.625	
		1	7.50	0.625	*COUNTY = DE KALB
ILR 99-000-5563	COMMONWEALTH EDISON CO.	31	23,487.00	25,560.053	
		31	23,487.00	25,560.053	*COUNTY = GRUNDY
ILD 05-540-9940	ABBOTT LABORATORIES	1	22.50	7.170	
ILR 99-000-9250	COMMONWEALTH EDISON CO	31	16,662.70	33,579.088	
ILR 99-001-1280	CHICAGO MEDICAL SCHOOL	1	7.50	4.397	
ILR 99-001-1645	AMERICAN CRITICAL CARE	2	15.00	5.500	
ILT 18-001-0001	ABBOTT LABORATORIES	4	300.00	4,091.099	
		39	17,007.70	37,687.254	*COUNTY = LAKE
ILD 00-080-3643	COMMONWEALTH EDISON	86	29,395.00	177,710.075	
ILR 99-002-0307	CHEM NUCLEAR SYSTEMS	2	1,546.00	85.136	
ILR 99-002-1347	IT CORP	3	4,992.00	21,218.100	
		93	35,933.00	199,013.311	*COUNTY = LA SALLE
ILD 00-627-8170	ALLIED CHEMICAL CO	37	21,352.50	238.500	
		37	21,352.50	238.500	*COUNTY = MASSAC
ILR 99-001-7790	US DEPT OF AGRICULTURE	2	97.50	1,115.301	
		2	97.50	1,115.301	*COUNTY = PEORIA
ILR 99-000-5282	COMMONWEALTH EDISON	45	30,573.91	28,265.456	
ILR 99-001-2833	ARMY, ARMAMENT, MUNITIONS	15	10,431.92	653,692.541	
		60	41,005.83	681,958.027	*COUNTY = ROCK ISLAND
IL7 21-382-0460	HONEYWELL JOLIET LAP FAC	4	1,552.50	821.790	
		4	1,552.50	821.790	*COUNTY = WILL
		367	[redacted]	1,356,859.628	**STATE = ILLINOIS
IND 00-506-8705	MILES LABORATORIES INC	1	56.51	1,315.708	
		1	56.51	1,315.708	*COUNTY = ELKHART

US ECOLOGY INC 9413286.1101
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR	GEN NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
IND 07-207-6967	INDIANA UNIV MEDICAL CENT	5	75.00	370.541	
INR 99-001-1215	VA HOSPITAL	1	60.00	5.594	
		6	135.00	376.135	*COUNTY = MARION
INR 99-001-1553	INDIANA UNIVERSITY	2	37.50	453.012	
		2	37.50	453.012	*COUNTY = PUTNAM
IND 04-899-4727	NOTRE DAME UNIVERSITY OF	1	67.50	37.730	
		1	67.50	37.730	*COUNTY = ST JOSEPH
		10	[redacted]	2,182.585	**STATE = [redacted]
KSD 00-001-2484	COLEMAN COMPANY INC	1	700.60	144.638	
		1	700.60	144.638	*COUNTY = SEDGWICK
KSD 07-627-4737	UNIVERSITY OF KANSAS	1	682.50	259.455	
		1	682.50	259.455	*COUNTY = WYANDOTTE
		2	[redacted]	404.093	**STATE = [redacted]
KYD 00-083-0851	KENTUCKY UNIVERSITY OF	4	1,102.50	3,481.900	
		4	1,102.50	3,481.900	*COUNTY = FAYETTE
KYD 08-922-6815	UNITED CATALYSTS INC	1	293.20	0.076	
KYD 98-070-9851	SOUTHWEST NUCLEAR CO	2	137.00	807.110	
KYD 99-000-5811	VA MEDICAL CENTER	1	90.00	0.298	
KYR 99-000-5522	METHODIST EVANGELICAL HOS	1	15.00	0.408	
KYR 99-000-6335	SUBURBAN HOSPITAL	1	15.00	0.160	
KYR 99-000-8533	AUDUBON HOSPITAL	1	15.00	0.110	
		7	565.20	803.162	*COUNTY = JEFFERSON
		11	[redacted]	4,290.062	**STATE = [redacted]
LAR 99-001-1561	VA MEDICAL CENTER	1	7.50	0.019	
LAR 99-001-1579	LOUISIANA ST UNIV MC	10	270.00	95.102	
		11	277.50	95.121	*COUNTY = CADDO
LAR 99-001-1363	GAMMA INDUSTRIES	3	37.50	5.000	
		3	37.50	5.000	*COUNTY = EAST BATON ROUGE
LAR 99-001-1777	EAST JEFFERSON HOSPITAL	1	34.10	8.000	
		1	34.10	8.000	*COUNTY = JEFFERSON
		15	[redacted]	108.121	**STATE = [redacted]
MAR 99-000-6348	WOODS HOLE OCEANOGRAPHIC	1	36.09	9.711	
MAR 99-000-8161	MARINE BIOLOGICAL LAB	2	205.25	221.179	
		3	241.34	230.890	*COUNTY = BARNSTABLE
MAR 99-000-8674	BERKSHIRE MEDICAL CENTER	3	19.01	0.081	
		3	19.01	0.081	*COUNTY = BERKSHIRE
MAR 99-000-6462	GAMMA DIAGNOSTIC LABS INC	1	4.01	0.200	
		1	4.01	0.200	*COUNTY = BRISTOL
MAR 99-000-6884	SMITH COLLEGE	1	7.50	0.525	
		1	7.50	0.525	*COUNTY = HAMPSHIRE
MAD 00-018-9068	MICROWAVE ASSOCIATES INC	2	43.59	35,696.979	
MAD 00-084-6469	POLAROID CORPORATION	1	4.01	5.300	
MAD 00-107-3139	HIGH VOLTAGE ENGINEERING	1	4.01	2.533	
MAD 00-186-3943	AVCO CORPORATION	1	220.00	317.774	
MAD 03-082-2381	BOSTON MEDICAL LAB	4	37.50	0.575	
MAD 03-082-6143	NEW ENGLAND NUCLEAR CORP	34	24,615.82	1,713,263.328	
MAD 05-598-6020	BRANDEIS UNIVERSITY	4	232.50	3,736.400	
MAD 06-216-6335	NUCLEAR METALS INC	51	20,973.10	98,423.894	

US ECOLOGY INC 9413286.1102
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
MAD 03-420-9055	CLINICAL ASSAYS	17	1,149.29	8,037.360	
MAR 98-073-1392	CREATIVE BIOMULECULES	2	22.50	10.070	
MAR 99-000-6785	COLLABORATIVE RESEARCH	1	15.00	2.900	
MAR 99-000-6793	COLLABORATIVE RESEARCH	1	30.00	7.150	
MAR 99-000-6918	ANGENICS INC	1	30.00	0.176	
MAR 99-000-7098	BIOMEASURE INCORPORATED	2	37.50	0.287	
MAR 99-000-7130	BIOCLINICAL GROUP, INC	6	157.50	120.840	
MAR 99-000-7189	BOSTON COLLEGE	3	58.02	40.554	
MAR 99-000-8716	SISA INC	2	34.01	5.000	
MAR 99-000-9433	LITTLE ARTHUR D INC	1	67.50	66.112	
MAR 99-001-0126	APICON CORP	1	4.01	1.250	
MAR 99-001-3507	BIOGEN INC	8	343.00	632.749	
MAR 99-001-8079	CAMBRIDGE RESEARCH LAB	1	22.50	11.360	
MAR 99-001-9695	BTC DIAGNOSTIC	1	4.01	0.010	
MAR 99-002-1031	CORNING MEDICAL	1	20.05	8.400	
		146	48,105.42	1,860,391.001	*COUNTY = MIDDLESEX
MAD 06-219-0491	DAMON MEDICAL LAB	4	216.54	17.292	
MAR 99-000-6124	HAEMONETICS CORP	1	4.01	12.000	
MAR 99-000-6744	CORNING MED & SCIENTIFIC	12	1,250.51	2,308.220	
MAR 99-000-9023	SERONO LABORATORIES INC	10	258.57	536.010	
MAR 99-001-2304	FOXBORO COMPANY	1	8.02	1,505.000	
MAR 99-002-0422	FOSTER MEDICAL CORP	1	7.50	1.446	
		29	1,745.15	4,379.968	*COUNTY = NORFOLK
MAR 99-000-9193	BOSTON EDISON CO	2	5,120.00	153.722	
MAR 99-001-3013	MEDICAL & SCIENTIFIC	8	278.02	205.000	
MAR 99-001-7279	ALLETESS MEDICAL LAB INC	1	30.00	1.138	
		11	5,428.02	359.860	*COUNTY = PLYMOUTH
MAD 00-084-6287	HARVARD UNIVERSITY	4	496.72	5,229.533	
MAD Co-660-5809	GILLETTE CO SRD	1	15.00	0.400	
MAD 07-172-3021	BETH ISRAEL HOSPITAL	1	92.23	28.052	
MAD 07-313-0411	MASSACHUSETTS GENERAL HOS	3	188.47	62.066	
MAD 07-658-0745	SIDNEY FARBER CANCER INST	1	56.14	45.899	
MAD 07-658-5173	BRIGHAM & WOMENS HOSP	3	164.41	33.701	
MAD 99-128-9505	CHILDRENS HOSPITAL	2	108.27	258.465	
MAR 99-000-0249	VETERAN'S ADMIN MED CTR	1	30.00	32.150	
MAR 99-000-0330	BOSTON CITY HOSPITAL	7	87.70	135.000	
MAR 99-000-6850	N ENGLAND DEACONE SS HOSP	8	163.89	7,397.834	
MAR 99-000-6868	BOSTON UNIV. MED. CTR.	6	306.24	182.155	
MAR 99-000-7064	INT'L CLINICAL LABS	4	60.00	8.000	
MAR 99-000-8033	BOSTON UNIVERSITY BIOLOGY	1	83.54	2.076	
MAR 99-001-3836	SEPAGEN INC	10	75.00	48.177	
MAR 99-001-6624	CENTRAL FOR BLOOD RSCH	7	244.61	3,433.884	
		59	2,232.22	16,897.392	*COUNTY = SUFFOLK
MAR 99-000-6082	EG&G MASON RESEARCH INST	1	40.10	2.544	
		1	40.10	2.544	*COUNTY = WORCESTER
		254	57,822.27	1,882,262.461	**STATE = MASSACHUSETTS
PDR 99-001-5190	WESTINGHOUSE ELECTRIC COR	1	15.00	3,287.030	
		1	15.00	3,287.030	*COUNTY = ANNE ARUNDEL
MDD 00-309-0198	AAI CORPORATION	1	30.00	153.416	
MDR 99-000-7379	JOHNS HOPKINS UNIV	7	615.00	8,776.097	
MDR 99-000-9888	CARNEGIE INSTITU OF WASH	2	45.00	1.300	

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
MDR 99-001-5299	JOHNSTON LABORATORIES	7	346.70	1,022.099	
MDR 99-001-5372	MARYLAND UNIVERSITY OF	5	266.29	1,435.460	
MDR 99-001-7018	BBL MICROBIOLOGY SYSTEMS	1	12.03	0.035	
		23	1,315.02	11,369.407	*COUNTY = BALTIMORE
MDR 99-000-7001	BALTIMORE GAS & ELECTRIC	12	9,937.50	5,953.953	
		12	9,937.50	5,953.953	*COUNTY = CALVERT
MDR 99-002-0117	MISSOURI UNIVERSITY OF	1	67.50	324.627	
		1	67.50	324.627	*COUNTY = DORCHESTER
MDR 99-001-2825	US ARMY	4	2,759.11	6,300.024	
		4	2,759.11	6,300.024	*COUNTY = FREDERICK
MDD 04-054-9461	JOHNS HOPKINS UNIV APL	1	4.01	0.102	
MDR 99-001-0043	ELECTRO NUCLEONICS INC	5	157.50	1,417.590	
		6	161.51	1,117.692	*COUNTY = HOWARD
MDD 04-264-4385	NEUTRON PRODUCTS INC	6	1,045.91	1,333,927.100	
MDD 05-518-6449	NATL INSTITUTES OF HLTH	11	8,407.50	55,310.468	
MDR 99-000-5456	LITTON BIONETICS INC	6	1,072.50	878.500	
MDR 99-000-6363	NAT'L BUREAU OF STANDARDS	4	314.50	42.774	
MDR 99-000-7502	SCIENCE APPLICATIONS INC	5	157.50	9.661	
MDR 99-000-7510	GILLETTE RES INSTITUTE	3	86.51	12.213	
MDR 99-000-7536	BETHESDA RESEARCH LABS	1	22.50	41.238	
MDR 99-000-7565	AM RED CROSS BLOOD SERV	2	15.00	1.224	
MDR 99-000-8856	AFRRI	3	675.52	498.618	
MDR 99-000-9110	NAT'L NAVAL MEDICAL CTR	2	405.00	108.320	
MDR 99-001-0134	NAVAL MED PSYCH INSTITUTE	2	120.00	69.590	
MDR 99-001-2627	SUBURBAN HOSPITAL RIA	3	22.50	1.499	
MDR 99-001-3252	NAVAL SURFACE WEAPONS CTR	2	1,004.50	195.810	
MDR 99-002-0232	USUHS	2	915.00	603.046	
		52	14,264.44	1,391,700.001	*COUNTY = MONTGOMERY
MDD 00-082-0163	MARYLAND UNIV OF	5	908.20	239.746	
		5	908.20	239.746	*COUNTY = PRINCE GEORGE S
		104	29,428.28	1,420,312.540	**STATE = MARYLAND
MER 99-001-9432	BATES COLLEGE	2	19.01	7.250	
		2	19.01	7.250	*COUNTY = ANDROSCOGGIN
MER 99-001-0902	BOWDOIN COLLEGE	1	22.50	8.200	
		1	22.50	8.200	*COUNTY = CUMBERLAND
MER 99-000-6819	JACKSON LABORATORY	1	112.50	404.129	
MER 99-001-0985	MOUNT DESERT ISLAND	1	75.00	11.098	
		2	187.50	415.227	*COUNTY = HANCOCK
MER 99-000-9938	MAINE YANKEE ATOMIC POWER	7	8,285.50	3,540.550	
		7	8,285.50	3,540.550	*COUNTY = LINCOLN
		12	8,516.51	3,971.227	**STATE = MAINE
MID 09-864-7621	INDIANA & MICH ELEC CO	5	5,924.50	1,894.045	
		5	5,924.50	1,894.045	*COUNTY = BERRIEN
MIR 99-001-0415	CONSUMERS POWER CO	1	1,296.00	2,122.872	
		1	1,296.00	2,122.872	*COUNTY = CHARLEVOIX
MID 05-334-3976	MICHIGAN STATE UNIVERSITY	2	82.50	2.954	
MIR 99-001-3096	MICHIGAN STATE OF	7	382.50	117.155	
		9	465.00	120.109	*COUNTY = INGHAM
MID 00-082-1520	UPJOHN COMPANY	2	481.20	408.000	
		2	481.20	408.000	*COUNTY = KALAMAZOO

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
MIR 99-001-0654	SEALED POWER CORP	1	202.50	125.900	
		1	202.50	125.900	*COUNTY = MUSKEGON
MIR 99-001-1660	WM BEAUMONT HOSPITAL	2	22.50	1.042	
MIR 99-001-5265	PROVIDENCE HOSPITAL	1	45.00	2.700	
MIR 99-002-0192	LEECO DIAGNOSTICS INC	1	45.00	414.000	
		4	112.50	417.742	*COUNTY = OAKLAND
MIR 99-001-7154	HOPE COLLEGE	1	30.00	0.255	
		1	30.00	0.255	*COUNTY = OTTAWA
MIR 99-001-0407	CONSUMERS POWER CO	16	15,305.40	11,825.234	
MIR 99-001-7105	INTERNATIONAL R&D CORP	1	105.00	10.247	
		17	15,410.40	11,835.481	*COUNTY = VAN BUREN
MIR 99-000-5209	US DEPT OF COMMERCE	1	30.00	0.240	
MIR 99-001-1181	MICHIGAN UNIVERSITY OF	4	1,305.00	1,559.522	
MIR 99-001-1769	WARNER LAMBERT PHAR RSCH	10	270.00	15,516.769	
		15	1,605.00	17,076.531	*COUNTY = WASHTENAW
MIR 99-000-5407	LAFAYETTE CLINIC	1	105.00	2.297	
MIR 99-001-0688	WAYNE STATE UNIV	1	750.00	336.332	
MIR 99-001-1301	HENRY FORD HOSPITAL	1	7.50	0.234	
MIR 99-001-2122	SINAI HOSP OF DETROIT	1	7.50	0.050	
MIR 99-001-3112	GENERAL MOTORS RESEARCH	3	30.00	72.070	
		7	900.00	410.963	*COUNTY = WAYNE
		62	26,427.90	34,411.918	**STATE = MICHIGAN
MND 04-953-7780	NORTHERN STATES POWER CO	5	850.00	11,396.383	
		5	850.00	11,396.383	*COUNTY = GOODHUE
MNR 99-000-5530	METROPOLITAN MEDICAL CTR	1	45.00	2.900	
MNR 99-001-3260	HENNEPIN CTY GENERAL HOSP	3	45.00	11.021	
MNT 26-001-0414	MINNESOTA UNIVERSITY OF	8	5,985.00	8,395.808	
		12	6,075.00	8,409.729	*COUNTY = HENNEPIN
MNO 03-346-7688	MAYO CLINIC/FOUNDATION	4	607.50	6,859.822	
		4	607.50	6,859.822	*COUNTY = OLMSTED
MND 00-082-4003	3M COMPANY	3	4,677.10	113,748.750	
MNR 99-000-5720	ST PAUL RAMSEY MED CENTER	1	157.50	21.000	
MNR 99-001-1272	HONEYWELL, INC	28	13,881.70	16,252.850	
MNR 99-001-2367	CHILDRENS HOSPITAL	1	37.50	8.493	
		33	18,753.80	130,031.093	*COUNTY = RAMSEY
MNR 99-001-3815	CARLETON COLLEGE	1	37.50	50.000	
		1	37.50	50.000	*COUNTY = RICE
MND 03-000-2240	IMMUNO NUCLEAR CORP	1	52.50	70.000	
		1	52.50	70.000	*COUNTY = WASHINGTON
MND 00-068-6139	NORTHERN STATES POWER CO	50	42,812.00	518,779.754	
		50	42,812.00	518,779.754	*COUNTY = WRIGHT
		106	69,188.30	676,196.781	**STATE = MINNESOTA
MOD 00-091-8906	MCDONNELL DOUGLAS CORP	7	375.00	8.348	
MOD 00-626-6803	MONSANTO COMPANY	12	2,002.50	928.419	
MOR 99-001-0399	PATHFINDER LABORATORIES	1	30.00	20,846.800	
MOR 99-001-2106	ST LOUIS UNIVERSITY	3	45.00	30.772	
MOR 99-001-2221	VA HOSPITAL	3	137.50	43.233	
MOR 99-001-2254	WASHINGTON UNIVERSITY	17	3,016.15	3,049.474	
		48	5,656.15	24,907.046	*COUNTY = ST LOUIS
		48	5,656.15	24,907.046	**STATE = MISSOURI

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
MSR 99-001-4904	MISSISSIPPI UNIVERSITY OF	7	42.03	358.419	
		7	42.03	358.419	*COUNTY = LAFAYETTE
		7	42.03	358.419	**STATE = [redacted]I
MTR 99-000-5571	MONTANA UNIVERSITY OF	2	67.50	14.892	
		2	67.50	14.892	*COUNTY = MISSOULA
MTR 99-001-7071	EXXON COMPANY USA	1	900.00	369.300	
		1	900.00	369.300	*COUNTY = YELLOWSTONE
		3	[redacted]	384.192	**STATE = MONTANA
NCR 99-001-4649	CAROLINA POWER & LIGHT	7	5,973.70	2,053.293	
		7	5,973.70	2,053.293	*COUNTY = BRUNSWICK
NCR 99-002-0711	USDA FORESTRY SCI LAB	1	7.50	0.020	
		1	7.50	0.020	*COUNTY = DUPLIN
NC1 75-089-0005	NAT'L INST OF ENV HTH SCI	4	135.00	410.061	
NC6 68-C09-0002	US EPA	1	112.50	1,266.304	
NCD 00-021-3519	DUKE UNIVERSITY	14	7,492.50	8,883.641	
NCD 00-486-8105	RESEARCH TRIANGLE INST	5	480.00	118,973.893	
NCD 09-771-8332	NORTHROP SERVICES INC	2	75.52	68.640	
NCR 99-001-0530	BURROUGHS WELLCOME CO	1	112.50	45,406.784	
NCR 99-001-3823	VA MEDICAL CENTER	5	315.00	169.176	
		32	8,723.02	175,177.499	*COUNTY = DURHAM
NCD 08-687-1282	BOWMAN GRAY SCH OF MED	3	262.50	269.327	
NCR 99-002-1040	EN-CAS ANALYTICAL LABS	1	30.00	0.162	
		4	292.50	289.489	*COUNTY = FORSYTH
NCD 06-180-1361	CIBA-GEIGY CORP.	6	652.00	672.350	
		6	652.00	672.350	*COUNTY = GUILFORD
NC6 17-002-2580	MARINE CORPS BASE	1	15.00	0.020	
		1	15.00	0.020	*COUNTY = ONSLOW
NCR 99-000-5142	EAST CAROLINA UNIVERSITY	1	120.00	44.893	
		1	120.00	44.893	*COUNTY = PITT
NCR 99-001-2528	NORTH CAROLINA ST UNIV	7	1,327.50	541.490	
NCR 99-001-8855	CARCLINA POWER & LIGHT CO	1	379.50	83.646	
		8	1,707.00	625.136	*COUNTY = WAKE
		60	[redacted]	178,862.700	**STATE = NORTH CAROLINA
NED C7-697-4161	NEBRASKA UNIV OF MED CTR	4	945.00	1,870.481	
		4	945.00	1,870.481	*COUNTY = DOUGLAS
NED 00-076-6808	NEBRASKA UNIV OF LINCOLN	2	712.50	878.146	
		2	712.50	878.146	*COUNTY = LANCASTER
NER 99-000-9516	OMAHA PUBLIC POWER DIST	18	9,716.70	205,654.212	
		18	9,716.70	205,654.212	*COUNTY = WASHINGTON
NER 99-001-4417	CIBA GEIGY CORPORATION	1	180.00	14.800	
		1	180.00	14.800	*COUNTY = YORK
		25	[redacted]	208,417.639	**STATE = NEBRASKA
NHR 99-000-7874	G.T.E. PRODUCTS	1	90.00	28.400	
		1	90.00	28.400	*COUNTY = HILLSBOROUGH
		1	90.00	28.400	**STATE = NEW HAMPSHIRE
NJD 00-137-8892	THOMAS J. LIPTON, INC.	3	16.34	11.700	
NJR 99-000-6595	HACKENSACK MEDICAL CENTER	1	15.00	62.916	

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WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
NJR 99-000-8930	LIFE CHEM	5	150.00	0.920	
NJR 99-001-0662	TELEDYNE ISOTOPES	64	2,531.33	828.512	
NJR 99-001-6222	MET PATH INC	2	517.50	38.026	
NJR 99-002-0091	BIOMATRIX INC	1	7.50	102.890	
		76	3,237.67	1,044.964	*COUNTY = BERGEN
NJR 99-000-9839	GARDEN STATE COMM. HOSP.	1	15.00	16.700	
		1	15.00	16.700	*COUNTY = BURLINGTON
NJR 99-000-7387	INST FOR MEDICAL RES	2	20.05	1.707	
NJR 99-000-9284	COOPER MEDICAL CTR.	1	8.02	1.065	
NJR 99-000-9417	OUR LADY OF LOURDES HOSP	1	4.01	0.006	
NJR 99-000-9425	OUR LADY OF LOURDES HOSP	6	40.10	0.060	
NJR 99-001-7960	RUOFF AND SONS INC	1	15.00	0.109	
		11	87.18	2.947	*COUNTY = CAMDEN
NJD 00-058-1363	ROCHE DIAGNOSTICS	1	60.00	930.000	
NJD 00-219-1211	HOFFMAN-LAROCHE INC	2	211.71	5,216.900	
NJD 00-752-0759	ST BARNABAS MED CTR	1	26.51	5.550	
NJD 09-687-7725	SCHERING CORPORATION	2	98.02	13.352	
NJD 95-064-1765	UNIGENE LABORATORIES INC	14	105.52	31.009	
NJR 99-000-7247	NEW JERSEY MED SCHOOL	6	375.00	365.675	
NJR 99-000-8625	BASF WYANDOTTE CORP	5	600.00	60.000	
NJR 99-001-0167	NEWARK BETH/ISRAEL MED CN	2	60.00	0.850	
NJR 99-001-2551	HOFFMAN LAROCHE INC	5	526.80	707.000	
NJR 99-001-4474	COLUMBUS HOSPITAL	1	8.02	2.000	
NJR 99-002-0703	ELECTRO-BIOLOGY INC	1	4.01	0.230	
		40	2,075.59	7,352.565	*COUNTY = ESSEX
NJD 00-122-0359	BLOCK DRUG CO INC	1	4.01	0.005	
NJR 99-000-7627	STEVENS INST OF TECH	1	4.01	0.028	
		2	8.02	0.033	*COUNTY = HUDSON
NJR 99-001-0027	HUNTERDON MEDICAL CENTER	1	4.01	0.909	
		1	4.01	0.906	*COUNTY = HUNTERDON
NJR 99-000-5993	MOBIL OIL CORP	1	37.50	4.500	
NJR 99-000-7361	PRINCETON UNIV, TRUSTEES	13	411.02	198.018	
NJR 99-001-0845	LIPOSOME COMPANY	10	322.50	33.461	
NJR 99-001-4060	AMERICAN CYANAMID COMPANY	1	7.50	3.000	
NJR 99-001-5360	RIDER COLLEGE	1	7.50	0.100	
		26	786.02	239.079	*COUNTY = MERCER
NJD 00-058-6164	FMC CORPORATION	2	37.50	14.020	
NJD 00-135-0263	RHONE POULENC CHEMICAL	3	82.50	90.000	
NJD 00-217-5313	CARTER WALLACE INC	1	15.00	0.220	
NJD 09-760-0345	GENERAL FOODS CORPORATION	1	7.50	0.001	
NJR 99-001-2270	COLGATE-PALMOLIVE COMPANY	1	75.00	7.830	
NJR 99-001-3427	ER SQUIBB & SONS INC	2	176.23	24.951	
NJT 35-001-0187	MOBIL CHEMICAL CO R & D	1	30.00	2.000	
		11	423.73	139.022	*COUNTY = MIDDLESEX
NJR 99-000-7254	MONMOUTH MEDICAL CENTER	7	56.14	0.550	
NJR 99-000-9029	JERSEY SHORE MED CTR	4	45.00	0.462	
NJR 99-001-2767	RIVERVIEW HOSPITAL	1	8.02	2.000	
NJR 99-001-3351	WORTHINGTON DIAGNOSTICS	6	90.00	36.154	
		18	199.16	39.166	*COUNTY = MONMOUTH
NJD 00-069-1741	LITTON SYSTEMS	2	15.52	0.136	
NJD 04-879-4986	ALLIED CORP	1	75.00	20.905	
NJR 99-000-5928	WARNER-LAMBERT	2	75.00	26.149	

REPORT NO: ECF945
RUN DATE: 03/18/85

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

01/01/84 THRU 12/31/84

GENERATOR#	GEN NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
NJR 99-001-5307	INTERNATIONAL NEUTRONICS	8	2,697.50	5,685.774	
NJT 00-000-9043	SANDOZ INC	1	75.00	3,712.400	
		14	2,939.02	9,445.366	*COUNTY = MORRIS
NJR 99-000-7358	COMMUNITY MEMRL HOSPITAL	7	28.07	13.719	
NJT 35-001-0179	GPU NUCLEAR	10	13,980.40	759.158	
		17	14,008.47	772.877	*COUNTY = OCEAN
NJR 99-000-6579	BARNERT MEMORIAL HOSP	4	26.51	0.194	
NJR 99-001-2296	ST MARYS HOSPITAL	4	20.05	0.113	
		8	46.56	0.307	*COUNTY = PASSAIC
NJR 99-000-9573	PUBLIC SERV ELECT & GAS	34	47,744.00	21,747.163	
		34	47,744.00	21,747.163	*COUNTY = SALEM
NJD 00-076-5081	EXXON BIOMEDICAL SCIENCES	1	37.50	1.260	
NJD 00-214-4202	ORTHO PHARMACEUTICAL CORP	1	43.07	15.402	
NJD 00-219-6053	BURROUGHS DEM CORPORATION	1	135.00	0.018	
NJD 07-825-9426	BIO-DYNAMICS, INC.	1	52.50	0.007	
NJR 99-000-8112	BECKMAN INSTRUMENTS INC	1	4.01	9.993	
		5	272.08	26.680	*COUNTY = SOMERSET
NJD 00-257-0893	EXXON RESEARCH & ENG	3	90.00	31.795	
NJR 99-000-6587	CIBA GEIGY CORPORATION	10	975.00	61.964	
NJR 99-000-7007	PSYCHIATRIC DIAG LAB AMER	7	60.00	1.408	
NJR 99-000-9300	ELIZABETH GEN HOSPITAL	1	22.50	0.027	
NJR 99-001-3443	MERCK & COMPANY INC	2	159.07	150.220	
		23	1,306.57	245.414	*COUNTY = UNION
		287	73,152.08	41,073.191	**STATE = NEW JERSEY
NMD 98-062-1197	NEW MEXICO UNIVERSITY OF	2	1,447.50	444.751	
		2	1,447.50	444.751	*COUNTY = BERNALILLO
		2	1,447.50	444.751	**STATE = NEW MEXICO
NYR 99-000-9490	NY STATE DEPT OF HEALTH	5	247.50	31.391	
NYR 99-000-9680	ST PETER'S HOSPITAL	5	44.11	6.560	
NYR 99-000-9967	V A MEDICAL CENTER	1	30.00	5.662	
NYR 99-001-0225	COHOES MEMORIAL HOSP	1	4.01	0.660	
NYR 99-001-0316	BENDER LABORATORY	1	15.00	3.304	
NYR 99-001-9655	THE COLLEGE OF ST ROSE	1	4.01	4.600	
		14	344.63	52.197	*COUNTY = ALBANY
NYR 99-000-8047	NEUROTOXICOLOGY UNIT	1	67.50	6.150	
		1	67.50	6.150	*COUNTY = ALLEGANY
NYR 99-000-6488	EINSTEIN, ALBERT COLL MED	10	185.57	541.901	
		10	185.57	541.901	*COUNTY = BRONX
NYR 99-000-7049	UNITED HEALTH SERV INC	8	140.57	19.059	
NYR 99-000-7395	BINGHAMTON GENERAL HOSP	2	24.06	22.500	
NYR 99-000-9920	IBM CORPORATION	1	7.50	0.006	
		11	172.13	41.605	*COUNTY = BROOME
NYR 99-000-7917	NORWICH-EATON PHARMACEUT	1	124.68	140.010	
		1	124.68	140.010	*COUNTY = CHENANGO
NYR 99-000-8468	ENGINE PRODUCTS DIVISION	2	2.68	64.390	
		2	2.68	64.390	*COUNTY = DELAWARE
NYR 99-001-3435	ROSWELL PARK MEMORIAL INS	1	15.00	53.000	
NYR 99-001-5158	NRD DIV	1	847.50	2,061,231.691	
		2	862.50	2,061,284.691	*COUNTY = ERIE
NYR 99-000-9409	W ALTON JONES CELL SCIENC	2	187.50	41.425	
		2	187.50	41.425	*COUNTY = ESSEX

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
NYR 99-000-8591	NATHAN LITTAUER HOSPITAL	8	32.08	0.312	
		8	32.08	0.312	*COUNTY = FULTON
NYD 04-917-8296	RADIAC RESEARCH CORP	28	34,875.14	101,728.748	
NYD 07-816-7012	DOWNSTATE MEDICAL CENTER	2	97.50	213.126	
NYD 10-543-5127	DOWNSTATE MEDICAL CTR	2	105.00	111.101	
NYR 99-000-9441	LONG ISLAND COLLEGE HOSP	1	4.01	5.000	
NYR 99-001-1413	BROOK DALE HOSP MED CEN	1	15.00	0.307	
NYR 99-001-7535	KINGSBROOK JEWISH MED CT	1	7.50	40.500	
NYR 99-001-8186	INTERFAITH MEDICAL CTR	1	30.00	0.110	
NYR 99-001-9531	SHERMAN _ ABRAMS LAB	1	4.01	1.500	
NYR 99-002-0554	DOWNSTATE MEDICAL CTR	15	652.50	610.283	
		52	35,790.66	102,710.675	*COUNTY = KINGS
NYD 00-003-1994	ROCHESTER UNIVERSITY OF	1	45.00	15.967	
NYD 00-221-9756	PENNWALT CORP.	11	247.50	165.250	
NYR 99-000-7403	GENESEE HOSPITAL	7	210.52	265.872	
NYR 99-000-8690	ROCHESTER GEN HOSP	2	15.00	14.675	
		21	518.02	481.784	*COUNTY = MONROE
NYR 99-000-9045	BIO-SCIENCE LABORATORIES	1	22.50	5.597	
NYR 99-000-9847	LABORATORY PROCEDURES INC	10	600.00	14.960	
NYR 99-001-2601	NEOMETRICS INC	1	24.06	1.015	
NYR 99-001-2694	COLD SPRING HARBOR LAB	2	37.50	203.901	
NYR 99-001-3591	NASSAU HOSPITAL	2	56.51	8.968	
NYR 99-001-3906	NASSAU COUNTY MEDICAL CTR	1	22.50	2.514	
NYR 99-001-4037	REISS HEALTH LAB	2	12.03	1.450	
NYR 99-001-6065	NORTH SHORE UNI HOSP	2	127.50	17.000	
		21	902.60	255.405	*COUNTY = NASSAU
NYD 00-003-2489	NYU MEDICAL CENTER	2	322.50	437.768	
NYD 02-039-6438	NY HOSP - CORNELL MED CTR	2	297.18	83.112	
NYD 07-526-5157	MEM SLN-KETT CANCER CTR	5	462.70	197.911	
NYR 99-000-5225	CITY COLLEGE OF CUNY	1	7.50	4.000	
NYR 99-000-5431	LENOX HILL HOSPITAL	1	7.50	0.546	
NYR 99-000-6041	MT SINAI MEDICAL CENTER	3	37.50	117.575	
NYR 99-000-6686	PUB HEALTH RES INST OF NY	2	22.50	29.040	
NYR 99-000-6827	NEW YORK BLOOD CENTER INC	2	45.52	46.880	
NYR 99-000-6975	ELLENVILLE COMM. HOSP.	1	7.50	0.001	
NYR 99-000-7122	VETERANS ADM MEDICAL CTR	2	22.50	3.131	
NYR 99-000-7582	ALBANY MED CENTER HOSP	11	202.50	63.704	
NYR 99-000-8005	MANHATTAN COLLEGE	2	30.00	29.265	
NYR 99-000-9532	ORENTREICH MED GROUP	1	20.05	0.100	
NYR 99-000-9946	MONTEFIORE HOSPITAL	4	38.54	20.196	
NYR 99-001-2429	COLUMBIA PRESBYTERIAN	4	225.00	810.998	
NYR 99-001-2759	ST LUKES HOSPITAL	3	31.04	1.540	
NYR 99-001-3903	ST LUKES ROOSEVELT HOSP	2	44.11	9.786	
NYR 99-001-3971	ROCKEFELLER UNIVERSITY	2	202.50	1,242.461	
NYR 99-001-4482	DOCTORS HOSPITAL	2	12.03	1.034	
NYR 99-001-4532	ST VINCENT'S HOSP/MED CTR	2	20.05	3.336	
NYR 99-001-4953	BETH ISRAEL MEDICAL CENTE	2	96.09	44.000	
NYR 99-001-4995	HASKINS LABS OF PACE UNIV	2	11.51	7.000	
NYR 99-001-5568	ORENTREICH FOUNDATION	4	88.22	8.240	
NYR 99-001-5968	HOSP FOR JOINT DISEASES	2	12.03	2.200	
NYR 99-001-9184	V A MEDICAL CENTER	2	153.64	49.025	
		66	2,420.21	3,212.849	*COUNTY = NEW YORK

REPORT NO: ECF845
RUN DATE: 03/18/85

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

01/01/84 THRU 12/31/94

GENERATOR	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
NYD 00-212-3503	E I DUPONT CHEM	1	7.50	0.014	
		1	7.50	0.014	*COUNTY = NIAGARA
NYR 99-001-3740	ST ELIZABETH HOSPITAL	3	12.03	0.011	
NYR 99-001-6651	FAXTON HOSPITAL	1	4.01	4.350	
		4	16.04	4.361	*COUNTY = ONEIDA
NYD 00-079-9239	SYRACUSE UNIVERSITY	1	45.00	36.500	
NYD 00-223-0902	BRISTOL-MYERS COMPANY	15	600.00	1,045.850	
NYD 00-305-3656	UPSTATE MEDICAL CENTER	3	427.50	305.479	
NYR 99-001-2478	VA MEDICAL CENTER	1	22.50	1.573	
NYR 99-001-4920	UPSTATE MEDICAL CENTER	2	225.00	549.625	
NYR 99-001-7238	ALLIED CORP-ALLIED CHEM	10	307.50	18.560	
		32	1,687.50	1,957.587	*COUNTY = ONONDAGA
NYR 99-001-0183	NIAGARA MOHAWK POWER CORP	2	2,023.50	1,019.998	
NYR 99-001-2841	NEW YORK POWER AUTH	10	8,794.50	15,136.211	
		12	10,818.00	16,156.209	*COUNTY = OSWEGO
NYR 99-001-3419	MI BASSETT HOSPITAL	3	67.50	0.736	
		3	67.50	0.736	*COUNTY = OTSEGO
NYR 99-000-5464	LONG ISLAND JEWISH HOSP	1	7.50	0.600	
NYR 99-000-5936	CENTRALIZED LAB SERVICES	3	22.50	2.816	
NYR 99-000-8682	BOOTH MEMORIAL HOSPITAL	1	4.01	0.600	
NYR 99-000-8955	QUEENS COLLEGE CUNY	2	34.53	1.100	
NYR 99-001-4623	BULOVA WATCH CO INC	1	7.50	80.000	
NYR 99-001-9044	FLUSHING HOSPITAL	2	15.00	0.750	
		10	91.04	85.966	*COUNTY = QUEENS
NYD 02-066-3464	LEONARD HOSPITAL	3	22.50	2.044	
NYR 99-000-7452	STERLING WINTHROP RES INS	12	832.50	301.450	
		15	855.00	303.494	*COUNTY = RENSSELAER
NYR 99-000-7767	COLLEGE OF STATEN ISLAND	1	7.50	0.200	
NYR 99-001-3625	NY STATE INSTUTE FOR	1	7.50	0.591	
		2	15.00	0.791	*COUNTY = RICHMOND
NYD 05-207-7054	BECTON-DICKINSON IMMUNO	2	30.00	107.462	
NYD 05-406-5909	LEDERLE LABORATORIES	1	0.67	0.020	
NYR 99-000-7692	FISHER SCIENTIFIC CO	2	8.02	0.450	
NYR 99-001-4557	SCHWARZ/MANN	1	7.50	200.000	
		6	46.19	307.932	*COUNTY = ROCKLAND
NYD 07-109-4197	GENERAL ELECTRIC	2	15.00	4.705	
NYR 99-000-6942	ELLIS HOSPITAL	2	16.04	0.700	
		4	31.04	5.405	*COUNTY = SCHENECTADY
NYD 04-764-7466	TII CORP	1	100.10	80,000.000	
NYR 99-001-3898	JOHN T MATHER HOSPITAL	2	8.02	1.384	
NYR 99-001-4508	HUNTINGTON HOSPITAL	1	7.50	0.001	
NYR 99-002-1115	USDA	1	13.50	36,000.000	
		5	129.12	116,001.385	*COUNTY = SUFFOLK
NYR 99-000-7353	CORNELL UNIVERSITY	9	622.50	690.106	
		9	622.50	690.106	*COUNTY = TOMPKINS
NYD 00-135-9694	IBM CORPORATION	1	7.50	0.106	
NYR 99-001-9788	STATE UNIV OF NEW YORK	1	7.50	1.589	
		2	15.00	1.695	*COUNTY = ULSTER
NYR 99-001-2643	ROCHESTER GAS & ELECTRIC	8	5,925.00	14,314.003	
		8	5,925.00	14,314.003	*COUNTY = WAYNE
NYD 00-122-1845	CIBA-GEIGY CORP.	8	592.50	1,255.963	
NYD 00-202-8652	REVLON HEALTH CARE GROUP	5	259.53	170.144	

US ECOLOGY INC 9413286.1110
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
NYD 04-556-2921	THE NDL ORGANIZATION	2	257.03	331.334	
NYD 07-272-1004	UNION CARBIDE CORP	1	4.01	1.000	
NYD 07-572-1354	SLOAN KETTERING INSTITUTE	2	110.05	37.346	
NYR 99-CCC-7023	NEW YORK POWER AUTH	9	4,076.00	9,662.443	
NYR 99-000-9276	CONSOLIDATED EDISON CO.	8	9,191.50	1,692.700	
NYR 99-001-2650	SELF-POWER LIGHTING	1	15.00	13,000.000	
NYR 99-001-3476	UNITED HOSPITAL	1	7.50	1.000	
NYR 99-001-4003	MEDICAL COLLEGE NEW YORK	2	19.01	12.017	
NYR 99-001-4045	NAYLOR DANA INSTITUTE	2	45.00	33.351	
NYR 99-001-4565	MEDI-RAY INC	1	7.50	1.000	
NYR 99-001-5893	BURKE REHABILITATION CEN	1	30.00	100.000	
NYR 99-001-7527	ACTAGEN INC	2	15.52	4.001	
NYR 99-001-9143	NY HOSP CORNELL MED CTR	1	7.50	0.204	
		46	14,637.65	26,302.503	*COUNTY = WESTCHESTER
		370	[illegible]	2,344,965.481	**STATE = [illegible]
OHT 40-001-9592	OHIO UNIVERSITY	2	150.00	141.364	
		2	150.00	141.364	*COUNTY = ATHENS
OHD 00-081-6595	CINCINNATI GAS & ELECTRIC	1	61.38	140.809	
		1	61.38	140.809	*COUNTY = CLERMONT
OHD 00-081-2230	CASE WESTERN RESERVE UNIV	4	90.00	116.421	
OHR 99-000-7411	BIO-SCIENCE LABORATORIES	1	45.00	1.200	
OHR 99-000-7486	CLEVELAND METRO GEN HOSP	4	139.01	364.000	
OHR 99-001-1595	TECHNICARE CORP	1	7.50	8.023	
OHR 99-002-0745	CHEMTRON CORPORATION	9	5,417.50	117.040	
		19	5,699.01	606.684	*COUNTY = CUYAHOGA
OHD 00-081-0077	OHIO STATE UNIVERSITY	1	607.50	851.591	
OHD 00-428-0442	ACCURAY CORP	1	15.52	4,860.020	
OHD 04-231-1209	ASHLAND CHEMICAL CO	1	15.66	5.300	
OHR 99-000-5910	CHILDREN'S HOSPITAL	1	52.50	3.158	
		4	691.38	5,720.069	*COUNTY = FRANKLIN
OHR 99-001-0829	BATTELLE-C.F. KETTERING	1	30.00	1.730	
		1	30.00	1.730	*COUNTY = GREENE
OH2 68-003-0929	US ENVIRON PROTECT AGENCY	2	307.42	583.440	
OH2 75-009-0001	NIOSH	1	30.00	0.105	
OHR 99-000-5183	JAMES N GAMBLE	1	90.00	40.920	
OHR 99-000-6207	US FOOD & DRUG ADM	1	75.00	16.260	
OHR 99-001-1124	CINCINNATI UNIVERSITY OF	1	225.70	53.999	
		6	728.12	994.724	*COUNTY = HAMILTON
OHD 09-262-1234	DIAMOND SHAMROCK CORP	3	225.00	65.359	
		3	225.00	65.359	*COUNTY = LAKE
OHR 99-000-5621	OHIO MEDICAL COLLEGE OF	2	420.00	112.028	
		2	420.00	112.028	*COUNTY = LUCAS
OHR 99-001-5067	ISOTEC CORPORATION	1	41.60	1.000	
OHR 99-002-0356	DESERET POLYMER RESEARCH	1	30.00	2.000	
OHR 99-002-1099	DR THOMAS J CLARKE	1	1.00	66.700	
		3	72.60	69.700	*COUNTY = MONTGOMERY
OHD 00-416-3275	GOODYEAR AEROSPACE	1	240.00	1.440	
		1	240.00	1.440	*COUNTY = PORTAGE
OHR 99-001-0472	GOODYEAR TIRE & RUBBER CO	1	7.50	0.050	
OHR 99-001-5174	PPG INDUSTRIES INC	1	187.50	3,918.510	
		2	195.00	3,918.560	*COUNTY = SUMMIT

GENERATORE	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
OHR 99-002-0638	BOWLING GREEN UNIVERSITYC	1	19.01	14.025	
		1	19.01	14.025	*COUNTY = WOOD
		45	8,531.50	11,786.522	**STATE = OHIO
OKR 99-001-9911	CONOCO INC	1	60.00	250.934	
		1	60.00	250.934	*COUNTY = KAY
OKR 99-000-5381	SEQUOYAH FUELS	7	4,657.50	897.991	
		7	4,657.50	897.991	*COUNTY = LOGAN
OKR 99-001-9747	OKLAHOMA UNIVERISTY OF	1	187.50	247.130	
		1	187.50	247.130	*COUNTY = OKLAHOMA
OKD 00-080-3601	PHILLIPS PETROLEUM CO	1	30.00	42.430	
		1	30.00	42.430	*COUNTY = WASHINGTON
		10	[illegible]	1,438.385	**STATE = OKLAHOMA
ORR 99-000-5613	OREGON STATE UNIVERSITY	[illegible]	250.01	1,556.899	
		1	250.01	1,556.899	*COUNTY = BENTON
ORD 07-643-0156	PORTLAND GENERAL ELEC	[illegible]	8,137.50	23,839.409	
		14	8,137.50	23,839.409	*COUNTY = COLUMBIA
ORD C4-979-3995	OREGON UNIVERSITY OF	[illegible]	45.00	55.605	
		1	45.00	55.605	*COUNTY = LANE
ORR 99-001-1105	TELEDYNE WAH CHANG ALBANY	[illegible]	[illegible]	2,600.700	
		18	22,238.60	2,600.700	*COUNTY = LINN
ORR 99-000-6421	PRECISION CASTPARTS CORP	[illegible]	[illegible]	4,152.344	
ORR 99-001-0373	PROVIDENCE PORTLAND MEDICAL CEN	[illegible]	50.00	20.000	
ORR 99-001-4706	PATHOLOGISTS CENTRAL LAB	[illegible]	105.80	14.555	
		36	29,283.20	4,186.899	*COUNTY = MULTNOMAH
ORR 99-002-0364	VTN OREGON INC	1	8.02	6.500	
		1	8.02	6.500	*COUNTY = WASHINGTON
		71	[illegible]	32,246.012	**STATE = OREGON
PAD 04-173-1514	APPLIED HEALTH PHYSICS	4	2,362.50	681.029	
PAR 99-000-7478	PITTSBURGH UNIVERSITY OF	1	7.50	51.500	
PAR 99-000-7700	ALLEGHENY GENERAL HOSP	2	127.50	78.200	
PAR 99-001-1934	MONTEFIORE HOSPITAL	4	26.51	4.315	
PAR 99-001-2213	VA HOSPITAL	5	52.50	69.155	
PAR 99-001-9390	CONSOLIDATED COAL CO.	2	951.00	4.092	
		18	3,527.51	883.291	*COUNTY = ALLEGHENY
PAR 99-001-4607	DUQUESNE LIGHT COMPANY	1	427.50	226.730	
		1	427.50	226.730	*COUNTY = BEAVER
PAR 99-001-9796	READING HOSP & MED CTR	1	7.50	0.405	
		1	7.50	0.405	*COUNTY = BERKS
PAR 99-001-9770	GUTHRIE FOUNDATION FOR	1	4.01	0.007	
		1	4.01	0.007	*COUNTY = BRADFORD
PAR 99-000-5492	BETZ LABORATORIES, INC.	6	25.40	165.923	
PAR 99-001-4136	DAMON CLINICAL LABS	7	52.50	0.421	
		13	77.90	166.344	*COUNTY = BUCKS
PAR 99-000-9359	HEWLETT PACKARD CO	4	20.05	5,540.004	
PAR 99-000-9E54	CENTO COR	2	45.00	393.200	
PAR 99-001-5497	AUTOMATION INDUSTRIES INC	4	645.27	2,541,962.332	
		10	710.32	2,547,895.536	*COUNTY = CHESTER
PAR 99-002-0778	NUS CORP	2	120.00	27.091	
		2	120.00	27.091	*COUNTY = CLARION

US ECOLOGY INC 9413286.1112
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
PAR 99-001-8442	US NAVY	1	1,237.68	5,760.000	
		1	1,237.68	5,760.000	*COUNTY = CUMBERLAND
PAR 99-000-5316	HERSHEY, M.S.MED. CTR.	2	517.50	954.989	
PAR 99-000-8443	HARRISBURG HOSPITAL	1	45.00	27.000	
PAR 99-001-0456	GPU NUCLEAR	38	19,278.90	123,396.164	
		41	19,841.40	124,378.153	*COUNTY = DAUPHIN
PAD 00-232-3533	WYETH LAB INC	2	112.65	23.980	
PAR 99-000-6405	CROZER CHESTER MED CTR	1	11.51	1.500	
PAR 99-000-7239	SWARTHMORE COLLEGE	1	8.02	0.072	
PAR 99-001-3849	DUPONT E I DE NEMOURS	14	1,207.50	306.012	
		18	1,339.68	331.564	*COUNTY = DELAWARE
PAD 00-238-9252	A T & T TECHNOLOGIES	3	2,827.75	0.612	
		3	2,827.75	0.612	*COUNTY = LEHIGH
PAR 99-000-7742	WILKES BARRE GENERAL HOSP	1	24.06	4.519	
PAR 99-001-6800	PENNA POWER & LIGHT CO.	22	15,808.50	172,256.686	
		23	15,832.56	172,261.205	*COUNTY = LUZERNE
PAR 99-002-1263	AIR PRODUCTS & CHEMICALS	4	1,815.00	48.400	
		4	1,815.00	48.400	*COUNTY = MERCER
PAR 99-000-7163	CONNAUGHT LABORATORIES	3	105.00	41.871	
		3	105.00	41.871	*COUNTY = MONROE
PAD 00-073-1471	MCNEIL PHARMACEUTICAL	7	997.50	399.581	
PAD 07-060-2776	LABORATORY PROCEDURES INC	55	3,735.00	67.998	
PAD 07-548-5595	ROHM AND HAAS CO	2	60.00	46.109	
PAR 99-000-5019	ABINGTON MEMORIAL HOSP	2	30.00	1.158	
PAR 99-000-8108	MICROMEDIC SYSTEMS INC	2	142.50	40.087	
PAR 99-000-8971	NORTH PENN HOSPITAL	2	30.00	2.641	
		70	4,995.00	563.574	*COUNTY = MONTGOMERY
PAR 99-001-7832	ITT ELECTRON TUBE DIV	1	4.01	0.100	
		1	4.01	0.100	*COUNTY = NORTHAMPTON
PAD 00-228-6920	SMITH KLINE & FRENCH LABS	16	3,080.40	1,525.677	
PAD 04-225-0712	PENNSYLVANIA UNIV OF RSO	5	1,282.50	5,023.274	
PAD 07-145-3302	PA HOSP MED COLEGE OF	2	79.53	32.844	
PAD 07-949-7621	PHILA. COLLEGE OF PHARMAC	1	15.00	4.520	
PAR 99-000-6504	BIO-SCIENCE LABORATORIES	1	4.01	0.100	
PAR 99-000-6645	VA MEDICAL CENTER	1	112.50	32.524	
PAR 99-000-7635	PENNSYLVANIA HOSPITAL	1	8.02	23.563	
PAR 99-000-7643	CONNECTIVE TISSUE RES INS	7	52.50	4.500	
PAR 99-001-0498	INSTITUTE FOR CANCER RSCH	3	150.00	246.560	
PAR 99-001-1066	ST ANGES MEDICAL CENTER	6	44.11	54,734	
PAR 99-001-2809	CANBERRA RMC	1	120.00	8.071	
PAR 99-001-3401	PRESBYTERIAN HOSPITAL	4	75.00	9.477	
PAR 99-001-4235	EASTERN REGIONAL RES CTR	3	30.00	18.421	
PAR 99-001-6966	ACTION MFG COMPANY	3	19.53	0.148	
PAR 99-002-0729	ST JOSEPH UNIVERSITY	1	4.01	0.015	
PAR 99-002-0968	ACADEMY OF NAT'L SCIENCES	1	37.50	0.058	
		56	5,114.61	6,934.556	*COUNTY = PHILADELPHIA
PAR 99-000-6447	PHILADELPHIA ELECTRIC CO	39	44,586.50	14,807.512	
PAR 99-001-3237	IBM CORPORATION	3	90.00	5.998	
		41	44,676.50	14,813.510	*COUNTY = YORK
		307	102,685.93	2,874,387.949	**STATE = PENNSYLVANIA
RID 00-064-9921	BROWN UNIVERSITY	4	233.02	86.160	

REPORT NO: ECF945
RUN DATE: 03/18/85

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

01/01/84 THRU 12/31/84

GENERATORE	GEN_NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
RID CO-065-2032	ST JOSEPH HOSPITAL	7	52.50	3.070	
RID 06-985-2530	MEMORIAL HOSPITAL	1	11.51	5.403	
RID 07-568-7665	WILLIAMS, ROGER GEN HOSP	3	100.25	2.019	
RID 07-571-0995	RHODE ISLAND HOSPITAL	10	795.00	557.940	
RIR 99-000-6199	MIRIAM HOSPITAL	4	273.64	179.123	
		29	1,465.92	833.715	*COUNTY = PROVIDENCE
		29	[redacted]	833.715	**STATE = [redacted]
SCD 06-931-6271	MEDICAL UNI OF S.C.	1	30.00	4.949	
		1	30.00	4.949	*COUNTY = CHARLESTON
SCD 04-837-4920	CAROLINA POWER & LIGHT	2	2,101.50	609.520	
		2	2,101.50	609.520	*COUNTY = DARLINGTON
SCR 99-001-0431	DUKE POWER CO	1	400.00	8.798	
		1	400.00	8.798	*COUNTY = OCONEE
SCR 99-002-1271	OWENS STEEL & ELECTRIC CO	3	1,511.00	80.640	
		3	1,511.00	80.640	*COUNTY = RICHLAND
		7	[redacted]	703.907	**STATE = [redacted]
TNR 99-001-8202	QUADREX CORPORATION	34	34,791.10	27,321.493	
		34	34,791.10	27,321.493	*COUNTY = ANDERSON
TNR 99-001-0936	VANDERBILT UNIVERSITY	6	857.61	2,011.457	
TNR 99-001-3658	VA MEDICAL CENTER.	2	150.00	61.573	
		8	1,007.61	2,073.030	*COUNTY = DAVIDSON
TND 03-457-5308	DAVISON SPECIALTY CHEM CO	17	8,070.00	72,345.000	
TNR 99-000-7916	TENN VALLEY AUTHORITY	22	28,997.50	28,219.542	
		39	37,067.50	100,564.542	*COUNTY = HAMILTON
TNR 99-001-7360	TENNESSEE UNIVERSITY OF	1	816.00	37.460	
		1	816.00	37.460	*COUNTY = KNOX
TND 00-702-4672	DUPONT EI DE NEMOURS & CO	82	41,182.50	8,558.600	
TNR 99-001-1405	ST JUDE CHILDRENS HOSP	6	229.10	133.640	
TNR 99-001-1447	TENNESSE UNIV OF	3	67.50	72.968	
		91	41,479.10	8,765.208	*COUNTY = SHELBY
TNR 99-001-7949	NUCLEAR FUEL SERVICES INC	5	3,195.00	193.533	
		5	3,195.00	193.533	*COUNTY = UNICOI
TND 05-398-2807	TNS INC	11	6,210.00	4,515.946	
TNR 99-000-9292	EAST TENNESSEE STATE UNIV	2	82.50	53.580	
		13	6,292.50	4,569.526	*COUNTY = WASHINGTON
		191	[redacted]	143,524.792	**STATE = [redacted]
TXR 99-002-0281	DOW CHEMICAL CO	1	247.50	47.310	
		1	247.50	47.310	*COUNTY = BRAZORIA
TXR 99-000-9334	GULF NUCLEAR INC	2	853.10	32,618.254	
		2	853.10	32,618.254	*COUNTY = ECTOR
TXR 99-000-5779	TODD SHIPYARDS CORP	4	2,253.10	2.559	
		4	2,253.10	2.589	*COUNTY = GALVESTON
TXD 05-513-5388	NUCLEAR SOURCES AND SERV	12	9,105.52	225,276.457	
		12	9,105.52	225,276.457	*COUNTY = HARRIS
		19	[redacted]	257,944.610	**STATE = [redacted]
UTR 99-000-8757	UTAH UNIVERSITY OF	3	345.00	337.642	
UTR 99-001-7345	NATIVE PLANTS INC	1	4.01	3.500	
UTR 99-001-7758	VA HOSPITAL	1	45.00	40.020	

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES	
UTR 99-001-8053	US BUREAU OF MINES	1	7.50	0.540	
		6	401.51	381.702	*COUNTY = SALT LAKE
UTD 09-202-4934	WESTERN ZIRCONIUM	7	4,372.50	96.340	
		7	4,372.50	96.340	*COUNTY = WEBER
		13	[illegible]	478.042	**STATE = UTAH
VAD 00-082-0712	VIRGINIA UNIVERSITY OF	14	855.00	1,846.644	
		14	855.00	1,846.644	*COUNTY = ALBEMARLE
VAR 99-001-0266	BEST INDUSTRIES INC	5	164.11	137,916.000	
		5	164.11	137,916.000	*COUNTY = ARLINGTON
VAR 99-000-5035	BABCOCK & WILCOX, LRC	3	1,627.50	7.302	
		3	1,627.50	7.302	*COUNTY = CAMPBELL
VAD 04-951-3195	MELOY LABORATORIES INC	2	165.00	834.620	
VAR 99-000-7114	NATIONAL HEALTH LABS	8	675.00	4.644	
VAR 99-001-2874	US GEOLOGICAL SURVEY	1	45.00	17.500	
VAR 99-001-4722	ATLANTIC RSCH CORP	1	15.00	3.000	
		12	900.00	859.764	*COUNTY = FAIRFAX
VAR 99-000-5894	VIRGINIA ELECTRIC & POWER	3	1,192.50	224.632	
		3	1,192.50	224.632	*COUNTY = LOUISA
VAD 07-474-7908	VA POLYTECHNIC INSTITUTE	2	60.00	57.119	
		2	60.00	57.119	*COUNTY = MONTGOMERY
VAD 00-079-8645	VA COMMONWEALTH UNIV	17	1,087.50	1,389.105	
VAR 99-000-9086	ROBINS, A.H. CO INC	18	329.32	177.737	
VAR 99-002-0059	RICHMOND UNIVERSITY OF	1	15.00	2.200	
		36	1,431.82	1,569.042	*COUNTY = RICHMOND
VAD 00-170-5110	MERCK & CO INC	2	16.04	3.632	
		2	16.04	3.632	*COUNTY = ROCKINGHAM
VAT 00-001-9502	VIRGINIA ELECTRIC & POWER	15	11,103.50	6,293.103	
		15	11,103.50	6,293.103	*COUNTY = SURRY
VAR 99-000-5308	HAZLETON LABORATORIES	11	1,095.10	5,041.016	
		11	1,095.10	5,041.016	*COUNTY = FAIRFAX
VA6 17-006-1403	NAVAL SUPPLY CENTER	2	115.50	0.060	
VAR 99-001-8210	NAVAL AIR REWORK FACILITY	1	75.00	3.492	
		3	190.50	3.572	*COUNTY = NORFOLK
		106	[illegible]	153,821.826	**STATE = VIRGINIA
VTR 99-000-9391	INST FOR MEDICAL RSCH	1	15.00	0.008	
		1	15.00	0.008	*COUNTY = BENNINGTON
VTR 99-000-8740	VERMONT UNIVERSITY OF	6	480.00	860.101	
VTR 99-001-8616	MEDICAL CTR HOSP OF VT	1	22.50	63.712	
		7	502.50	923.873	*COUNTY = CHITTENDEN
VTR 99-000-5845	VERMONT YANKEE NUCLEAR	8	7,649.51	7,112.733	
		8	7,649.51	7,112.733	*COUNTY = WINDHAM
		16	[illegible]	8,036.614	**STATE = VERMONT
WAD 00-449-2575	BATTELLE NORTHWEST LAB	1	5.40	0.277	
WAD 00-004-8360	US ECOLOGY INC	38	113.01	0.301	
WAD 93-073-8488	WA PUBLIC PWER SUP SYS	22	14,585.00	35,932.091	
WAR 99-001-0910	EXXON NUCLEAR CO INC	31	12,099.00	120.067	
WAR 99-001-9051	SMITH, M LLOYD, CHP	1	15.00	40.001	
		93	26,797.41	36,092.737	*COUNTY = BENTON
WAR 99-001-1009	BATTELLE MARINE LAB	1	38.54	15.098	
		1	38.54	15.098	*COUNTY = CLALLAM

GENERATORE	GEN_NAME	SHIPMENTS	CUBIC FEET	MILLICURIES	
WAR 99-000-5560	[redacted]	[redacted]	[redacted]	481,103.345	
WAR 99-001-2403	NUCLEAR SUPPORT SERVICES	1	22.50	34.679	
WAR 99-001-2924	[redacted]	[redacted]	[redacted]	1.530	
WAR 99-001-2932	RALPH M BALTZO	1	4.01	10.501	
WAR 99-001-2940	VETERANS MEDICAL CENTER	2	52.50	57.360	
WAR 99-001-2957	[redacted]	[redacted]	[redacted]	3,919.442	
WAR 99-001-2973	PROVIDENCE MEDICAL CENTER	2	37.50	1.240	
WAR 99-001-2981	PUBLIC HEALTH SERVICE	10	75.00	108.768	
WAR 99-001-2999	NOOA NW RSCH LAB	1	15.00	15.000	
WAR 99-001-3039	PACIFIC MEDICAL CENTER	11	142.50	45.969	
WAR 99-001-3047	GENETIC SYSTEMS CORP	[redacted]	[redacted]	1,669.657	
WAR 99-001-3054	VIRGINIA MASON RSCH CEN	[redacted]	[redacted]	440.692	
WAR 99-001-3674	[redacted]	[redacted]	[redacted]	628.812	
WAR 99-001-6131	ISSAQUAH HEALTH RES INST	2	20.05	8.165	
WAR 99-001-6925	IMMUNEX CORPORATION	[redacted]	[redacted]	691.437	
		96	5,945.72	488,736.597	*COUNTY = KING
WAR 99-000-5670	[redacted]	[redacted]	[redacted]	8,915.428	
WAR 99-001-8871	[redacted]	[redacted]	[redacted]	0.058	
		18	11,486.60	8,915.486	*COUNTY = KITSAP
WAR 99-001-2965	VETERANS MEDICAL CENTER	2	45.00	10.636	
WAR 99-001-9653	[redacted]	[redacted]	[redacted]	513.000	
		4	54.50	523.636	*COUNTY = PIERCE
WAR 99-002-0083	WHITMAN COLLEGE	1	4.80	600.000	
		1	4.80	600.000	*COUNTY = WALLA WALLA
WAR 99-001-4664	WASHINGTON STATE UNIV	[redacted]	[redacted]	1,883.510	
		2	315.00	1,883.510	*COUNTY = WHITMAN
WAR 99-001-5C91	ALLIED NUCLEAR INC	[redacted]	[redacted]	2.371	
		2	420.00	2.371	*COUNTY = YAKIMA
		217	[redacted]	536,769.435	**STATE = WASHINGTON
WIR 99-001-1587	NAT'L FISHERY LABS	2	15.00	0.440	
		2	15.00	0.440	*COUNTY = LA CROSSE
WID 09-342-2657	WISCONSIN ELECTRIC	17	20,004.60	20,462.743	
		17	20,004.60	20,462.743	*COUNTY = MANITOWOC
WIR 99-001-1694	BLOOD CENTER SE WISC	1	22.50	2.740	
WIR 99-001-1884	MT SINAI MEDICAL CENTER	1	7.50	2.000	
WIR 99-001-2239	VA HOSPITAL	1	7.50	104.000	
		3	37.50	108.740	*COUNTY = MILWAUKEE
WIR 99-002-1172	DAIRYLAND POWER CORPORATE	1	105.00	9,307.975	
		1	105.00	9,307.975	*COUNTY = VERNON
		23	[redacted]	29,879.898	**STATE = WISCONSIN
WVR 99-001-0217	MARSHALL UNIVERSITY	2	135.00	15.580	
		2	135.00	15.580	*COUNTY = CABELL
WVD 75-092-0621	DHHS PHS CDC NIOSH ALOSH	2	64.53	7.648	
		2	64.53	7.648	*COUNTY = MONONGALIA
		4	[redacted]	23.228	**STATE = WEST VIRGINIA
		4,039	1,358,915.65	215,285,822.292	***GRAND TOTAL***

***** END OF REPORT *****

REPORT NO: ECF845
RUN DATE: 03/18/85

US ECOLOGY INC
WASTE ANALYSIS BY COUNTY
RICHLAND, WASHINGTON FACILITY

01/01/84 THRU 12/31/84

GENERATOR#	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES

RETURN CODE 00
ECF845 NORMAL EOJ

RECORDS READ	=	00336541
RSR RECORDS INCLUDED	=	00004039

RAD FILE CLOSED PROPERLY

GENERATOR	GEN_NAME	SHIPMENTS	CUBIC_FEET	MILLICURIES

RETURN CODE 00
ECF845 NORMAL EOJ

RECORDS READ	=	00336541
RSR RECORDS INCLUDED	=	00004039

RAD FILE CLOSED PROPERLY

Complete unshaded parts and forward to:
Hazardous Waste Unit
2750E/A113/200E
Westinghouse

CHEMICAL WASTE DISPOSAL REQUEST

Manifest No.

Generator Logbook No.

Disposal Analysis Distribution*
1. Generator 4. ____
2. H.W.U. 5. ____
3. ____ 6. ____
*May be used by generator as needed.

Requested By	Telephone No.	Address	Company
Warren Bodily	6-9126	1262 Bldg. / 3000 Area	KEH

Signature/Date

Accumulation Date: 8-10-88

WASTE DESCRIPTION (For additional items, continue on the back of this form)

A Item No.	B No. of Containers	C Container Size	D Container Description	E Total Waste Quantity (kg)	F Waste Description	G Chemical Components	H Weight %	I Physical Properties	J Hazards	K Waste Status	L Container Status
Example 1	1	55 gal	DOT 17E	205	TURCO Decon 4512A Solution, 10% in Water	TURCO 4512A MSDS Attached Water	10.0 90.0	Liquid, pH < 2 Flash point > 200 °F	C	O	F
Example 2	1	5 gal	DOT 37M	34	Waste from Hg Cleanup	Mercury Rags Soil	1.3 4.0 94.7	Solid	EP	S	PF
Example 3	23	55 gal.	Steel Drum	0	Empty Conoco 32 Oil Drums - Contained Used Oil	Oil-MSDS Attached PCB - Lab Data Attached	100.0 <1 ppm	Liquid, pH = 8.2 Flash Point > 200 °F	None	U	MT
	1	25 lbs	Cardboard Can	11.3	Old Product - "Nitro Lay"	Sodium Cyanide	45	Solid	C	Old	F
						Soda Ash	15				
						Potassium Chloride	15				
						Manganese Dioxide	15				
						Caustic	10				

HW 88-791

WA 8-10-88

INSTRUCTIONS

Accumulation Date - List the accumulation date of the oldest waste

Column A - Item Number - Item number for each unique waste.

Column B - Number of Containers - Number of containers of a unique waste to be disposed

Column C - Container Size - Size of containers specified in Column B. If multiple container sizes, specify number and size of each.

Column D - Container Description - Specify container's DOT specification. If non-DOT container or unknown, specify type, e.g. steel drum

Column E - Total Waste Quantity - Total waste quantity (in kilograms only) of each unique waste to be disposed

Column F - Waste Description - Specify trade name or general description of each unique waste. If waste material is a paint, specify color for evaluation of pigments.

Column G - Chemical Components - List all organic and inorganic components of the unique waste using specific chemical names. Attach Material Safety Data Sheets, analytical data, or other documents to adequately describe the composition of the waste

Column H - Weight (%) - For each waste component indicate percent or range of percents in which the component is present in the waste. Trace amounts of pesticides, herbicides, heavy metals and PCB's should be specified. Components must add up to 100% including water, earth, or other components. If a unit other than percent is used, indicate the unit. When possible, provide test results or other documentation to verify percentages.

Column I - Physical Properties - Indicate whether Solid (S), Liquid (L), or Gas (G) or any combination of these phases, also indicate pH and flash point.

Column J - Hazards - Indicate whether waste is Corrosive (C), Ignitable (I), Reactive (R), Toxic (T), Explosive (E), Persistent (P), EP Toxic (EP) or Carcinogenic (X).

Column K - Waste Status - Indicate whether waste is: Reacted (Rx), Treated (T), New (N), Used (U), Old (or expired) (O), Spill Material (S).

Column L - Container Status - Indicate whether container is: Full (F), Partially Full (PF), Empty (< 1 in. in 55 Gal Drums) (MT), Triple Rinsed (TR).

RECEIPT

CHEMICAL WASTE DISPOSAL ANALYSIS NO. KEH-24-676

Name W.H. BODILY Address 1262/3000

Organization KEH

Generator Logbook No. HW88-791 Accumulation Date 8-10-88

Waste Shipment Deadline Date 11-8-88

NOTE: THIS IS ONLY A RECEIPT SHOWING WE HAVE RECEIVED YOUR CHEMICAL WASTE DISPOSAL REQUEST. YOU WILL BE RECEIVING A LETTER WITH INSTRUCTIONS ON THE PACKAGING AND SHIPPING OF YOUR WASTE AS SOON AS POSSIBLE.

CHEMICAL WASTE DISPOSAL ANALYSIS NO. KEH-24-676

ISSUE DATE OCT 04 1988

WASTE GENERATOR

Name W. H. Bodily Address 1262/3000 Area

Organization Kaiser Engineers Hanford Telephone 376-9126

Generator Logbook No. HW88-791 Accumulation Date August 10, 1988

Waste Shipment Deadline Date November 8, 1988

SITE HAZARDOUS WASTE ENGINEERING SUPPORT UNIT
2750E/A113/200 East (MSIN R1-51)

Disposal Analysis by Darlene Hagel D. L. Hagel Telephone 373-5464

Approval(s) Gladys Hackett Site Hazardous Waste Engineering Support Unit Representative

D. W. Lindsey, Acting Manager

INSPECTION: Inspection Representative G. O. Boness 376-7627

TRANSPORTATION: SEE APPLICABLE FACILITY FOR TRANSPORTATION REPRESENTATIVE.

WASTE STORAGE/DISPOSAL DESTINATION(S) [Check applicable facility(s)]

XX	616 Nonradioactive Dangerous Waste Storage Facility/616 Building/600 Area	Transportation Representative P. L. Hemsworth 373-1881
___	212-P PCB Storage Facility 212-P Building/200 North Area Facility Representative S. M. Baker 373-3806	Transportation Representative R. G. Dean 376-1420
___	Central Landfill Nonregulated Drum Storage Area/600 Area	Transportation Representative R. G. Dean 376-1420
___	Central Landfill Trash Trench/600 Area	
___	Shock Sensitive/Reactive/Explosive Waste Disposal	Representative M. R. Romsos 373-4032
___	Recycle Facility ___	

PICK UP ON MONDAYS & TUESDAYS ONLY - SCHEDULE APPROXIMATELY 1 WEEK IN ADVANCE.

Attachments

R. E. Baker (212P Facility only) R. E. Phelps (Central Landfill only)

GENERAL WASTE DISPOSAL/STORAGE INSTRUCTIONS

All waste designations, packaging, shipping, and administrative activities and documentatic are subject to audit by authorized Washington Department of Ecology (Ecology), U. S. Department of Energy (DOE), and contractor personnel. The activities related to disposal of the referenced waste(s) must adhere to requirements in every detail. Generators who fail to adhere to requirements will have their disposal privileges revoked by Ecology, and may be eligible for penalties as defined in governing regulations.

All hazardous wastes must be packaged and transported according to Washington State Regulations Chapter 173-303 WAC and Department of Transportation (DOT) Regulations 49 CFR. Improperly packaged wastes will not be accepted by site disposal facility personnel. The Generator may be required to correct the manifest and/or packaging discrepancies at the receiving facility.

Preparation for Shipment

Wastes must be packaged, labeled, marked, and manifested by the Generator according to specific instructions provided. Labels and Uniform Hazardous Waste Manifest forms are available as store stock items.

Inspection

When the waste has been properly packaged and manifested, the shipment must be inspected by the Westinghouse Traffic Department prior to transport. The Generator should schedule this preshipment inspection by contacting the Westinghouse Inspection Representative.

Manifest

The properly completed Uniform Hazardous Waste Manifest(s) will be initiated by the Generator and must be presented at the time of the inspection. The manifest must be initialled by the Traffic Department representative to verify generator compliance with the packaging instructions. The Generator may NOT make any unauthorized additions, deletions, or alterations to a manifest after the manifest has been initialled by the Traffic Department representative. More than one manifest may be required, depending on shipping destinations and waste compatibility. When shipping hazardous waste under a routine disposal analysis the Generator must reference the routine disposal analysis number in line 15 of the manifest. When the Transporter arrives to transport the waste, the Generator must sign the manifest, obtain the Transporter's signature, and retain the tissue "generator copy". The original and all remaining copies must accompany the shipment. The original copy of the manifest will be returned to the Generator when the shipment is complete. Waste generators must retain the signed original copy of the manifest in an auditable file.

Radiological Release

The Generator is responsible for obtaining necessary radiological release documentation. The Transporter will NOT accept any nonradioactive hazardous waste shipment that does not have documentation of an unconditional radiological release or documentation of exemption from unconditional survey. This documentation is only applicable for a 24-hour period following its issuance.

Transportation

The Generator is responsible for arranging transportation by contacting the Westinghouse

DISPOSAL ANALYSIS NO. KEH-24-676

OFFSITE DISPOSAL - 616 NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY

Waste items listed for offsite disposal must be properly packaged, labeled and manifested for shipment to an offsite disposal facility in accordance with State of Washington Administrative Code, Department of Ecology Dangerous Waste Regulations, Chapter 173-303 WAC. The Hanford generator has the responsibility for packaging and for shipping the waste to the offsite staging facility: Nonradioactive Dangerous Waste Storage Facility, 616 Building/600 Area. Offsite disposal shipments originating from this facility will be arranged by Westinghouse.

The waste generator must comply with the following requirements for packaging, labeling and marking wastes for offsite disposal:

Packaging:

- Waste must be packaged in a DOT Specification 17H metal drum or 21C fiber drum.
- Each container must have lid tightly in place. In addition, all gaskets, seals, and bungs must be carefully inspected and replaced if necessary.
- Each container must be strong, tight, clean, and in good condition.
- All container weights must be restricted to 500 pounds or less when possible. If this is not possible, contact Bob Dean on 376-1420 one week prior to the shipping date.

Labeling:

- Any DOT label(s) specified on the attached table must be applied to each container. Labels may be obtained from Westinghouse Central Stores.
- A properly completed EPA Hazardous Waste sticker (see attached example) must be applied to each container.
  - The DOT proper shipping name (including punctuation) must appear EXACTLY as specified on the attached table.
  - Please use waterproof permanent ink.
  - The label must be legible.

DISPOSAL ANALYSIS NO. KEH-24-676

Marking:

- Each container must be legibly numbered on the top and sides using the manifest number and a unique container number, e.g., KEH-24-676-1.
- The weight of each outer container exceeding 110 pounds must be marked on the top and side of the container.
- "This End Up" must be marked on the TOP of each container. DO NOT USE STICKERS WITH ARROWS.
- Overpacked drums must be marked "SALVAGE DRUM" on the side of the drum.
- In accordance with 49 CFR 172.304, all markings must be legible, durable, and in a color which contrasts with the container.

Inspections:

- All containers must be properly marked, labeled, and made readily accessible prior to the inspection.
- DO NOT STACK CONTAINERS.

Manifests:

- The address portion of the Uniform Hazardous Waste Manifest (item 3 on page 1, item 23 on continuation pages) should be filled out similar to the following example:

  WESTINGHOUSE HANFORD COMPANY, 340/300 AREA (332)
  P.O. BOX 550, 2401 STEVENS DR., RICHLAND, WA 99352
  (509) 373-1218 ATT: I.M. GENERATOR R2-D2

- In the example above, Westinghouse Hanford Company is the generator, 340/300 Area is the location where the waste was consolidated and offered for transportation, and 332 is the actual generating facility. The street address on the following line is what appears on the Environmental Protection Agency Label, followed by the generator phone number, name, and mail stop number.

Radiological Release:

- Arrangements should be made to obtain radiological release documentation or exemption from survey documentation following the inspection. Please note that this documentation is only applicable for a 24-hour time period following its issuance.
- **Each container in a shipment must bear a radiological release sticker to be acceptable for transport.**

EXAMPLE

ATTACHMENT TO DISPOSAL ANALYSIS

PAGE AND ITEM NUMBER FROM MANIFEST

MANIFEST NUMBER

9413286.1124

PAGE 1, ITEM A

WHC-24-240-1

HAZARDOUS WASTE

STATE AND FEDERAL LAW
PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, AND THE
WASHINGTON STATE DEPARTMENT OF ECOLOGY,
OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T. SHIPPING NAME: WASTE ACID, LIQUID, N.O.S. UN or (NA#) 1760

GENERATOR INFORMATION:

NAME: U.S. DEPARTMENT OF ENERGY

ADDRESS: P.O. BOX 550, 2401 STEVENS DR.

CITY: RICHLAND STATE: WA ZIP: 99352

EPA ID NO.: WA7890008967

EPA WASTE NO.: D002, WT02

ACCUMULATION START DATE: 4-14-88

MANIFEST DOCUMENT NO.:

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

STYLE WMSPEC-P

Printed by LABELMASTER, Div. of AMERICAN LABELMARK CO., CHICAGO, IL 60646

WASTE SHIPPING SUMMARY TABLE 9413286.1125

'O: KEH-24-676
'N: 616 NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY/600 AREA
IO: KEH-24-676

CELL LEGEND:
1A = Flammable 1A CS = Caustic
1B = Flammable 1B D = Acid
C = Combustible O = Oxidizer

DOT HAZARD CLASS	DOT PROPER SHIPPING NAME	WASTE NO.	USDOT ID NO.	DOT/EPA LABELS	CONTAINERS QTY.	CONTAINERS TYPE	TOTAL WASTE QUANTITY	STORAGE CELL
Poison B	RQ, Waste Poisonous Solid, Corrosive, n.o.s. (sodium cyanide) (Nitro-loy: 45% sodium cyanide 15% soda ash 15% potassium chloride 15% manganese dioxide 10% caustic) pH >12.5	D002 D003 WT01 (EHW)	UN2928	Poison, Corrosive, EPA Hazardous Waste	1	DF 25#	11.3 K	CS

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No. 2050-0039. Expires 9-30-88

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. WA 7890008967	Manifest Document No. XEH-24-676	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Kaiser Engineers Hanford Co., 1262 Bldg., 3000Area
P.O. Box 550, 2401 Stevens Dr., Richland, WA 99352
4. Generator's Phone (509) 376-9126 ATT: WF Bodily

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: Westinghouse TRansportation
6. US EPA ID Number: WA 7890008967
C. State Transporter's ID
D. Transporter's Phone (509)373-1881

7. Transporter 2 Company Name: None
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
616 Nonradioactive Dangerous Waste
Storage Facility/616 Building/600 Area
Att: JE Chulos
10. US EPA ID Number: WA 7890008967
G. State Facility's ID
H. Facility's Phone (509) 373-5013

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	x RQ, Waste Poisonous Solid, Poison B UN 2928 Corrosive, N.O.S. (sodium cyanide)	1	DM	50	k	D002, D003, WT01 (EHW)
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Warren H. Bodily				

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

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GENERATOR NUMBER NJR 99 001 6222

RADIOACTIVE WASTE SHIPMENT & DISPOSAL MANIFEST

US ECOLOGY, INC.

EXECUTIVE OFFICE: (502) 426-7160

P.O. BOX 7246 • LOUISVILLE, KENTUCKY 40207

USE THIS NO. ON ALL CONTINUATION PAGES → 87685

(1) GENERATOR NAME MET PATH INC.
ADDRESS 1 MALCOLM AVE.
CITY TETERBORO STATE NJ ZIP 17688
CONTACT ALAN JONES PHONE 914-737-7338
USER PERMIT # 2451 SHIPMENT # 87-8W2

(2) BILL DISPOSAL CHARGES TO BROKER
NAME PURCHASE ORDER #
ADDRESS
CITY STATE ZIP

(3) AGENT/BROKER THE NDL ORGANIZATION, INC.
BROKER'S US ECOLOGY # NYD 84 566 2921
ADDRESS PO BOX 791
CITY PEEKSKILL STATE NY ZIP 10566
CONTACT ALAN JONES PHONE 914-737-7338
BROKER SHIPMENT 87-8W2 BROKER USER PERMIT # 5320

Broker's Authorized Signature Acknowledging Waste Receipt Date

(4) CONSIGNED TO
☐ P.O. BOX 638 Hanford Reservation Richland, WA 99352 509-377-2411
X
☐ P.O. BOX 578 HWY 95, 12 m. So. of Beatty, NV 89003 702-553-2203
☐ OTHER
CONTACT
ADDRESS
CITY STATE ZIP
PHONE

(5) CARRIER THE NDL ORGANIZATION, INC SHIPPING DATE 06/26/87
CARRIER EPA # (if any) NYD 84 566 2921
ADDRESS 1000 LOWER SOUTH ST.
CITY PEEKSKILL STATE NY ZIP 10549
PHONE 914-737-7338
CASK TYPE CASK SURFACE EXPOSURE RATE mR/hr

TOTAL FOR EACH CLASS # OF PACKAGES	TOTAL FOR EACH CLASS WEIGHT (Pounds)	PROPER SHIPPING NAME & HAZARD CLASS (PER 49 CFR 172.101)	ID NUMBER
		Radioactive Material, empty packages	UN2908
		Radioactive Material, fissile, n.o.s. — Radioactive Material	UN2918
		Radioactive Material, low specific activity, n.o.s. — Radioactive Material	UN2912
2	250	Radioactive Material, n.o.s. — Radioactive Material	UN2982
		Radioactive Material, limited quantity, n.o.s. — Radioactive Material	UN2910
		Radioactive Material, special form, n.o.s. — Radioactive Material	UN2974
		Radioactive Material, instruments and articles — Radioactive Material	UN2911
		Thorium Nitrate — Radioactive Material	UN2976
		Uranyl Acetate (RQ-5000/2270) — Radioactive Material	NA9180
		Uranyl Nitrate, solid (RQ-5000/2270) — Radioactive Material	UN2981

(7) SHIPMENT TOTALS (DO NOT WRITE IN SHADED AREAS)

VOLUME (cu ft)	TOTAL # OF PACKAGES	SOURCE MATERIAL (kgs)	SPECIAL NUCLEAR MATERIAL (grams) U-233	U-235	PLUTONIUM	TOTAL
11.51	2	0.0	0.000000	0.000000	0.000000	0.000000

ACTIVITY

ACTIVITY TOTALS: ☐ Curies ☑ Millicuries (10CFR20.311)	TRITIUM	C-14	Tc-99	I-129	ALL ISOTOPES
	0.000000	1.000000	0.000000	0.000000	1.000000

(8) THIS IS TO CERTIFY THAT THE HEREIN-NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED, AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION AND ARE IN COMPLIANCE WITH ALL REQUIREMENTS APPLICABLE AT THE DESIGNATED DISPOSAL SITE, AND THAT THE MATERIALS ARE CLASSIFIED AND DESCRIBED IN ACCORDANCE WITH THE REQUIREMENTS OF 10CFR, PART 61 AND PART 20.311 OR EQUIVALENT STATE REGULATIONS.

Alan Jones Gen. Mgr. 6/25/87
Authorized Signature Title Date

TERMS AND CONDITIONS

a. **TITLE:** Upon inspection and acceptance at the disposal site by US Ecology and all appropriate regulatory authorities, title to the Waste which conforms to Company's representations herein shall thereupon transfer from the Customer and be vested in US Ecology.

b. **WASTE PRODUCTS:** Customer represents and warrants that data set forth in this Radioactive Waste Shipment & Disposal Manifest is true and correct in all respects and in accordance with all applicable governmental laws, rules, regulations and the designated facility license.

c. **INDEMNIFICATION:** Customer agrees to indemnify US Ecology, its officers, employees and agents against all loss and liability whatsoever if such loss or liability results from the failure of the Waste to conform in all material respects to the data supplied on the Radioactive Waste Shipment & Disposal Manifest or this shipment fails to meet the standards prescribed by the Department of Transportation or any other governmental agency having jurisdiction over such matters.

FOR US ECOLOGY'S USE ONLY

TYPE OF CONTAINER	CONTAINER VOLUME CU. FT.	# OF PKGS.	CU. FT. PER CONTAINER TYPE
DRUMS			
OVERPACK			
55	7.50		
30	4.01		
5	0.67		
OTHER			
BOXES			
1st SIZE			
2nd SIZE			
3rd SIZE			
SK LINERS			
ER			
IT			

LOAD EVALUATION

CHECK ALL THAT APPLY TO THIS LOAD. DESCRIBE INADEQUACIES IN COMMENT SECTION

☐ Manifest Waste Description Inadequate
☐ Contamination or Leakage Detected
☐ Unexpected Exposure Rates Detected
☑ No Violations Detected on this Load
☐ Bracing Inadequate
☐ Labels, Markings, etc. Inadequate
☐ Container Integrity Inadequate
☐ Other

DESCRIBE THE EXTENT OF ANY VIOLATION CHECKED ABOVE AND THE REMEDIAL ACTION TAKEN:

☐ CHECK HERE IF A SUPPLEMENTAL REPORT IS ATTACHED.

BURIAL DATA

CONTAINER SEPARATION ☐,☐,☐

(Code all that apply to this load.)
CODES: Bin and (SNM) ___ 1; 4Ft. waste (SNM) ___ 2;
10Ft. between upright containers (Cases) ___ 3;
10Ft. soil (Containing agent 1% by volume) ___ 4;
Other ___ 5; No requirement ___ 6;

INDICATE MINIMUM BURIAL DEPTH FOR EACH WASTE CATEGORY BURIED FROM THIS MANIFEST				
WASTE CATEGORY	HIGH R/hr.	CLASS A	CLASS B	CLASS C
DEPTH IN FEET		8		

Date Received 6-30-87
Date Disposed 7-2-87
Trench No. 14
This material meets licensed limits.
This material was disposed of in accordance with license.
AUTHORIZED INITIALS: [illegible]

US ECOLOGY INVOICE #
US ECOLOGY CUSTOMER # (Must agree with Agent named in Block 2)
US ECOLOGY INVOICE DATE MO DY YR
DISCREPANCY CODE(S): ☐☐,☐☐,☐☐,☐☐,☐☐

BATES #

CONSIGNEE ORIGINAL COPY

(MUST ACCOMPANY WASTE IN TRANSIT)

GENERATOR NO: [illegible]

GENERATOR NAME: MET PATH INC.

AGENT/BROKER: THE NDL ORGANIZATION, INC.

US ECOLOGY, INC.

CONTINUATION SHEET

REV. 10/85C

9413286-1128

This form is designed for mechanically printed data only. No handwritten data will be accepted. Each container section must be separated from any previous container data by a horizontal line across the entire page. Minimum pitch is 15 characters per inch.

MANIFEST # 87685

PAGE 2 OF 2

(9) Item No.	(10) Container Type	(11) Container Volume (Cu. Ft.)	(12) Container Weight (pounds)	(13) Physical Form	(14) Waste Description (See Note #1)	(15) Solidification or Absorbent Media (See Note #2)	(16) Chemical Form/ Chelating Agent (10CFR20.311)	Check Below if < 0.1% Chelating Agent by Weight	(17) Radionuclide (10CFR20.311)	(18) Activity X ☐ Curies ☐ Millicuries (10CFR20.311)	(19) D.O.T. Sub-Type (A1, A2, LSA, etc.)	(22) Special Nuclear Material (Grams)	(21) Source Material (Kilograms)	(22) Waste Form Class 10CFR 61.55	(23) Stability Class (See Note #3) 10CFR 61.56	Radiation Levels mR/HR (24) Disposal Container Surface	(25) Reserved for US Ecology Use Only	(26) Disposal Container At 1 Meter	(27) Transport Index	(28) Fissile Class	(29) D.O.T. Label 49CFR173.444
33	DRUM	7.50	172	LIQUID	13	99	BROTH,WATER	X	C-14	1.000000	A2	0.000000	0.000	A	U	0.02		0.02			White I
																					Radioactive —
98	DRUM	4.81	86	SOLID	10	99	90%WATER,10%TCA	X	H-3	6.000000	A2	0.000000	0.000	A	U	0.02		0.02	—	—	White I
																					Radioactive —
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2		11.31	258	(30) PAGE TOTALS						7.000000		0.000000	0.000								

NOTE #1 - Waste Description Codes

2. Dry Solid
3. Solidified Liquid
4. Biological (Not Animal Carcasses)
7. Filter Media
8. Dewatered Resins
9. Solidified Resins
10. Absorbed Aqueous Liquid
11. Absorbed Organic Liquid
12. Scintillation (or organic) Liquid In Vials In Absorbent
13. Aqueous Liquid In Vials In Absorbent
14. Animal Carcasses In Absorbent
*99. Other

*ITEM MUST INCLUDE A WRITTEN AND SIGNED EXPLANATION ATTACHED TO THIS MANIFEST.

NOTE #2 - Solidified or Absorbent Media Codes

2. Speed-Dry
3. Celatom (MP-78)
4. Floor Dry/Super Fine
5. Hi Dri
6. Floroo or Floroo X
7. Instant-Dri
8. Safe-T-Sorb
9. Oil-Dri (Safe n Dri)
10. Zandite, Grades 2, 3, 4
11. Dow Media
12. Cement
13. Asphalt
14. Delaware Custom Media
15. Envirostone
16. Krotite
*99. Other

NOTE #3 - NRC Stability Class Code

S - Stable
U - Unstable

CONSIGNEE ORIGINAL COPY
(MUST ACCOMPANY WASTE IN TRANSIT)

ATTACHMENT II - 4e

[redacted]

WA 8967
6·25·87

the NDL organization, inc.

015723

post office box 791
peekskill, new york 10566
(914) 737-7330

June 25, 1987

9413286.1129

Re: Shipment No. 87-8W2

1. Use of Code 99 in Column 15 on any manifest in this shipment means that the absorbent used is RAD-LITE brand Vermiculite approved by letter dated March 24, 1983 (attached), or Chemsil 3030 brand absorbent.

2. The following abbreviations are used on manifests of this shipment:

   RIA = Radioimmunoassay
   TCA = Tri-Chloroacetic Acid
   DHA = Dihydroalprenolol

Alan Jones

Alan Jones, General Manager

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Attachment 41-1

RHB [illegible] 4e

JHD [illegible]

[redacted]

WA8967

5-28-87

UNUSUAL OCCURRENCE REPORT

RICHLAND FACILITY

Reference No. 87-34

TYPE OF OCCURRENCE MATERIAL NOT ACCEPTABLE PER LICENSE

A. CUSTOMER US ECOLOGY INC (BROKER) DATE 05/28/87

ADDRESS PO BOX 335 SHIPMENT NO. SB1092

SHEFFIELD IL 61361 MANIFEST NO. VARIOUS

CARRIER US ECOLOGY

GENERATOR NO. ILD 04-506-3450 BATES NO. 15649

CONTACT ANDY ARMBRUST PHONE NO. (800) 626-5334

9413286.1130

B. TYPE CONTAINER(S) 55 GALLON DRUM

ISOTOPE(S) AND ACTIVITY: H-3 717.915 MCI IODINES 38.016 MCI SNM N/A

OTHER ISOTOPES OF CONCERN SR-90 30.00 MCI, RA-226 20.00 MCI

SURVEY RESULTS: RADIATION LEVEL N/A CONTAMINATION LEVEL N/A

C. DESCRIPTION OF OCCURRENCE: 1 DRUM FROM MAYO CLINIC (SR-90 > CLASS A) AND 7 DRUMS FROM METROPOLITAN MEDICAL CENTER (SCINTILLATION VIALS) UNACCEPTABLE FOR DISPOSAL

D. CORRECTIVE ACTION TAKEN: DRUMS WERE REMOVED FROM SHIPMENT AND RETURNED TO GENERATOR

E. STATE ACTION TAKEN: ____ TELEPHONE NOTIFICATION ____ WARNING LETTER

____ SUSPENSION X NONE

F. CUSTOMER RESPONSE:

G. DISCREPANCY CODES: 09, 99

CHRONOLOGY REQUIRED: YES ____ NO X

CC: MARKETING YES X NO ____ FRC&SO INITIALS

____ MAIL INFORMATION TO CRC & SO

FRC&SO INITIALS

ATTACHMENT III

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CHRISTINE BEATTY RINIKER
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

November 13, 1987

Mr. Thomas S. Baer, President
US Ecology Nuclear
9200 Shelbyville Road, Suite 300
P.O. Box 7246
Louisville, Kentucky 40207

Re: Acceptance of Lead Containing Wastes at US Ecology, Richland

Dear Mr. Baer:

The past two years have seen much interest and frustration expressed by low level waste generators, waste management facilities, and involved regulatory agencies pertaining to the disposal of commercially generated mixed waste. In fact, US Ecology's Richland site is prohibited from receiving mixed waste due to loss of interim status in November of 1985. In addition, it is our understanding that the Richland site does not presently accept low level wastes which include lead actively in use as shielding.

The purpose of this letter is to delineate our continuing concern over the disposal of uncontaminated lead in use as shielding, and to reiterate that, until this concern has been adequately addressed, such materials are not acceptable for disposal within Washington. This position stems from the simple fact that the environment does not distinguish between lead which may emanate from a shielded waste shipment and that originating from other lead bearing containers which are more clearly interpreted as regulated under the RCRA/state hazardous waste program. We view this inequity as one which should prompt detailed hazard assessment, and which will likely result in regulatory revision. We consequently intend to pursue this issue with the Environmental Protection Agency, the Nuclear Regulatory Commission, and with US Ecology.

We are also taking this opportunity to solicit additional information from you regarding the management of lead, and would appreciate your providing us the following:

1. A listing of the different types of lead that have been, or are disposed at the Richland site. Please include both known and estimated volumes.

2. A discussion of the different packaging requirements under RCRA, DOT, NRC, and DSHS regulations, including US Ecology's view of any possible inconsistencies or incompatibility between them.

3. Identification and discussion of any alternative packaging methods which generators could follow to improve lead containment, e.g., special encapsulation requirements such as the use of high integrity containers.

4. If current packaging methods are, in your opinion, questionable, or are not feasible for all types of lead, please provide an analysis of special waste management practices that could be implemented at the US Ecology site to provide better overall containment. Some of these may include: waste segregation, design features such as membrane liners, or complexing agents which could limit lead mobility at the molecular or particulate level.

5. We would also appreciate your advising us of any knowledge you have of efforts aimed at lead use minimization employed by either US Ecology, low level waste brokers, or generators.

Your help in this endeavor is appreciated. If you need additional information regarding the state's position or our request for additional information please contact Mr. Timothy L. Nord of my staff at (206) 459-6138.

Sincerely,

Roger Stanley

Roger F. Stanley
Hanford Project Manager

cc: Greg Sorlie
John Littler
Terry Husseman
Timothy L. Nord
Terry Strong, DSHS
Ken Feigner, USEPA
Barry Bede, US Ecology
Curt Eschels, Office of the Governor
USEPB-01

US Ecology, Inc.
9200 Shelbyville Road, Suite 526
P.O. Box 7246
Louisville, Kentucky 40207
502 426-7160

WA8960 7
8-22-85 6a

USEcology

August 22, 1985

Mr. Robert Stamnes
RCRA Permits Section
U. S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Mail Stop 533
Seattle, Washington 98101

Dear Mr. Stamnes:

As discussed in our letter to you dated July 9, 1985, US Ecology is in the process of installing an integrated groundwater monitoring system at our Richland, Washington Low-Level Radioactive Waste Site to comply with appropriate state and federal regulatory requirements. Included with that letter for your review and comment was the drawing showing the location of the proposed wells and a specification outlining the method of installation. Enclosed with this letter is the same drawing showing the proposed location for the complete set of wells, although it is our intention to install only five wells (No. 3, 5, 8, 10 and 13) initially. This immediate installation will allow better characterization of subsurface conditions at the facility prior to installation of the balance of the system.

The five wells to be installed now will be drilled using a cable tool rig. Four of the wells will be constructed of mild steel casing with a 304 stainless steel screen (wells 3, 5, 8, 13), and one (well 10) will be constructed of flush-threaded PVC casing with a 304 stainless steel screen. The PVC well will be constructed within a ten-inch borehole and will have a sand pack extending five feet above the screen and a 100-foot thick granular bentonite seal. The remaining annular space will be filled with a cement/bentonite grout. All the wells will be fitted with lockable caps. In order to obtain the required data on an expedited basis, we will begin drilling next week.

Should you have any questions concerning this plan, please do not hesitate to call on me.

Sincerely,

S. V. Wright, Jr.
Vice President

SVW:njc
Encl.

File

[redacted] 6a

WA 8916 7

RECORD OF COMMUNICATION

☒ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE

☐ OTHER (SPECIFY) 7.30.85

(Record of item checked above)

TO: U.S. Ecology Hanford, Wash. File

FROM: Bob Stamnes

DATE 7/30-31/85

TIME

SUBJECT EPA Review of U.S. Ecology Submittal of GW Monitoring Plan

SUMMARY OF COMMUNICATION

Mr. Sid Wright U.S Ecology ~~was~~ requested any comments EPA had on the proposed GW monitoring system design submitted by U.S. Ecology.

I informed Sid that EPA had not had (hydrogeologist) anyone to review it. The letter did not request our comments. (The letter is with urgent Please for compliance effort).

I also informed Sid that a complete review would not be possible without site characterization (hydrogeologically) information. ~~It~~ I said our position has been that we do not review GW system design until site has been characterized.

Sid said the Submittal was for Compliance with 264 and 265. Sid said he would send site characterization information for EPA review.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

Initially Sid said he understood one well upgradient and 3 down satisfied 265 requirements. I said site characterization was necessary first under 265 also to determine the appropriate design.

Sid said they would proceed to install the proposed GW plan w/o EPA comments.

INFORMATION COPIES TO: Hoffer, Telecon w/ Rose Stanley, Pierre

EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 5300-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

9113206.1134

US Ecology, Inc.
P.O. Box 7246
9200 Shelbyville Road, Suite 526
Louisville, Kentucky 40207
502 426-7160

[redacted] 6a
Richland - Action
FYI

[redacted]

WA 8967
7-9-85

USEcology

July 9, 1985

Mr. Robert Stamnes
RCRA Permits Section
U. S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Mail Stop 533
Seattle, Washington 98101

Dear Mr. Stamnes:

Pursuant to discussions held at US Ecology's Low-Level Radioactive Waste Disposal Facility near Richland, Washington, on June 18, 1985, between the USEPA Region X and the Washington State Departments of Ecology and Social and Health Services and US Ecology, we are proceeding with the installation of an integrated groundwater monitoring system. The installation of a number of the proposed monitoring wells will be expedited insofar as possible by US Ecology in recognition of the requirements contained in the Resource Conservation and Recovery Act Solid and Hazardous Waste Amendments of 1984.

The groundwater monitoring plan will consist of two (2) detection monitoring systems to monitor the site for both chemical and radiological constituents. These two (2) systems, including the location of the monitoring wells, are shown on the attached drawing. Wells numbered 3, 4, 5, 6, 8 and 10 will be utilized for monitoring for RCRA constituents along with the two (2) upgradient wells No. 13 and 14. Wells numbered 1, 2, 3, 4, 7, 9, 11 and 12 will be utilized for monitoring for radiological constituents along with the two (2) upgradient wells No. 13 and 14. Since US Ecology on November 8, 1985, will cease receipt of "mixed wastes" (i.e. scintillation vials) and will file a Closure Plan for these materials, RCRA monitoring of future trenches or facilities will not be required; and thus, these areas will be monitored solely for their radioactive constituents, if any.

The wells will be constructed and installed in accordance with the attached procedure. The well casings will be six (6) inch schedule 80 flush threaded PVC above the water table with 316 stainless steel well screens from five (5) feet above the water table and a minimum of thirty-five (35) feet into the water table.

We are presently identifying and contacting contractors who have the requisite experience and equipment required to drill the proposed wells on an expedited basis. We hope to issue a contract in the near future and will inform you when it is awarded. Should you have any questions concerning this plan, please do not hesitate to contact us.

Sincerely,

S. V. Wright, Jr.
Vice President

SVW:njc

Att.

cc: Mrs. Nancy Kirner, DSHS
Ms. Lynda Brothers, WDOE
Mr. James Shaffner, NRC

US Ecology, Inc.

Low-Level Radioactive Waste Disposal Facility

Richland, Washington

Specifications for Monitor Well Installation

(a) Install monitoring wells to a depth of 358 feet;

(b) Each well is to be screened from 318 to 358 feet with a number twenty (20) slot continuous wire wrap threaded 316 stainless steel screen, six (6) inches in diameter;

(c) Each well is to be cased with six (6) inch schedule 80 polyvinyl chloride (PVC) pipe, which is flush threaded;

(d) Each well is to be equipped with steel centralizers at fifty (50) foot intervals;

(e) A protective steel surface casing will be installed around each well at the surface;

(f) Each well is to be drilled using either an air rotary or cable-tool drill;

(g) Split barrel samples shall be obtained at ten (10) foot intervals, at change of material or at request of the US Ecology project manager;

(h) A graded sand filter pack shall be placed around each well screen, and extended at least five (5) feet above the top of the screen;

(i) The sand pack shall meet the following criteria, siliceous with less than 5% calcareous material, a uniformity coefficient of 2.5 or less, less than 5% of any material passing a number 200 sieve, and no shale, mica, dirt, loam, or organic impurities of any kind;

(j) A two (2) foot granular bentonite seal is to be placed above the sand pack;

(k) The annular space from the bentonite seal to the surface is to be filled with granular bentonite to a depth of 200 feet below the surface, and the remaining annular space is to be filled with a cement and bentonite grout, consisting of 94 pounds of cement and 10 pounds of bentonite per 6 gallons of water;

(l) A drillers log indicating material, depth, and penetration rates is to be maintained, and included in the final report;

(m) A geologists log, indicating strata thickness, sample interval, sample type, sample recovery, material description (using the unified soil classification) and depth to water, will be maintained and included in the final report;

(n) A well construction diagram will be prepared for each well, indicating the depth to the bentonite seal, top and bse of the sand pack, top and base of the well screen, boring diameter, casing and screen diameter, and casing and screen material;

(o) Each well is to be developed to a sand and silt free condition using either a bailer, a surge block, no water or any other fluid is to be used; and

(p) The final report should list all procedures used, copies of the driller's logs, geologist's logs and well construction diagrams for each well and a certification by a registered geotechnical engineer or geologist that the wells were installed in accordance with the specifications.

WA 8967
6-25-84 6a

Date: June 25, 1984

To: George Hofer

From: Mike Brown

Subject: Brief Summary of RBT, US Ecology, and Mobile GW Inspections.

-Full reports to follow.

Ridgefield Brick and Tile (06-12-84)
-monitoring wells ultilized are drinking water wells.
-probably not placed to immediately detect GW contamination in either vertical and horizontal directions.
-Financial assurance not in place.
-certification of closure late and is being reviewed.
?Action: Compliance Order when report is complete.

U.S. Ecology (06-14-84)
-located on Hanford reservation.
-company does not have it's own GW monitoring system but utilizes DOE monitoring well system.
-wells are from 1/2 mile to 1 1/2 mile from active units.
-although GW depth is approx 300 ft, wells were probably not placed to immediately detect GW contamination.
-company states that DOE will not allow placement of wells (lease?), but this was not suppported by Battelle. There is a study going on in the area and Battelle and/or DOE requested that no wells be placed in the area. However, wells could be placed if company had asked.
-company does not monitor for the RCRA parameters.
-company does not have a sampling and analysis plan.
?Action: Compliance Order when report is complete.

Mobile (06-19-84).
-GW monitoring system not sufficient.
-Deep wells (150 ft) exists but not palced to detect immediate GW contamination. Wells sampled twice in 81-82 time frame and once in 02/84.
-WDOE had company put in 6 to 8 shallow wells (30ft). Only three of these wells have water in them to sample (two non contiguous active units).
-GW monitoring system must be able to yield water.
?Action: Compliance Order when report complete.

WA 8967 6a
6·21·84

Battelle
Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington U.S.A. 99352
Telephone (509) 376-9680
Telex 15-2874

Contractor's Findings do not
necessarily represent EPA's Final Determinations

June 21, 1984

Michael Brown
US Environmental Protection Agency Region X
1200 Sixth Avenue
Seattle, WA 98101

Dear Mike:

Enclosed is a draft copy of the sampling review of U.S. Ecology. In general, I was disappointed with the effort put into monitoring by U.S. Ecology. They seem to be willing to sit back and let someone else do a job that fits their needs in name only.

Some effort needs to be placed into properly designing a monitoring system for the site. A great deal is known about the hydrology of the Hanford Site that could be directed at the design of an excellent monitoring system.

Sincerely,

Dave

D. A. Myers
Senior Research Scientist
Geophysical Fluid Dynamics Section
GEOSCIENCES RESEARCH AND ENGINEERING DEPARTMENT

DAM:pd

cc: D. R. Elle - US DOE
P. A. Eddy - PNL
C. Stotler - BCL

- Proper shipping name YES NO

- Hazard Class YES NO

- Identification number YES NO

f. Total quantity of each hazardous waste by units of weight or volume and type and number of containers placed aboard transport vehicle. YES NO

4. Does the manifest contain the certification attesting to proper classification, description, packaging, labeling, marking and condition in accordance with DOT and EPA regulations? YES NO

5. Does the manifest contain an adequate number of copies to provide one copy for:

a. Generator's records YES NO

b. Records of each transporter YES NO

c. TSD facility owner or operator's records YES NO

d. Signature by each transporter and return to generator YES NO

e. Signature by TSD facility and return to generator YES NO

6. Does the generator use the manifest properly by:

a. Signing the certification YES NO

b. Obtaining signature and date of acceptance from initial transporter YES NO

c. Retaining one copy of the transporter's signed manifest for 3 years or until receipt of a signed copy from disposal facility YES NO

d. Giving transporter the remaining copies of the manifest YES NO

7. Does the generator contact the transporter and/or the designated TSD facility to determine the shipment status in the event that a signed copy from the designated facility has not been received within 35 days? YES NO

8. Does the generator submit an Exception Report to the U.S. EPA in the event that a signed copy of the manifest has not been received from the designated TSD facility within 45 days? YES NO

9. The Manifest Exception Report must include

   a. A legible copy of the manifest and

   b. A letter of explanation describing efforts and results of status investigation.

********** TSD FACILITIES SKIP TO MODULE V **********

D. Does generator operate a specific area on-site for container handling or storage? YES NO

1. Does generator comply with the requirements set forth in governing on-site waste accumulation: YES NO

   a. Labeling and marking YES NO

   b. Dating YES NO

   c. Inspections (weekly for containers) YES NO

2. Are incompatible wastes segregated? YES NO

3. What quantities of HW are stored? _____

4. What is the longest period that it has been stored? _____

5. Were there any hazardous wastes stored on site at the time of inspection? (90 day storage allowance is allowed only if waste is stored in accordance with §262.34; i.e. must be stored in containers or tanks. Thus need to make note if storing in waste pile, etc.) YES NO

   a. If yes, do they appear properly packaged (if in containers) or, if in tanks, are the tanks secure? YES NO

   b. If not properly packaged or in secure tanks, please explain. YES NO

   c. Are containers clearly marked and labeled? YES NO

   d. Do any containers appear to be leaking? YES NO

   e. If yes, approximately how many? _____

WAD 06-004-8360
~~WA 789 000 8967~~

U.S. Ecology Inc., P.O.Box 638, Richland, WA 99352

RCRA GROUNDWATER QA/QC COMPLIANCE MONITORING CHECKLIST
(Revision 04-10-84)

Purpose: The purpose of this checklist is to assist in the assessment of the quality of the Ground-Water Monitoring System required by the Interim Status ground water regulations (40 CFR 265 Subpart F) for facilities within Region 10. Regional contact Michael Brown (206) 442-2852; FTS 399-2852.

Components:	Date Received	Date Completed
EXECUTIVE SUMMARY		
I. MONITORING SYSTEM		
II. SAMPLING TECHNIQUE		
III. DATA ANALYSIS		
A. Duplicate Samples		
B. Other		

EXECUTIVE SUMMARY:

Resource Documents:

Summary:

Contractors findings do not necessarily represent EPA's final determinations.

I. GROUNDWATER MONITORING SYSTEM (Section to be completed before site visit)

Resource Documents: Hanford Groundwater Monitoring Plan

Summary:

It is apparent that US Ecology has attempted to "piggy-back" all of their monitoring activities onto an existing monitoring program applicable for the Hanford Reservation. While the larger Dept of Energy Program is appropriate for the larger site it is not well tuned for the specific US Ecology operation. The wells are too far from the sources of potential contaminati to rapidly detect any excursion of contaminants. There is limited evidence that U.S. Ecology even has the required documentation on site. The ground water monitoring system for this disposal site needs to be drastically upgraded to even approach compliance. The placement of new wells, appropriate for the monitoring of this site should be coordinated with the USDOE and their contractors to assure proper placement for compliance monitoring.

A. Identification of Hazardous Waste and Regulated Units

1. What HW are being land treated at this facility?
2. What ground-water regulated process units are utilized at this facility?
3. How long have these HW been put into units?
4. What volume of HW and other liquids have been put into the regulated unit?
5. What is the chemical character of the materials being placed in the regulated unit?
6. If tests have been run, is a copy of the results available?
7. How long have these wastes been deposited in the unit?
8. Are any closed fill areas at or near the regulated units?
9. Are there ponds or lagoons within the regulated unit?
10. If yes, are they metered?
11. Are there any groundwater chemical analyses available?

Comments:

1. These are scintillation vials containing Xylene, Toulene or Benzene as the carrier fluid.
2. Trench burial of drums and containers
3. Since 1965
4. ?
5. Mostly low level waste, but the scintillation vials are present
6. Only random drums are opened, and then only at the request of the State of Washington
7. 1965
8. Yes, the current open trench is #9
9. No, No "liquid wastes may be disposed"
10. N/A
11. Yes, but not for appropriate containments

B. Regional Hydrogeological Information

1. Has a geologic/hydrologic study been done by a qualified professional? Yes
2. Is a regional map of the site available? Yes
3. Is a local map of the site available? Yes
4. Are there any significant topographic features? No
5. Has the geology of the site been mapped? Yes
6. Is the geologic map available? Yes
7. What type of formation underlies the region? ~~Hanford fm~~, Ringold, Col Riv Basa
8. Is formation consolidated, unconsolidated, fractured? uncons. sands & gravels
9. Is formation heterogeneous enough to cause a possible differentiation in pollutant flow? Yes
10. Are any streams, rivers, lakes or wetlands near the facility? Distance? Direction? Col. River ~ 12 mi east
11. Is there more than one aquifer beneath the site? Yes
    Are they hydraulically connected? Yes.

Comments:

The Hanford Site geology is very well known. Groundwater studies have been carried out for 20+ years. Extensive research has gone into this characterization. The efforts, however, have been directed at the specific US Ecology Site. As far as is known US Ecology has done none of the studies but has relied totally on the Hanford, USDOE, programs.

C. Site Specific Hydrogeological Information?

1. Is there a site specific geohydrologic map available? Not for the 100 area of US Ecology
   What is the date of issue?
   Are any recent (post map date) changes evident?
2. Are local discharging wells noted? Distance? Direction? No / none present
3. Does pumping of surrounding wells change or reverse the direction of the hydraulic gradient? No N/A
   What is the period or season of pumping? N/A
4. Are potentiometric maps available? Yes - but not at US Ecology
   Is groundwater flow direction noted? Yes
   Are the contours logical based on other maps? Yes
   Is the facility along with the HW units plotted (Scale)? No
   Are any seeps, springs, etc., shown near the facility? N/A
   Are monitoring wells plotted? Yes
   Is site potentiometric surface plotted? Yes
   Is the indicated potentiometric surface compatible with regional hydrology? Yes
   Are site flow lines indicated? Yes
   What are the contour intervals? 10-20 ft
   Are static water elevations shown? Yes
5. Does the facility affect the groundwater surface? No

Comments:

All of the above information is available from the US DOE not US Ecology. US Ecology's program is sadly lacking in the required information.

D. Monitoring Well Locations.

1. Are logs of all wells and borings available from either onsite or offsite? Yes, from USDOE
2. Are the monitoring wells completed in the same stratum as nearby water supply wells? If no, please explain. Yes
   Are any types of geophysical logs available? Yes - four suite
   Were any discrete formation samples taken? Yes
   How were these samples taken? drive core barrel
3. Are any physical tests of aquifer materials available? No
4. Have the elevations of the wells been surveyed to sufficient accuracy to determine gradient? Yes
5. Is there sufficient distance between wells to establish a gradient on the potentiometric surface? Yes - too much for monitor purposes
6. Do the regulated units create a ground-water mound? No
7. Is the upgradient well(s) paced in a position to represent a background condition. Yes
8. Does intermittent flow to the disposal site affect the ground-water mound? N/A
9. Do the downgradient wells monitor the mounding at the water surface? N/A
10. Are the ground water monitoring wells placed in a position such they can immediately detect any ground-water contamination from the regulated unit? NO
11. Does the master map clearly show the monitoring wells and their assigned identification numbers? NO (U.S. Ecology) USDOE maps yes

Comments:

(7) there are no nearby pumping wells, although the logs of the nearest (~ 12 miles away) are available.

(10) The monitoring wells are a significant distance from the facility, up to 1.5 miles. Immediate detection of a spill is impossible. It should be noted that immediate detection using groundwater samples could not be accomplished in any case as the water table lies about 300 ft below the site. Early detection would require wells located near the facility boundary

(11) Maps provided show well locations but no numbers.

E. Well Completion

1. Are the wells constructed of nonreactive materials? See below
   Casings? Screens? Gravel pack materials?
   Have any glues or solvents been used?
2. Have the wells been sealed to prevent downward migration of contaminants? Bentonite? Cement? Other? How? No
3. Will these contact the water being sampled? N/A
4. Are the wells capped and locked to prevent vandalism? Yes
   If no, what security measures taken?
5. Are the wells protected against vehicular damage? No, but lean-casing provide protection
6. Are the wells completed in the first water bearing zone? Yes
7. Is this the regional aquifer? Yes
8. Is this a perched aquifer or zone? N/A
9. Are the wells screened in water bearing materials? Perforated
   What type of screen was used?
   Size of openings? ~ 3/8 x 3"
10. Does the screen extend above the water surface so as to detect "floating" contaminants or account for fluctuating water levels? open area does
11. Are the wells gravel or sand packed around the screen? No
    What materials were used in the pack?
    What was the source of those materials?
12. Are the wells screened at the correct level? —
13. What was the method of drilling? Auger? Mud Rotary? Air Rotary? Reverse Rotar? Cable Tool? Jetting? Other? Cable tool
14. Was the equipment cleaned prior to drilling? How? ? drilled in 1958-1960
15. Were any additives, including non-formation water, used during or after drilling? Yes water
16. What precautions were taken to prevent cross-contamination during drilling? None
17. Have the wells been developed? By what method? See below
    Was any non-formation fluid used for jetting or surging?

Comments:

1. generally - mild steel casings, perforated or screened, natural gravel packs, no glues or solvents

17. Yes by pumping and sampling over the years

18. The wells used for this monitoring effort are maintained regularly under the Hanford program.

F. Sampling and Analysis Plan

1. Does the plan specify the procedures to be used to collect the required samples?
2. Does the plan specify the data and methods for in field collection?
3. How soon after well completion was the first sample taken?
4. How is the plan deficient?

Comments:

No S. and A. plan in evidence for US Ecology

II. SAMPLING TECHNIQUE (Section to be completed during site visit)

Resource Documents: Field observation – US Ecology does not maintain a sampling and analysis plan. All sample collection has been by and through the Hanford Groundwater Monitoring Program. A detailed plan for that program is available.

Summary:

The samples collected during our visit were not appropriate for RCRA monitoring. There was no attempt made to sample for the constituents of interest to EPA. No. UOA, or TOX, TOC samples were taken. Although the samplers are trained to collect those samples, those analyses are not required under the Hanford program.

U.S. Ecology does not provide any input into the sampling and analysis program of the Dept of Energy. This should be rectified to assure the necessary analyses are made.

A. Well Purging

1. Well correctly identified? ✓
2. Depth to water measured? Yes
3. Depth to bottom measured or available from records? ✓
4. Sounding equipment cleaned after use? N/A
5. From where in the well is the water drawn? 1st 40' at Aquifer
   Is this depth consistantly maintained? ✓
6. Volume to remove calculated? By previous determination
7. How do you determine that formation water is being sampled?
   Number of well casings evacuated?
   Stabilization of pH, eh, spec. cond. or temp.? Previous study on stabilization and temperature.
8. What method is used to purge the wells?
   If commercially available, what make and model number? SS Bailer
9. Why was this method selected?
   Has this procedure been maintained throughout the sampling program? No.
   If no, what other methods have been used? Bailing samples collected prior to 1978 - 1978 to present used pumps
10. What period of time usually elapses between purging and sampling?
11. Water collected and stored if hazardous? Non hazardous
    How is this water disposed of? To ground
12. Were the samples turbid? Which? No
    What precautions are taken to avoid cross contamination?
    Individual pumps or bailers? ✓
    Is the same cable/rope used in all wells?
    Is the cable/rope cleaned? wrapped?

Comments: Good method of sampling, there are samplers who do nothing else

B. Sampling Equipment

1. What type of equipment is used? Same as above
2. Is it commercially available? Make? Model No.?
3. Sampling equipment clean? ✓
4. Sampling equipment kept clean during use? ✓
5. Sampling equipment appropriate for contaminants? ✓
6. Sampling equipment properly cleaned in field if needed? ✓

Comments:

C. Sampling Procedures

1. Does the same person/contractor/laboratory always take the samples? Yes
2. With what materials does the sample come in contact? polyethylene, pvc ABS? SS
3. For VOA's, what is done to prevent sample aeration? N/A
4. Are sample containers appropriate for analytes? (See Appendix A)

pH, NO3 and Gamma scan only

A. Well Purging

1. Well correctly identified? ✓
2. Depth to water measured? No
3. Depth to bottom measured or available from records? ✓
4. Sounding equipment cleaned after use? N/A
5. From where in the well is the water drawn? 1st 40' of Aquifer
   Is this depth consistantly maintained? ✓
6. Volume to remove calculated? By previous determination
7. How do you determine that formation water is being sampled?
   Number of well casings evacuated?
   Stabilization of pH, eh, spec. cond. or temp.? Previous study on stabilization and temperature.
8. What method is used to purge the wells?
   If commercially available, what make and model number? SS submersible
9. Why was this method selected?
   Has this procedure been maintained throughout the sampling program? No.
   If no, what other methods have been used? Bailing, samples collected prior to ~1978 follows insp
10. What period of time usually elapses between purging and sampling? ✓
11. Water collected and stored if hazardous? Non hazardous
    How is this water disposed of? To ground
12. Were the samples turbid? Which? No
    What precautions are taken to avoid cross contamination?
    Individual pumps or bailers? ✓
    Is the same cable/rope used in all wells?
    Is the cable/rope cleaned? wrapped?

Comments: Good method of sampling, there are samplers who do nothing else

B. Sampling Equipment

1. What type of equipment is used? Same as above
2. Is it commercially available? Make? Model No.?
3. Sampling equipment clean? ✓
4. Sampling equipment kept clean during use? ✓
5. Sampling equipment appropriate for contaminants? ✓
6. Sampling equipment properly cleaned in field if needed? ✓

Comments:

C. Sampling Procedures

1. Does the same person/contractor/laboratory always take the samples? Yes
2. With what materials does the sample come in contact? polyethylene, PP ABS SS
3. For VOA's, what is done to prevent sample aeration? N/A
4. Are sample containers appropriate for analytes? (See Appendix A)

^3H, NO_3 and Gamma scan only

F. Field QA/QC

1. Field QA/QC samples prepared?
   - Duplicates ✓ but not necessarily these wells, it's random over the Hanford project
   - Samples preservative blank No
   - Spikes No
   - Transport/transfer blanks No
2. Bottles prerinsed with sample water (except pesticides/herbicides)? Yes
3. Correct preservatives used (see Appendix A)? N/A
4. Sample holding times not exceeded (see Appendix A)? ✓

Comments: These wells are a very small portion of the Hanford program, QA procedures are applied over the total effort.

G. Sample Labels

1. Integrity? ✓
2. Required information?
   - Unique sample number ✓
   - Name of collector ✓
   - Date and time of collection ✓
   - Place of collection ✓
3. Optional information?
   - Sample type ✓
   - Preservative used
   - Analyses required ✓
   - Field information

Comments: Pre printed labels for each well, filled out in field by samplers

F. Sample Seals

1. Integrity? N/A
2. Required information?
   - Unique sample number (same as label)
   - Name of collector
   - Date and time of sampling

Comments:

I. Field Log Book None

1. Bound?
2. Entries?
   - Purpose of sampling
   - Unique sample number
   - Date and time of collection
   - Names of all persons present
   - Location of sample point (description and/or sketch)
   - Description of sampling methodology
   - Number and volume of sample taken
   - Suspected composition of sample
   - Name and address of field contact
   - Sample distribution and transportation
   - Field observations
   - Field measurements
   - Signature of sampler

Comments:

J. Chain of Custody Record

1. Required information?
   - Sample number ✓
   - Signature of sampler ✓
   - Date and time of collection ✓
   - Place and address of collection
   - Type of sample ✓
2. Number and type of containers
3. Signature of custodian ND
4. Inclusive dates of possession
5. Signature of receiver
6. Description of shipping container

Comments: Samples are delivered directly to the lab at the end of each sampling day. The lab signs off on the field collection data sheet

J. Sample Analysis Request

1. Field information?
   - Name and phone number of collector
   - Date and time of collection
   - Collector's sample number
   - Field information
   - Analysis requested
   - Special handling or storage

Routine request to lab

2. Laboratory information?
   - Name of person receiving sample
   - Date of sample receipt
   - Analysis required

Comments:

K. Sample Shipping

1. Samples packed to prevent breakage? Yes
2. Chain of custody record enclosed? Hand carried
3. Sample analysis request enclosed? No
4. Shipping container sealed? No

Comments:

L. Sample Receipt

1. Condition of samples checked? N/A
   - Containers intact
   - Preservative present
   - Seal intact
2. Sample information checked?
3. Chain of custody record present?
4. Sample and seal information match chain of custody record?
5. Chain of custody record signed?
6. Request for analysis present?
7. Receipt of sample entered in laboratory log book?
8. Laboratory sample number assigned?
9. Sample stored in secure area?

Comments:

M. Lab QA/QC

1. Lab quality assurance plan available? Yes
2. Documentation of EPA acceptable methods? ___
3. Instrument calibration records available? Yes
4. Copies of QA/QC control charts available? — ?
5. Method accuracy and precision calculated and reported? Yes

Comments

- Sampled well # 33-56 down gradient well

  Temp 21.5°C ; pH = 6.9 ; SC = 440 ; Time 11:37 ; ~ 1 mile off site

- Sampled well # 34-51 down gradient

  Temp 21.1 ; pH = 7.1 ; SC = 425 ; Time: [redacted] 12:28

- Transfer Sample Taken right before 34-51 samples. C-Free water was poured through sampling tube 12:15

- went back to U.S. Ecology office for discussion
  - Dennis Bowhay said that he would evaluate well placement when EPA submits report.
  - Don Ellis stated that he wanted a copy of EPA's report OK

- left U.S. Ecology ~13:00

- cleared samples for radioactivity by 13:45 at 300 bael

- U.S. Ecology said that Region I had already requested Part B Application

9/13/96 IEG

WA 89167 6a
6-14-84

To: File U.S. Ecology

From: Michael Brown RCRA Compliance & Permits

Subject: RCRA GW Inspection on 06-14-84 Trip Report

- Met at WDOE Central office on 06-13-84 (1:30 → 2:30 PM) with Dennis Bamby & Dan Reel to strategize for the inspection next day. Received copy of Dennis's 04-30-84 inspection checklist.

06-14-84

- 7:00 Breakfast with Paul Eddy & Dave Myers
  Paul Eddy (Battelle Northwest Lab) is manager for Hanford's GW Monitoring Program. ~2,100 wells on site ~50 sampled routinely
  parameter checked H^3, NO_3, gross α, gross β, & gamma scan Cs St
- 8:00 went to O&M to get pH meters + sp Cd Meters
- 8:30 Geoscience building to get trunk + well logs
- 9:15 left for U.S. Ecology { U.S. Ecology P.O. Box 638 Richland, WA }
- 9:50 - arrived U.S. Ecology & introductions
  { Steve Carpenter U.S. Ecology; Facility Manager
  { Elmer ~~Ed~~ Martinez U.S. Ecology Corporate, Deputy Radiation Safety Officer
  Mike Brown, Dave Myers; Paul Eddy
  - explain purpose of GW monitoring + specific wells
- 10:15 - left to sample MW # 30-61 Upgradient ~3/4 mile from active unit
  Temp 22.2°C; pH = 6.9; SC = 425; Time 10:21
  Mike Brown, Dave Myers, + Elmer Martinez + two Hanford Workers
- 10:45 - came back to office to pick up WDOE
  Dennis Bamby (WDOE); Coral Sally (WDOE); Dan Elle (DOE)
  Paul Eddy (Battelle)
  Coral Sally is WDOE person in Radioactive Waste, works for Lydia Bruthes

DW 3267 1/58

SAMPLING AND SAFETY PLAN

WA 0461 6a
File 6.7.84

Project: RCRA Ground-Water QA/QC Program

Approvals: Project Coodinator Michael Brown
Supervisor
Quality Assurance Officer (x1675)
Quality Assurance Control # RQAMO 05184 SCP

Purpose: This program is an effort to determine the adequacy of the regulated community's QA/QC ground-water sampling procedures at facilities regulated by 40 CFR 265 Subpart F. The Region 10 Lab part in this effort is to identify the sampling the chemical constitutents in the ground-water. EPA plans to yisit the facilities at the time of the facilities scheduled sampling to observe their sampling techniques and to take duplicate Lab samples.

Facility: Name U.S. Ecology
Address Nordland WA
Contact York Rhodes
Phone (509) 326-7387

Sampling: Sampling collection, preservation, and shipment will be conducted according to SW-864 Test Methods for Evaluating Solid Waste.
Project ~~Tech~~ Code (x1678 or (x1599) AWD-013A
Acc # (x1678) AGDD3A
Sampling Date 06-07-84
Number Wells 2
Chemical Parameters ~~TOC~~ Volatiles
~~TOX~~ Base Neutrals
PH, SC. Drawing water metals
Lab Containers
Lab Numbers (x0370) 24675 → 24099

Chain of Custody: Labels, seals, log book, and chain of custody records will be done in accordance to SW-846 Test Methods for Evaluating Solid Waste.

Analytical Methods: Test methods For Evaluating Solid Waste (SW-846) will be ultilized. AII laboratory QC data will be maintained at the EPA Lab and made available upon request.

Sampling Technique: To assess QC of the samples to be collected, water control blanks will be prepared and provided by Region 10 Lab. This includes one transport blank which will be carried throughout the survey unopened and a transfer blank which will be transferred to new sample containers via the sampling collection device during the survey. The quality control blanks will be analyzed along with the field samples by the Region 10 Lab.

Data: Data will be reviewed by Lab for validity and provided to Mike Brown for summarizing and distribution. Data will not be entered into STORET.

Safety: Investigators will adhere to all applicaple Region 10 Safty regulations.

Fire Station: 911
Ambulance: 911
Hospital: Rodlee 880 Swift Blvd 946-4611

911396-1601

9413286.1161

*** Lab Analysis Report ***

==> Transaction #: 1 1/1534

Work Group: (65) Acid Extract Scan

Instrument: (INCOS-51) GC/MS INCOS-5100 Capillary Column

Method: (EPA-625) 8/84,Acids,Pesticides, GC/MS

Chemist: (JSB) Blazevich, Joe Hours Worked:

Project: AWD- 136 (U.S. ECOLOGY) (HANFORD) ~~WA 789 000 8967~~ WA0 06 004 8360 Prg File#: AGDD3A

Prj Off: Brown, Michael Analysis Due: 84/10/17 Revised Due:

*** Sample Records in Transaction ***

Parameter Form File: AC13H Title: Organics -- Acid Extractables

Seq#	Sample #	Date/Time	Description
01	8424[illegible]	84/10/4 1 46	WELL 826-51A
02	8424079	84/10/4 1258	GW MONITORING WELL/RCRA COMPLIANCE
03	8424[illegible]	84/10/4 1137	GW MONITORING WELL

Record Type: TRNTBL Date Verified: 84/10/12 By: WOODS,BRUCE A.
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 19-OCT-84 23:16:53 Status: V Batch: A

9413286.1162

Section #: 10101524 (65) Acid Extract Scan
Project Code : ANO-0134 U.S. ECOLOGY (HANFORD) PE # : AGDD3A

Sample Id:	84 24076	84 24079	84 24082
Matrix:	Water-Tot	Water-Tot	Water-Tot
Units:	ug/l	ug/l	ug/l
% Slds:			
QA Code:			
Date Extract:	840716	840716	840716
Date Analyzd:	840911	840911	840911
1 Phenol, 2,4,6-trichloro-	.30	.30	.30
2 M-cresol, p-chloro-	.20	.20	.20
3 Phenol, 2-chloro-	.10	.10	.10
4 Phenol, 2,4-dichloro-	.30	.30	.30
5 Phenol, 2,4-dimethyl-	.20	.20	.20
6 Phenol, 2-nitro-	.30	.30	.30
7 Phenol, 4-nitro-	10	10	10
8 Phenol, 2,4-dinitro-	20	20	20
9 O-cresol, 4,6-dinitro-	.20	20	20
10 Phenol, pentachloro-	10	10	10
11 Phenol	0.10	0.10	0.10
12 Benzoic acid (non P	10	10	10
13 Phenol,2-methyl- (non P			
14 Phenol,4-methyl- (non P			
15 Phenol,245-trichloro-(nonP			

9413286.1163

Transaction #: 08010747 (51) VOA - PP Scan (GC/MS)
Proj Code : AWD-013A U.S. ECOLOGY (HANFORD) PE # : AGDD3A

	Sample Id:	84 24077	84 24080	84 24083	84 24086
	Matrix:	Water-Tot	Water-Tot	Water-Tot	Water-Tot
	Units:	ug/l	ug/l	ug/l	ug/l
	% Slds:				
	QA Code:				
	Date Extract:				
	Date Analyzd:	840628	840628	840712	840712
1	Acrolein	10U	10U	10U	10U
2	Acrylonitrile	5U	5U	5U	5U
3	Benzene	2U	2U	2U	2U
4	Carbon Tetrachloride	2U	2U	2U	2U
5	Benzene, chloro-	2U	2U	2U	2U
6	Ethane, 1,2-dichloro-	2U	2U	2U	2U
7	Ethane, 1,1,1-trichloro-	2U	2U	2U	2U
8	Ethane, 1,1-dichloro-	2U	2U	2U	2U
9	Ethane,1,1,2-trichloro-	2U	2U	2U	2U
10	Ethane,1,1,2,2-tetrachloro	2U	2U	2U	2U
11	Ethane, chloro-	2U	2U	2U	2U
12	Ether, chloroethyl vinyl	2U	2U	2U	2U
13	Chloroform	2U	2U	2U	2U
14	Ethylene, 1,1-dichloro-	2U	2U	2U	2U
15	Ethylene,1,2-trans-dichlor	2U	2U	2U	2U
16	Propane, 1,2-dichloro-	2U	2U	2U	2U
17	Propylene, 1,3-dichloro-	2U	2U	2U	2U
18	Benzene, ethyl-	2U	2U	2U	2U
19	Methane, dichloro-	2U	2U	2U	2U
20	Methane, chloro-	2U	2U	2U	2U
21	Methane, bromo-	2U	2U	2U	2U
22	Methane, tribromo-	2U	2U	2U	2U
23	Methane, dichlorobromo-	2U	2U	2U	2U
24	Methane, trichlorofluoro-	2U	2U	2U	2U
25	Methane, dichlorodifluoro-	2U	2U	2U	2U
26	Dibromochloromethane	2U	2U	2U	2U
27	Tetrachloroethylene	2U	2U	2U	2U
28	Toluene	2U	2U	2U	2U
29	Ethylene, trichloro-	2U	2U	2U	2U
30	Vinyl chloride	2U	2U	2U	2U

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*** Lab Analysis Report ***

==> Transaction #: 08010747

Work Group: (51) VOA - PP Scan (GCMS)

Instrument: (INCOS-32) GC/MS INCOS-3200 Capillary Column

Method: (EP2-624) Purgeables, GC/MS Purge and Trap

Chemist: (SVP) Pope, Steve Hours Worked:

Project: AWD-013A U.S. ECOLOGY (HANFORD) Prg Ele#: AGDD3A

Prj Off: Brown, Michael Analysis Due: 840617 Revised Due:

*** Sample Records in Transaction ***

Parameter Form File: VOA Title: Organics - Volatile

Seq#	Sample #	Date/Time	Description
01	8424077	840614 1046	GW MONITORING WELL
02	8424080	840614 1228	GW MONITORING WELL
03	8424083	840614 1137	GW MONITORING WELL
04	8424086	840613 1215	TRANSFER BLANK

Record Type: TRNIN1 Date Verified: 84/08/15 By: WOODS,BRUCE A.
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07261448 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDC3A MIB
Par: BARIUM BA,DISS UG/L (Par# 01005 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-208.2 Barium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840713

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	50	GW MONITORING WELL	840614 (29)
2	84 24078	47	GW MONITORING WELL	840614 (29)
3	84 24081	42	GW MONITORING WELL	840614 (29)
4	84 24084	5U	TRANSFER BLANK	840613 (30)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07261444 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDE3A MIB
Par: SELENIUM SE,DISS UG/L (Par# 01145 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPA-270.2 Selenium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840706

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	1U	GW MONITORING WELL	840614 (22)
2	84 24078	1	GW MONITORING WELL	840614 (22)
3	84 24081	1	GW MONITORING WELL	840614 (22)
4	84 24084	1U	TRANSFER BLANK	840613 (23)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

9413286.1167

Transaction #: 07261442 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDD3A MIB
Par: CHROMIUM CR,DISS UG/L (Par# 01030 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-218.2 Chromium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840711

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	8	GW MONITORING WELL	840614 (27)
2	84 24078	2	GW MONITORING WELL	840614 (27)
3	84 24081	6	GW MONITORING WELL	840614 (27)
4	84 24084	1U	TRANSFER BLANK	840613 (28)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07261437 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDC3A MIB
Par: LEAD PB,DISS UG/L (Par# 01049 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPI-239.2 Lead, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840712

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	1U	GW MONITORING WELL	840614 (28)
2	84 24078	1U	GW MONITORING WELL	840614 (28)
3	84 24081	1U	GW MONITORING WELL	840614 (28)
4	84 24084	1U	TRANSFER BLANK	840613 (29)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

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*** Lab Analysis Report ***

Transaction #: 07131005 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDC3A MIB
Par: SILVER AG,DISS UG/L (Par# 01075 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-272.2 Silver, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840703

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	.1U	GW MONITORING WELL	840614 (19)
2	84 24078	.1U	GW MONITORING WELL	840614 (19)
3	84 24081	.1U	GW MONITORING WELL	840614 (19)
4	84 24084	.1U	TRANSFER BLANK	840613 (20)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07131003 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDC3A MIB
Par: MERCURY HG,DISS UG/L (Par# 71890 S)

Instrument: ACF403 AA Cold Flame (PE403)
Method: EPA-245.1 Mercury, Cold Vapor, Manual
Chemist: (MDS) Stinson, Margaret Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840702

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Ana
1	84 24075	.051U	GW MONITORING WELL	840614 (18)
2	84 24078	.051U	GW MONITORING WELL	840614 (18)
3	84 24081	.051U	GW MONITORING WELL	840614 (18)
4	84 24084	.051U	TRANSFER BLANK	840613 (19)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

9413286.1171

Transaction #: 07131002 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDD3A MIB
Par: ARSENIC AS,DISS UG/L (Par# 01000 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-206.2 Arsenic, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840702

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Ani
1	84 24075	1U	GW MONITORING WELL	840614 (18)
2	84 24078	5	GW MONITORING WELL	840614 (18)
3	84 24081	1U	GW MONITORING WELL	840614 (18)
4	84 24084	1U	TRANSFER BLANK	840613 (19)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07130959 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDE3A MI8
Par: CADMIUM CD,DISS UG/L (Par# 01025 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPA-213.2 Cadmium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840705

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	0.2U	GW MONITORING WELL	840614 (21)
2	84 24078	0.2U	GW MONITORING WELL	840614 (21)
3	84 24081	0.2U	GW MONITORING WELL	840614 (21)
4	84 24084	0.2U	TRANSFER BLANK	840613 (22)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 06201336 Seq #: 01 (10) Gen Inorg/Phys-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGD03A MIB
Par: CNDUCTVY LAB @ 25C UMHO (Par# 00095 S)

Instrument: CONDUC Conductivity Meter #XXXXXXX
Method: EP1-120.1 Conductance, Specific
Chemist: (PRD) Davis, Phil Hours Worked:
Lab Prep:( ) Unspecifed Date Preprd: Date Anlyzd: 840615

Matrix: (10) Water-Total Units: (03) umho/cm

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	400.	GW MONITORING WELL	840614 (1)
2	84 24078	425.	GW MONITORING WELL	840614 (1)
3	84 24081	419.	GW MONITORING WELL	840614 (1)
4	84 24084	3.8	TRANSFER BLANK	840613 (2)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Davis, Phil
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 06201334 Seq #: 01 (10) Gen Inorg/Phys-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) AGDD3A MIB
Par: LAB PH SU (Par# 00403 S)

Instrument: PH-ORION Orion pH Meter #XXXXXXX
Method: EP1-150.1 pH, Electrometric
Chemist: (PRC) Davis, Phil Hours Worked:
Lab Prep:( ) Unspecifed Date Preprd: Date Anlyzd: 840615

Matrix: (10) Water-Total Units: (06) Std Unts

Line	Sample #	Result	Sample Location/Description	#Days to Ani
1	84 24075	7.5	GW MONITORING WELL	840614 (1)
2	84 24078	7.8	GW MONITORING WELL	840614 (1)
3	84 24081	7.8	GW MONITORING WELL	840614 (1)
4	84 24084	6.4	TRANSFER BLANK	840613 (2)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Davis, Phil
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 30-AUG-84 08:52:42 Status: V Batch: A

*** Lab Analysis Report ***

Special Restrictors For Transaction Retrieval:

Transaction Range: 05 To 09

Record Types: 10 20

Record Status Codes: V Batch: A A A A

Project Code: AWD-013A

Work Group Code:

Sample # Range: 0 To ZZZZZZZZ

Databases to search: CUR VER

Date since record was last updated:

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RRRRRRRR      SSSSSSSS   PPPPPPPP
RRRRRRRR      SSSSSSSS   PPPPPPPP
RR      RR    SS         PP      PP
RR      RR    SS         PP      PP
RR      RR    SS         PP      PP
RR      RR    SS         PP      PP
RRRRRRRR      SSSSSS     PPPPPPPP
RRRRRRRR      SSSSSS     PPPPPPPP
RR  RR              SS   PP
RR  RR              SS   PP
RR    RR            SS   PP
RR    RR            SS   PP
RR      RR  SSSSSSSS     PP
RR      RR  SSSSSSSS     PP


BBBBBBBB      RRRRRRRR      OOOOOO     WW      WW   NN      NN
BBBBBBBB      RRRRRRRR      OOOOOO     WW      WW   NN      NN
BB      BB    RR      RR    OO  OO     WW      WW   NNNN    NN
BB      BB    RR      RR    OO  OO     WW      WW   NNNN    NN
BB      BB    RR      RR    OO  OO     WW      WW   NNNN    NN
BB      BB    RR      RR    OO  OO     WW      WW   NNNN    NN
BBBBBBBB      RRRRRRRR      OO  OO     WW  WW  WW   NN  NN  NN
BBBBBBBB      RRRRRRRR      OO  OO     WW  WW  WW   NN  NN  NN
BB      BB    RR  RR        OO  OO     WW  WW  WW   NN    NNNN
BB      BB    RR  RR        OO  OO     WW  WW  WW   NN    NNNN
BB      BB    RR    RR      OO  OO     WWWW  WWWW   NN    NNNN
BB      BB    RR    RR      OO  OO     WWWW  WWWW   NN    NNNN
BBBBBBBB      RR      RR      OOOOOO     WW      WW   NN      NN
BBBBBBBB      RR      RR      OOOOOO     WW      WW   NN      NN


RRRRRRRR      PPPPPPPP     TTTTTTTTTT          222222
RRRRRRRR      PPPPPPPP     TTTTTTTTTT          222222
RR      RR    PP      PP       TT            22    22
RR      RR    PP      PP       TT            22    22
RR      RR    PP      PP       TT      ;;;;  22    22
RR      RR    PP      PP       TT      ;;;;  22    22
RRRRRRRR      PPPPPPPP         TT      ;;;;        22
RRRRRRRR      PPPPPPPP         TT      ;;;;        22
RR  RR        PP               TT                22
RR  RR        PP               TT                22
RR    RR      PP               TT      ;;;;    22
RR    RR      PP               TT      ;;;;    22
RR      RR    PP               TT        ;;  2222222222
RR      RR    PP               TT        ;;  2222222222
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WA 8101 [redacted] 66 8-17-84 9413286.1177

17-AUG-84 EPA Region X Lab Management System
*** Lab Analysis Report ***

==> Transaction #: [illegible]747

Work Group: (VO) VOA - PP Scan (GCMS)

Instrument: (INCOS-32) GC/MS INCOS-32 Capillary Column

Method: (EPA-624) Purgeables, GC/MS Purge and Trap

Chemist: (SVP) Pope, Steve Hours Worked:

Project: AMI- 624 U.S. [illegible] (HANFORD) Prg File#: 16CD3

Prj Off: Brown, Michael Analysis Due: 840817 Revised Due:

*** 4 Sample Records in Transaction ***

Parameter Form File: VOA Title: Organics - Volatile

Seq#	Sample #	Date/Time	Description
01	8424077	84.614 1 46	GW MONITORING WELL
02	8424081	84.614 1126	GW MONITORING WELL
03	8424083	84.614 1137	GW MONITORING WELL
04	8424086	840613 1235	TRANSFER BLANK

Record Type: TRNIN1 Date Verified: 84/08/15 By: WOODS,BRUCE A.
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 17-AUG-84 21:52:19 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 0[illegible] 747 (61) VOA - PP Scan (GC/MS)
Proj Code : [illegible] U.S. GEOLOGY (HANFORD) PE # : A60D3A

Sample Id:	84 74 77	84 24787	84 24182	84 24186
Matrix:	Water-Tot	Water-Tot	Water-Tot	Water-Tot
Units:	ug/l	ug/l	ug/l	ug/l
% Slds:				
QA Code:	MW			
Date Extract:	36-61	34-51	33-54	TB
Date Analyzd:	84 626	840624	840712	840712
1 Acrolein	10U	10U	10U	10U
2 Acrylonitrile	5U	5U	5U	5U
3 Benzene	2U	2U	2U	2U
4 Carbon Tetrachloride	2U	2U	2U	2U
5 Benzene, chloro-	2U	2U	2U	2U
6 Ethane, 1,2-dichloro-	2U	2U	2U	2U
7 Ethane, 1,1,1-trichloro-	2U	2U	2U	2U
8 Ethane, 1,1-dichloro-	2U	2U	2U	2U
9 Ethane,1,1,2-trichloro-	2U	2U	2U	2U
10 Ethane,1,1,2,2-tetrachloro	2U	2U	2U	2U
11 Ethane, chloro-	2U	2U	2U	2U
12 Ether, chloroethyl vinyl	2U	2U	2U	2U
13 Chloroform	2U	2U	2U	2U
14 Ethylene, 1,1-dichloro-	2U	2U	2U	2U
15 Ethylene,1,2-trans-dichlor	2U	2U	2U	2U
16 Propane, 1,2-dichloro-	2U	2U	2U	2U
17 Propylene, 1,3-dichloro-	2U	2U	2U	2U
18 Benzene, ethyl-	2U	2U	2U	2U
19 Methane, dichloro-	2U	2U	2U	2U
20 Methane, chloro-	2U	2U	2U	2U
21 Methane, bromo-	2U	2U	2U	2U
22 Methane, tribromo-	2U	2U	2U	2U
23 Methane, dichlorobromo-	2U	2U	2U	2U
24 Methane, trichlorofluoro-	2U	2U	2U	2U
25 Methane, dichlorodifluoro-	2U	2U	2U	2U
26 Dibromochloromethane	2U	2U	2U	2U
27 Tetrachloroethylene	2U	2U	2U	2U
28 Toluene	2U	2U	2U	2U
29 Ethylene, trichloro-	2U	2U	2U	2U
30 Vinyl chloride	2U	2U	2U	2U

[redacted]

9H15286.1178

2/2

FIELD SAMPLE DATA SHEET

9413286.1179

Date Samples Received: 84 06 15 1745 (Yr Mo Dy Time)

Project Code: AGD-013A Account: AGDD3A ☒ Enforcement/Custody

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous

Coordinator: Mike Brown x2872 ☐ Data Confidential

☐ Data for Storet

Notes:

Received by: PRD

Samplers: Michael F Brown

Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY: ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							8	4	2	4	0	8	4	Hanford Ranch	8	4	0	6	1	3	1	2	1	5						GW Monitoring Well for RCRA Compliance
	X											0	8	5																
	X											0	8	6																

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
8	4	2	4	0	8	4										
				0	8	5										
				0	8	6										

Field or Office Copy — Project Officer Copy — Laboratory Copy

AGDD3A
AWD013A

VOLATILES

PROJECT: U.S. Ecology/Hanford COMPILED BY: JM Blazevich DATE: 7-25-84

LABORATORY: EPA Region X REVIEWED BY: [illegible] DATE: 7-25-84

	SAMPLE # :	24077	24080	24083	24086				
	UNITS :	ug/l →							
	LOQ :	6-28-84 →		7-2-84 →					
1.	acrolein	10 u	10u	10u	10u				
2.	acrylonitrile	5 u	5u	5u	5u				
3.	benzene	2 u	2u	2u	2u				
4.	carbon tetrachloride								
5.	chlorobenzene								
6.	1,2-dichloroethane								
7.	1,1,1-trichloroethane								
8.	1,1-dichloroethane								
9.	1,1,2-trichloroethane								
10.	1,1,2,2-tetrachloroethane								
11.	chloroethane								
12.	2-chloroethylvinyl ether								
13.	chloroform								
14.	1,1-dichloroethylene								
15.	1,2-trans-dichloroethylene								
16.	1,2-dichloropropane								
17.	1,3-dichloropropylene								
18.	ethylbenzene								
19.	methylene chloride								
20	methyl chloride								
21.	methyl bromide								
22.	bromoform	↓	↓	↓	↓				

91-328A-180

VOLATILES (Continued)

PROJECT: U.S. Ecology/Hanford COMPILED BY: JM Blazevich DATE: 7-25-84

LABORATORY: EPA Region X REVIEWED BY: [illegible] DATE: 7-25-84

	SAMPLE # :	24077	24080	24083	24086				
	UNITS :	ug/l →							
	LOQ :								
23.	dichlorobromomethane	2u	2u	2u	2u				
24.	trichlorofluoromethane	↓	↓	↓	↓				
25.	dichlorodifluoromethane								
26.	chlorodibromomethane								
27.	tetrachloroethylene								
28.	toluene								
29.	trichloroethylene								
30.	vinyl chloride								

0184

NON-PRIORITY POLLUTANT HAZARDOUS SUBSTANCES LIST COMPOUNDS

PROJECT: U.S. Ecology / Hanford COMPILED BY: JM Blazevich DATE 7-25-84

LABORATORY: EPA Region X REVIEWED BY: [signature] DATE 7-25-84

	SAMPLE # :	24077	24080	24083	24086				
	UNITS :	ug/l	→	→	→				
	LOQ :								
1.	benzoic acid								
2.	2-methylphenol								
3.	4-methylphenol								
4.	2,4,5-trichlorophenol								
5.	aniline								
6.	benzyl alcohol								
7.	4-chloroaniline								
8.	dibenzofuran								
9.	2-methyl naphthalene								
10.	2-nitroaniline								
11.	3-nitroaniline								
12.	4-nitroaniline								
13.	acetone	2u	2u	2u	2u				
14.	2-butanone	↓	↓	↓	↓				
15.	carbon disulfide								
16.	2-hexanone								
17.	4-methyl 1-2-pentanone								
18.	styrene								
19.	vinyl acetate	ND	ND	ND	ND				
20.	o-xylene	2u	2u	2u	2u				

GH3286-182

TENTATIVELY IDENTIFIED COMPOUNDS

PROJECT: U.S. Ecology / Hanford COMPILED BY: J.M. Blazevich DATE: 7-25-84

LABORATORY: EPA Region X REVIEWED BY: [illegible] DATE: 7-25-84

VOA FRACTION: SAMPLE # :	24077	24080	24085	24086				
CAS # NAME	0/2	0/3	0/11	0/1				
1. NONE	—	—	—	—				
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

*** Lab Analysis Report ***

9413286.1184

Transaction #: 07261437 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6D13A MIB
Par: LEAD PB,DISS UG/L (Par# 01049 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPA-239.2 Lead, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840712

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	1U	GW MONITORING WELL	840614 (28)
2	84 24078	1U	GW MONITORING WELL	840614 (28)
3	84 24081	1U	GW MONITORING WELL	840614 (28)
4	84 24084	1U	TRANSFER BLANK	840613 (29)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 10-AUG-84 23:19:58 Status: V Batch: A

WA 8947
8.10.84
lab

*** Lab Analysis Report ***

Transaction #: 07261442 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A60C3A MIE
Par: CHROMIUM CR,DISS UG/L (Par# 01030 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPA-218.2 Chromium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840711

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	8	GW MONITORING WELL	840614 (27)
2	84 24078	2	GW MONITORING WELL	840614 (27)
3	84 24081	6	GW MONITORING WELL	840614 (27)
4	84 24084	1U	TRANSFER BLANK	840613 (28)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 10-AUG-84 23:19:58 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07261444 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DC3A MIB
Par: SELENIUM SE,DISS UG/L (Par# 01145 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-270.2 Selenium, AA, Furnace
Chemist: (RL4) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840706

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	%Days to Anl
1	84 24075	1U	GW MONITORING WELL	840614 (22)
2	84 24078	1	GW MONITORING WELL	840614 (22)
3	84 24081	1	GW MONITORING WELL	840614 (22)
4	84 24084	1U	TRANSFER BLANK	840613 (23)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 10-AUG-84 23:19:58 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07261448 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DE3A MI8
Par: BARIUM BA,DISS UG/L (Par# 01005 S)

Instrument: AZ500 AA Zeeman Furnace (PE5000)
Method: EP1-208.2 Barium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840713

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	50	GW MONITORING WELL	840614 (29)
2	84 24078	47	GW MONITORING WELL	840614 (29)
3	84 24081	42	GW MONITORING WELL	840614 (29)
4	84 24064	5U	TRANSFER BLANK	840613 (30)

Record Type: TRNIN2 Date Verified: 84/08/08 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 10-AUG-84 23:19:58 Status: V Batch: A

[redacted]

1/2

FIELD SAMPLE DATA SHEET

PHS286.1188

Date Samples Received: 84 06 15 14 55 (Yr Mo Dy Time)

Project Code: AGD-013A Account: AGDD3A ☒ Enforcement/Custody

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous

Coordinator: Mike Brown X2852 ☐ Data Confidential

☐ Data for Storet

Notes: Diss-As, Ba, Cd, Cr, Pb, Hg, Se, Ag Received by: PRD

Cond & pH (24075, 078, 081, 084) Samplers: Michael Brown

B/N-(24076, 079, 082) VOA-(24077, 080, 083, 086)

Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER Yr	Wk	Seq	STATION NUMBER	DATE Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	075	well # 36-61	84	06	14	MNS 1346						GW monitoring well for RCRA Compliance.
	X									076											well # 36-61A pH 6.9 Sp Cond 425
	X									077											Temp 22.2°C
	X							84	24	078	well # 34-51				1228						
	X									079											
	X									080					MNS						
	X							84	24	081	well # ~~37-55~~				1437						
	X									082	35-56										
	X									083											

LAB NUMBER Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	CONDCTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	075							22.2		6.9	425				
		076							↓		↓	↓				
		077							↓		↓	↓				
84	24	078							21.1		7.1	425				
		079							↓		↓	↓				
		080							↓		↓	↓				
84	24	081							21.5		6.9	460				
		082							↓		↓	↓				
		083							↓		↓	↓				

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2/2

FIELD SAMPLE DATA SHEET

Date Samples Received: 84 06 15 1455 (Yr Mo Dy Time)

Project Code: AWD-013A Account: AGDD3A ☒ Enforcement/Custody Notes: Received by: PRD

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous Samplers: Michael F Brown

Coordinator: Mike Brown x2852 ☐ Data Confidential

☐ Data for Storet Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER Yr	Wk	Seq	STATION NUMBER	DATE Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	084	Trench Fence	84	06	13	12 15						GW Monitoring Well for RCRA Compliance
"	X									085	"	"	"	"	"						
"	X									086	"	"	"	"	"						

LAB NUMBER Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	084							Not done		Not done	not done				
		085														
		086														

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9413286.1190

REGION X LABORATORY — METAL DATA-AA-HGA 2100 (WATER) — DETERMINATION Cr-d

PROJ NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/ohart div.	mg/l	ug/liter
	24075	100	100	1				.008	8
	24078	↓	↓	↓				.002	2
	24081							.006	6
	24084							<.001	1 U

PARAMETER CODE 01030

DATE RECEIVED 6/15/84 ANALYZED 7-11-84

LOCATION U.S. Ecology/Hanford Site

SEND DATA TO Mike Brown x2852
AWD-D13A

AGDD3A
P.P.
JUL 20

METHOD AA-Zeeman

REFERENCE E.P.A.

CHEMIST'S SIGNATURE A. Rupp

REVIEWED BY

9413286.1191

REGION X LABORATORY — METAL DATA-AA-HGA 2100 (WATER) — DETERMINATION Pb-d

PROG NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/chart div.	mg/l	ug/liter
	24075	100	100	1				< 0.001	1 U
	24078	↓	↓	↓				↓	↓
	24081								
	24084								

PARAMETER CODE 01049

METHOD AA-Zeeman

DATE RECEIVED 6/15/84 ANALYZED 7-12-84

AGDD3A

P.P.

REFERENCE E.P.A.

LOCATION U.S. Ecology/Hanford Site

CHEMIST'S SIGNATURE

SEND DATA TO Mike Brown x2852

AWD-013A

JUL 20 1984

REVIEWED BY

REGION X LABORATORY

METAL DATA-AA-HGA 2100 (WATER) 9413286.1192 DETERMINATION Se-d

PROJ NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/ohart div.	mg/l	ug/liter
	24075	100	100	1				<.001	1U
	24078	↓	↓	↓				.001	1
	24081							.001	1
	24084							<.001	1U

PARAMETER CODE 01145

METHOD AA-Zeeman

DATE RECEIVED 6/15/84 ANALYZED 7-6-84

REFERENCE E.P.A.

AGDD3A

P.P.

LOCATION U.S. Ecology/Hanford Site

CHEMIST'S SIGNATURE R. Lupo

SEND DATA TO Mike Brown x2852

AWD-D13A

REVIEWED BY

JUL 20 1984

9413286 1193

REGION X LABORATORY — METAL DATA-AA — DETERMINATION Ba-diss

PROJ NO	LAB NO.	SAMPLE VOL.	CONC. VOL.	CONC. FACTOR	DILUTION FACTOR	DILUTION	mg/l CONC.	ug/l
	24075	100	100				.050	50
	24078	↓	↓	↓			.047	47
	24081						.042	42
BLK	24084						<.005	5U

PARAMETER CODE 01005

METHOD AA-Zeeman

DATE RECEIVED 6/15/84 ANALYZED 7-13-84 AGDD3A

REFERENCE E.P.A.

LOCATION U.S. Ecology / Hanford Site

CHEMIST'S SIGNATURE

SEND DATA TO Mike Brown X2852 P.P.

REVIEWED BY

AWD-013A

JUL 20 1984

*** Lab Analysis Report ***

Transaction #: 06201336 Seq #: 01 (10) Gen Inorg/Phys-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DE3A MI9
Par: CNDUCTVY LAB @ 25C UMHO (Par# 00095 S)

Instrument: CONDUC Conductivity Meter #XXXXXX
Method: EPA-120.1 Conductance, Specific
Chemist: (PRD) Davis, Phil Hours Worked:
Lab Prep:( ) Unspecifed Date Preprd: Date Anlyzd: 840615

Matrix: (10) Water-Total Units: (03) umho/cm

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	400.	GW MONITORING WELL	840614 (1)
2	84 24078	425.	GW MONITORING WELL	840614 (1)
3	84 24081	419.	GW MONITORING WELL	840614 (1)
4	84 24084	3.8	TRANSFER BLANK	840613 (2)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Davis, Phil
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 20-JUL-84 21:24:59 Status: V Batch: A

[redacted]

*** Lab Analysis Report ***

Transaction #: 06201334 Seq #: 01 (10) Gen Inorg/Phys-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DE3A MIB
Par: LAB PH SU (Par# 00403 S)

Instrument: PH-ORION Orion pH Meter #XXXXXXX
Method: EP1-150.1 pH Electrometric
Chemist: (PRD) Davis, Phil Hours Worked:
Lab Prep:( ) Unspecifed Date Preprd: Date Anlyzd: 840615

Matrix: (10) Water-Total Units: (06) Std Unts

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	7.5	GW MONITORING WELL	840614 (1)
2	84 24078	7.8	GW MONITORING WELL	840614 (1)
3	84 24081	7.8	GW MONITORING WELL	840614 (1)
4	84 24084	6.4	TRANSFER BLANK	840613 (2)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Davis, Phil
Transaction Status: Verified Transaction...Ready to release
*** Verified and Transferred to VERIFIED ***
Processed: 20-JUL-84 21:34:59 Status: V Batch: 1

REGION X LABORATORY GENERAL PURPOSE DATA SHEET DETERMINATION pH (lab)

	PROJ NO	LAB NO			ANSWER
1		24075			7.5
2		24078			7.8
3		24081			7.8
4		24084			6.4

PARAMETER CODE 00403

DATE RECEIVED 6/15/84 ANALYZED 6/15/84 AGDD3A

LOCATION U.S. Ecology / Hanford Site

SEND DATA TO Mike Brown X2852

AWD-013A

JUN 20 1984

9411286.1196

METHOD pH Meter (150.1)

REFERENCE EPA Manual

CHEMIST'S SIGNATURE Phil Davis

REVIEWED BY

REGION X LABORATORY GENERAL PURPOSE DATA SHEET DETERMINATION Conductivity

PROJ NO	LAB NO	Cell K	Scale reading	X Factor	Temp °C ANSWER	umhos @ 25°C
	24075	1.0	3.8	100	23.5	400
	24078	〃	4.0	100	22.5	425
	24081	〃	4.3	100	27.0	419
	24084	〃	3.8	1	24.0	3.8
	24078	1.0	4.05	100	22.5	426
SD	147 umhos @ 25°C	1.0	1.40	100	22.5	= 147 umhos @ 25°C

PARAMETER CODE 00095

DATE RECEIVED 6/15/84 ANALYZED 6/15/84

LOCATION U.S. Ecology/Hanford Site

SEND DATA TO Mike Brown X2852

AWD-013A

AGDD3A

JUN 20 1984

METHOD Conductivity Meter (120.1)

REFERENCE EPA Manual

CHEMIST'S SIGNATURE

REVIEWED BY

9413286.1197

2/2

FIELD SAMPLE DATA SHEET 9413286.1198

Date Samples Received: 8 9 0 6 1 5 1 4 5 5 (Yr Mo Dy Time)

Project Code: AGWD-013A Account: AG0D3A ☒ Enforcement/Custody Notes: Received by: PRD

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous Samplers: Michael Brown

Coordinator: Mike Brown x2852 ☐ Data Confidential

☐ Data for Storet Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE: Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	004	Trench Head	84	06	13	1215						GW boundary well for RCRA Caprock
↓	X									005	↓	↓	↓	↓	↓						↓
↓	X									006	↓	↓	↓	↓	↓						↓

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	CONDCTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	004							not		not	not				
		005							done		done	done				
		006														

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'12

FIELD SAMPLE DATA SHEET

Date Samples Received: 84 06 15 1455 (Yr Mo Dy Time)

Project Code: AGD-013A Account: AGDD3A ☒ Enforcement/Custody

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous

Coordinator: Mike Brown X2852 ☐ Data Confidential

☐ Data for Storet

Notes: Diss-As, Ba, Cd, Cr, Pb, Hg, Se, Ag Received by: PRD

Cond & pH (24075, 078, 081, 084)

B/N-(24076, 079, 082) VOA-(24077, 080, 083, 086)

Samplers: Michael Brown

Recorder: _____ (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY ENDING DATE: Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	075	well # 36-61	84	06	14	MS/C 1246						CW monitoring well for RCRA Compliance
	X									076											well # 36-61A pH 6.9 Spcond 425
	X									077											Temp 22.2°C
	X							84	24	078	well # 34-51				1228						
	X									079											
	X									080											
	X							84	24	081	well # ~~37-50~~ MWS 38-56				1337						
	X									082											
	X									083											

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	CONDCTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	075							22.7		6.9	425				
		076							↓		↓	↓				
		077														
84	24	078							21.1		7.1	425				
		079							↓		↓	↓				
		080														
84	24	081							21.5		6.9	460				
		082							↓		↓	↓				
		083														

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FIELD SAMPLE DATA SHEET

Date Samples Received: 84 06 19 1455 (Yr Mo Dy Time)

Project Code: AWD-013A Account: AGDD3A ☒ Enforcement/Custody Notes: Diss-As, Ba, Cd, Cr, Pb, Hg, Se, Ag Received by: PRD

Name/Location: U.S. Ecology, Hanford Site ☒ Possible Toxic/Hazardous Cond & pH (24075,078,081,084) Samplers: Michael Brown

Coordinator: Mike Brown X2852 ☐ Data Confidential B/N-(24076,079,082) VOA-(24077,080,083,086)

☐ Data for Storet Recorder: _____ (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY: ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	075	well # 316-61	84	06	14	1446						CW monitoring well for RCRA Compliance
	X									076											well # 316-61A pH 6.9 sp Cond 425
	X									077											Temp 22.2°C
	X							84	24	078	well # 34-51				1228						
	X									079											
	X									080											
	X							84	24	081	well # ~~7-30~~ 35-56				1137						
	X									082											
↓	X									083											

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	075							22.2		6.9	425				
		076							↓		↓	↓				
		077														
84	24	078							21.1		7.1	425				
		079							↓		↓	↓				
		080														
84	24	081							21.5		6.9	460				
		082							↓		↓	↓				
		083														

Field Office Copy Project Officer Copy Laboratory Copy

9412986 1200

FIELD SAMPLE DATA SHEET

Date Samples Received: 84 06 15 1745 (Yr Mo Dy Time)

Project Code: 1GWD-013A Account: AGDD3A
Name/Location: U.S. Ecology, Hanford Site
Coordinator: Mike Brown x2852

☒ Enforcement/Custody
☒ Possible Toxic/Hazardous
☐ Data Confidential
☐ Data for Storet

Notes:

Received by: PRD
Samplers: Michael F. Brown
Recorder: (Signatures Required)

SOURCE CODE	MATRIX: Water	Sediment	Tissue	Oil	#CONT./PRES: Unpres	H_2SO_4	HNO_3	LAB NUMBER: Yr	Wk	Seq	STATION NUMBER	DATE: Yr	Mo	Dy	Time	COMPOSITE ONLY: ENDING DATE Mo	Dy	Time	Type	Freq	STATION DESCRIPTION
20	X							84	24	084	699-S1-Hanlb	84	06	13	12:15						GW boundary well for RCRA compliance
↓	X									085	↓		↓		↓						
↓	X									086											

LAB NUMBER: Yr	Wk	Seq	DEPTH	Units	Type	COL MTD CD	QA CODE	%FM RIGHT BANK	TEMP DEG C	DO MG/L	pH	COND CTVY umho/cm	TURBIDITY FTU	TOTAL ALK MG/L	FLOW	MISCELLANEOUS INFORMATION
84	24	084							not		not	not				
		085							done		done	done				
		086														

Field or Office Copy | Project Officer Copy | Laboratory Copy

9411328&.1201

REGION X LABORATORY — METAL DATA-AA-HGA-2100 (WATER) — DETERMINATION Ag-d

PROJ NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/ohart div.	mg/l	ug/liter
	24075	100	100	1				<.0001	.1U
	24078	↓	↓	↓				↓	↓
	24081								
	24084								

PARAMETER CODE 01075

DATE RECEIVED 6/15/84 ANALYZED 7-3-84 AGDD3A

LOCATION U.S. Ecology/Hanford Site P.P.

SEND DATA TO Mike Brown X2852 AWD-013A

JUL 11 1984

METHOD AA-Zeeman

REFERENCE E.P.A.

CHEMIST'S SIGNATURE

REVIEWED BY

REGION X LABORATORY — MERCURY DATA-AA-FLAMELESS — DETERMINATION Hg-Diss

	PROJ NO	LAB NO	VOLUME OF SAMPLE	SAMPLE CHART DIV	BLANK CHART DIV.	CORRECTED CHART DIV.	CONSTANT PER DIV.	FACTOR	ANSWER ug/l
1		24075	100 (ml)	20	2.0	< 0.5	.0103		.0514
2		24078	↓	20	↓	↓	↓		↓
3		24081		20					
4		24084		20					
5									
6									
7		24078 Duplicate		2.0	2.0	< 0.5	.0103		.0514
8		24078 + .5ug Hg		50.5 spike	Div = 2.0 sample	Div = 50.5	x .0103 =	5202 ÷ .5	= 104% recovery
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

PARAMETER CODE 71890

METHOD AA Cold Vapor

DATE RECEIVED 6/15/84 ANALYZED 7-2-84

REFERENCE EPA

LOCATION U.S. Ecology / Hanford Site

CHEMIST'S SIGNATURE M. Stinson

SEND DATA TO Mike Brown x 2852

AGDD3A

P.P. P.P.

AWD-013A

REGION X LABORATORY — METAL DATA-AA-HGA 2100 (WATER) — DETERMINATION: As - d

PROJ NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/ohart div.	mg/l	ug/liter
	24075	100	100	1				<.001	1U
	24078	↓	↓	↓				.005	5
	24081							<.001	1U
	24084							<.001	1U

PARAMETER CODE 01000

DATE RECEIVED 6/15/84 ANALYZED 7-2-84

LOCATION U.S. Ecology/Hanford Site

SEND DATA TO Mike Brown X2852 AGDD3A

AGDD3A P.P.

JUL 11 1984

METHOD AA-Zeeman

REFERENCE E.P.A.

CHEMIST'S SIGNATURE

REVIEWED BY

REGION X LABORATORY — METAL DATA-AA-HGA 2100 (WATER) — DETERMINATION Cd-d

PROJ NO	LAB NO.	VOL OF SAMPLE	VOL OF CONC.	CONC. FACTOR	DILUTION FACTOR	CHART DIVISIONS	ug/l/chart div.	mg/l	ug/liter
	240275	100	100	1				< .0002	2U
	240278	↓	↓	↓				↓	↓
	240281								
	240284								

PARAMETER CODE 01025

METHOD AA-Zeeman

DATE RECEIVED 6/15/84 ANALYZED 7-5-84 AGDD3A

REFERENCE E.P.A.

LOCATION U.S. Ecology/Hanford Site

P.P.

CHEMIST'S SIGNATURE R. Lupo

SEND DATA TO Mike Brown X2852 5021 9825116

REVIEWED BY

AUD-D13A

JUL 11 1984

*** Lab Analysis Report ***

Transaction #: C7130959 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DE3A MIB
Par: CADMIUM CD,DISS UG/L (Par# 01025 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EPA-213.2 Cadmium, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(15) Filtered (.45u) Date Preprd: Date Anlyzd: 840705

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	0.2U	GW MONITORING WELL	840614 (21)
2	84 24078	0.2U	GW MONITORING WELL	840614 (21)
3	84 24081	0.2U	GW MONITORING WELL	840614 (21)
4	84 24084	0.2U	TRANSFER BLANK	840613 (22)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 27-JUL-84 22:18:13 Status: V Batch: A

[redacted]

*** Lab Analysis Report ***

9413286.1207

Transaction #: 07131002 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DC3A MIB
Par: ARSENIC AS,DISS UG/L (Par# 01000 S)

Instrument: AZ5000 AA Zeeman Furnace (PE5000)
Method: EP1-206.2 Arsenic, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840702

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	1U	GW MONITORING WELL	840614 (18)
2	84 24078	5	GW MONITORING WELL	840614 (18)
3	84 24081	1U	GW MONITORING WELL	840614 (18)
4	84 24084	1U	TRANSFER BLANK	840613 (19)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 27-JUL-84 22:18:13 Status: V Batch: A

*** Lab Analysis Report ***

Transaction #: 07131003 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DE3A MIB
Par: MERCURY HG,DISS UG/L (Par# 71890 S)

Instrument: ACF403 AA Cold Flame (PE403)
Method: EPA-245.1 Mercury, Cold Vapor, Manual
Chemist: (MDS) Stinson, Margaret Hours Worked:
Lab Prep:(2.) Filtered (.45u) Date Preprd: Date Anlyzd: 840702

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	.051U	GW MONITORING WELL	840614 (18)
2	84 24076	.051U	GW MONITORING WELL	840614 (18)
3	84 24081	.051U	GW MONITORING WELL	840614 (18)
4	84 24084	.051U	TRANSFER BLANK	840613 (19)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 27-JUL-84 22:18:13 Status: V Batch: A

*** Lab Analysis Report ***

9413286.1209

Transaction #: 07131005 Seq #: 01 (30) Metals-Specified

Prj: U.S. ECOLOGY (HANFORD) (AWD-013A) A6DC2A MIB
Par: SILVER AG,DISS UG/L (Par# 01075 S)

Instrument: AZ5000 AA Zeeman Furnace (PE500C)
Method: EP1-272.2 Silver, AA, Furnace
Chemist: (RLA) Arp, Roy L. Hours Worked:
Lab Prep:(10) Filtered (.45u) Date Preprd: Date Anlyzd: 840703

Matrix: (10) Water-Total Units: (11) ug/l

Line	Sample #	Result	Sample Location/Description	#Days to Anl
1	84 24075	.1U	GW MONITORING WELL	840614 (19)
2	84 24078	.1U	GW MONITORING WELL	840614 (19)
3	84 24081	.1U	GW MONITORING WELL	840614 (19)
4	84 24084	.1U	TRANSFER BLANK	840613 (20)

Record Type: TRNIN2 Date Verified: 84/07/20 By: Bossler, Gail
Transaction Status: Verified Transaction...Ready to release.
*** Verified and Transferred to VERTRANS ***
Processed: 27-JUL-84 22:18:13 Status: V Batch: A

WELL NO. 6 36 61A TOTAL DEPTH= 390.00

WA 8961

[redacted]

6b

misc well data

DATE: 072248
DRILLER:
FORMAN: ROW

EOLIAN SEDIMENTS

DEPTH	MATERIALS PENETRATED
5.	BLOW SAND

GLACIOFLUVIAL SEDIMENTS

DEPTH	MATERIALS PENETRATED
23.	SAND & BASALT GRAVEL
30.	BASALT GRAVEL & BLACK & WHITE SAND & MUD
45.	BASALT SAND & MUD
80.	BLACK & WHITE SAND & MUD
120.	BLACK & WHITE SAND & LOTS OF MUD
200.	BLACK & WHITE SAND, MUD & CLAY
205.	BLACK & WHITE SAND, SMALL GRAVEL, MUD & CLAY
210.	BLACK & WHITE SAND, LESS MUD & CLAY
225.	BLACK & WHITE SAND, MORE MUD & CLAY
230.	BLACK & WHITE SAND, SOME ROCK, MUD & CLAY
238.	BLACK & WHITE SAND, MUD & CLAY
245.	FINE BLACK & WHITE SAND & LESS MUD
260.	FINE BLACK & WHITE SAND & MORE MUD
295.	FINE WHITE SAND, LOTS OF MUD & TRACE OF BLACK SAND
300.	FINE WHITE SAND & THICK CLAY MUD

RINGOLD FORMATION

DEPTH	MATERIALS PENETRATED
324.	FINE WHITE SAND & LOTS OF MUD & TRACE OF BLACK SAND
325.	MEDIUM GRAVEL & COARSE WHITE SAND
369.	GRAVEL, SAND & SILT, WATER TABLE AT -339 FEET
370.	SMALL ROCKS, GRAVEL, SAND & MUD
383.	GRAVEL & WHITE SAND
390.	GRAVEL-FINE TO COARSE-ALL COLORS & SAND-FINE TO COARSE, BLACK & WHITE

HYDROGRAPH DATA - WELL NO. 6 36 61A

9413286.1211

MEASURMENTS TO DATE = 171
CASING ELEVATION = 748.11(FT-MSL)
******* = DRY WELL

27-JAN-49	392.04	24-FEB-49	392.12	31-MAR-49	392.12
28-APR-49	392.45	26-MAY-49	392.53	30-JUN-49	392.21
18-JUL-49	392.27	25-AUG-49	392.32	29-SEP-49	392.83
27-OCT-49	392.43	25-NOV-49	392.97	29-DEC-49	392.96
26-JAN-50	392.57	23-FEB-50	393.14	30-MAR-50	392.99
27-APR-50	393.14	25-MAY-50	392.91	29-JUN-50	393.05
27-JUL-50	393.15	31-AUG-50	392.99	26-SEP-50	393.24
26-OCT-50	393.59	24-NOV-50	393.24	28-DEC-50	393.40
25-JAN-51	393.72	27-FEB-51	393.57	27-MAR-51	393.47
24-APR-51	393.82	29-MAY-51	393.77	26-JUN-51	393.92
31-JUL-51	393.92	28-AUG-51	393.94	25-SEP-51	394.08
30-OCT-51	393.88	27-NOV-51	394.44	26-DEC-51	394.30
29-JAN-52	394.34	26-FEB-52	394.40	26-MAR-52	394.18
24-APR-52	394.64	29-APR-52	394.43	27-MAY-52	394.64
29-JUL-52	394.77	26-AUG-52	394.63	30-SEP-52	394.71
28-OCT-52	394.68	26-NOV-52	395.00	30-DEC-52	395.14
28-JAN-53	395.03	25-FEB-53	394.95	24-MAR-53	395.37
21-APR-53	395.27	27-MAY-53	394.92	30-JUN-53	395.19
28-JUL-53	395.27	25-AUG-53	395.35	29-SEP-53	395.15
27-OCT-53	395.28	25-NOV-53	395.94	29-DEC-53	396.42
26-JAN-54	396.02	23-FEB-54	395.38	30-MAR-54	395.38
27-APR-54	395.56	24-MAY-54	395.92	30-JUN-54	395.92
27-JUL-54	395.69	31-AUG-54	395.79	28-SEP-54	395.98
26-OCT-54	395.88	13-NOV-54	396.00	21-DEC-54	395.96
25-JAN-55	395.74	23-FEB-55	395.94	24-APR-55	396.04
26-APR-55	396.04	28-JUN-55	396.47	26-JUL-55	396.34
30-AUG-55	396.61	27-SEP-55	396.72	25-OCT-55	397.04
29-NOV-55	396.77	27-DEC-55	396.10	31-JAN-56	395.22
27-FEB-56	394.62	13-MAR-56	394.80	14-SEP-56	398.27
15-OCT-56	398.35	26-DEC-56	398.90	28-JAN-57	399.15
21-FEB-57	399.40	14-MAR-57	399.58	27-JUL-57	400.27
26-AUG-57	400.32	16-SEP-57	400.50	24-OCT-57	400.80
20-NOV-57	400.46	26-DEC-57	400.84	17-FEB-58	402.02
21-MAR-58	402.36	24-JUN-58	402.51	8-SEP-58	403.16
7-NOV-58	403.20	15-DEC-58	403.58	24-MAR-59	403.56
29-JUN-59	404.03	29-SEP-59	404.57	21-DEC-59	404.92
23-MAR-60	405.30	22-JUN-60	405.48	28-SEP-60	405.61
7-DEC-60	405.80	23-MAR-61	406.27	27-JUN-61	406.28
13-DEC-61	406.89	5-MAR-62	406.91	26-JUL-62	407.01
14-JAN-63	407.53	26-JUL-63	407.69	19-DEC-63	407.70
19-JAN-65	408.20	19-AUG-65	408.54	23-SEP-65	408.14
18-OCT-65	408.45	29-DEC-65	408.66	1-MAR-66	408.75
11-APR-66	408.68	16-MAY-66	408.34	28-JUL-66	408.61
31-OCT-66	408.26	3-JAN-67	408.67	28-MAR-67	408.94
16-OCT-67	408.71	19-MAR-68	408.65	23-APR-69	409.31
17-MAR-70	408.95	23-MAR-70	409.38	1-APR-70	409.69
15-MAY-70	409.38	14-SEP-71	409.32	5-OCT-72	408.62
8-JAN-73	408.83	13-APR-73	409.03	17-JUL-73	408.70
15-AUG-73	408.73	29-AUG-73	408.61	14-SEP-73	408.41
4-OCT-73	408.78	18-OCT-73	408.63	18-APR-74	408.36
10-JUL-74	408.16	18-OCT-74	408.19	8-JAN-75	408.39
14-APR-75	408.11	7-JUL-75	408.00	3-DEC-75	407.97
15-JUN-76	408.02	8-DEC-76	407.78	1-JUL-77	408.20
7-DEC-77	408.04	1-JUN-78	408.16	1-DEC-78	408.04
1-DEC-79	408.12	1-JUN-80	407.79	1-DEC-80	408.63

1-JUN-81	408.06	1-DEC-81	408.02	1-JUN-82	407.94
1-DEC-82	407.84	1-JUN-83	408.10	1-DEC-83	407.74

CONTAMINANT DATA - WELL NO. 9413286.1213

CONTAMINANT TYPE -- TRITIUM (PCI/L)
CONTAMINANT CODE = 3
MEASURMENTS TO DATE = 14

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
5-MAY-64	2.10E+03	0.00E-01	10-JUL-73	4.80E+02	0.00E-01	30-OCT-73	5.20E+02	0.00E-01	15-JAN-74	6.00E+02	0.00E-01
30-APR-74	5.00E+02	0.00E-01	8-JUL-74	9.00E+02	0.00E-01	28-OCT-74	5.20E+02	0.00E-01	31-DEC-74	1.10E+03	0.00E-01
29-APR-75	6.40E+02	0.00E-01	8-JUL-75	5.60E+02	0.00E-01	5-NOV-75	1.30E+03	0.00E-01	31-DEC-75	3.40E+03	0.00E-01
29-APR-76	9.90E+02	0.00E-01	29-JUN-76	1.10E+03	0.00E-01						

CONTAMINANT DATA - WELL NO. 6 36 61A

CONTAMINANT TYPE -- TOTAL BETA (PCI/L)
CONTAMINANT CODE = 2
MEASURMENTS TO DATE = 19

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
1-JUL-53	8.20E+00	0.00E-01	1-AUG-53	4.40E+00	0.00E-01	1-OCT-53	4.60E+01	0.00E-01	1-FEB-54	2.30E+00	0.00E-01
1-MAY-54	1.40E+01	0.00E-01	1-AUG-54	9.00E+00	0.00E-01	1-OCT-54	3.70E+03	0.00E-01	1-JUN-55	7.00E+00	0.00E-01
1-MAR-59	2.00E+02	0.00E-01	1-APR-59	2.00E+02	0.00E-01	1-MAY-59	2.00E+02	0.00E-01	1-JUN-59	2.00E+02	0.00E-01
1-JUL-59	2.00E+02	0.00E-01	30-OCT-73	7.50E+01	0.00E-01	15-JAN-74	7.50E+01	0.00E-01	28-OCT-74	7.50E+01	0.00E-01
31-DEC-74	7.50E+01	0.00E-01	5-NOV-75	8.00E+01	0.00E-01	31-DEC-75	8.00E+01	0.00E-01			

9413286.1215

CONTAMINANT DATA - WELL NO. 6 36 61A

CONTAMINANT TYPE -- NITRATE (MG/L)
CONTAMINANT CODE = 4
MEASURMENTS TO DATE = 60

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
28-OCT-57	1.80E+00	0.00E-01	8-JAN-58	1.00E+00	0.00E-01	12-FEB-58	1.00E+00	0.00E-01	12-MAR-58	1.00E+00	0.00E-01
9-APR-58	1.00E+00	0.00E-01	7-MAY-58	1.00E+00	0.00E-01	11-DEC-58	1.00E+00	0.00E-01	1-MAR-59	1.00E+00	0.00E-01
1-APR-59	1.00E+00	0.00E-01	1-MAY-59	1.00E+00	0.00E-01	1-JUN-59	1.00E+00	0.00E-01	1-JUL-59	1.00E+00	0.00E-01
13-DEC-60	1.00E-01	0.00E-01	21-MAR-61	4.50E+00	0.00E-01	18-APR-61	1.00E-01	0.00E-01	23-MAY-61	1.80E-01	0.00E-01
20-JUN-61	7.20E+00	0.00E-01	11-JUL-61	3.10E+00	0.00E-01	18-JUL-61	3.20E+00	0.00E-01	21-NOV-61	1.60E+00	0.00E-01
19-DEC-61	2.60E+00	0.00E-01	27-FEB-62	2.30E+00	0.00E-01	17-JUL-62	6.50E+00	0.00E-01	15-AUG-62	8.60E-01	0.00E-01
10-JUL-63	5.80E-01	0.00E-01	10-JUL-73	1.00E+01	0.00E-01	30-OCT-73	9.00E+00	0.00E-01	15-JAN-74	1.00E+01	0.00E-01
30-APR-74	1.20E+01	0.00E-01	8-JUL-74	9.80E+00	0.00E-01	28-OCT-74	1.10E+01	0.00E-01	31-DEC-74	1.20E+01	0.00E-01
29-APR-75	1.00E+01	0.00E-01	8-JUL-75	1.10E+01	0.00E-01	5-NOV-75	9.70E+00	0.00E-01	31-DEC-75	1.10E+01	0.00E-01
29-APR-76	1.20E+01	0.00E-01	29-JUN-76	1.20E+01	0.00E-01	26-APR-77	5.00E-01	0.00E-01	25-JUL-77	1.40E+01	0.00E-01
26-JAN-78	1.40E+01	0.00E-01	24-APR-78	1.30E+01	0.00E-01	13-JUL-78	2.60E+01	0.00E-01	11-OCT-78	1.50E+01	0.00E-01
25-JAN-79	1.20E+01	0.00E-01	30-APR-79	1.50E+01	0.00E-01	2-OCT-79	1.50E+01	0.00E-01	23-JAN-80	1.30E+01	0.00E-01
17-APR-80	1.40E+01	0.00E-01	10-JUL-80	5.30E+01	0.00E-01	27-JAN-81	5.00E-01	0.00E-01	20-APR-81	1.60E+01	0.00E-01
13-JUL-81	1.40E+01	0.00E-01	29-SEP-81	1.60E+01	0.00E-01	21-JAN-82	1.50E+01	0.00E-01	4-OCT-82	1.50E+01	0.00E-01
20-JAN-83	1.30E+01	0.00E-01	15-APR-83	1.40E+01	0.00E-01	4-OCT-83	1.40E+01	0.00E-01	17-JAN-84	1.30E+01	0.00E-01

WELL NO. 6 33 56 TOTAL DEPTH= 440.00

DATE: 052658
DRILLER:
FORMAN: JURKE

GLACIOFLUVIAL OR EOLIAN SEDIMENTS

DEPTH	MATERIALS PENETRATED
5.	TOPSOIL, SAND
165.	SAND
170.	MEDIUM SAND
175.	MEDIUM SAND & GRAVEL
190.	COARSE SAND
200.	FINE SAND
239.	MEDIUM SAND
255.	FINE SAND
265.	MEDIUM SAND
270.	MEDIUM SAND & GRAVEL (FINE)
275.	MEDIUM SAND
285.	SAND & GRAVEL
295.	CEMENT, GRAVEL
305.	CEMENTED GRAVEL
315.	COBBLES & GRAVEL, WATER TABLE AT -312 FEET

RINGOLD FORMATION

DEPTH	MATERIALS PENETRATED
320.	CEMENTED GRAVEL & COBBLES
350.	COBBLES & GRAVEL
355.	GRAVEL, SAND & CLAY
360.	GRAVEL & SAND
400.	GRAVEL & SAND
405.	SANDY CLAY (YELLOW)
410.	BLUE CLAY
415.	SANDY BLUE CLAY
440.	BLUE CLAY

HYDROGRAPH DATA - WELL NO. 6 33 56

MEASURMENTS TO DATE = 56
CASING ELEVATION = 717.03(FT-MSL)
******* = DRY WELL

11-OCT-58	399.41	15-DEC-58	400.05	24-MAR-59	399.71
29-JUN-59	400.13	30-SEP-59	400.73	23-DEC-59	401.35
23-MAR-60	401.29	29-JUN-60	401.44	23-SEP-60	401.71
8-DEC-60	402.23	24-MAR-61	402.84	27-JUN-61	402.29
13-DEC-61	403.08	26-JUL-62	403.30	14-JAN-63	401.75
26-JUL-63	402.51	19-DEC-63	402.91	18-JAN-65	404.51
19-AUG-65	404.59	23-SEP-65	404.73	19-OCT-65	404.74
27-DEC-65	405.15	1-MAR-66	405.21	14-APR-66	404.88
16-MAY-66	404.76	1-AUG-66	404.82	31-OCT-66	404.73
4-JAN-67	405.23	28-MAR-67	404.99	17-OCT-67	405.28
19-MAR-68	405.35	22-APR-69	407.10	15-MAY-70	405.61
14-SEP-71	404.77	10-MAR-72	405.18	23-AUG-72	404.93
8-JAN-73	404.45	13-APR-73	403.70	17-JUL-73	403.39
10-JUL-74	403.87	8-JAN-75	403.98	14-APR-75	403.63
7-JUL-75	403.59	3-DEC-75	403.49	15-JUN-76	403.61
8-DEC-76	403.24	1-JUL-77	403.59	7-DEC-77	403.64
1-JUN-78	403.50	1-DEC-78	403.40	1-DEC-79	403.60
1-JUN-80	403.63	1-DEC-80	403.13	1-JUN-81	403.35
1-DEC-81	403.22	1-JUN-82	403.07		

CONTAMINANT DATA - WELL NO. 6 33 56

CONTAMINANT TYPE -- TRITIUM (PCI/L)
CONTAMINANT CODE = 3
MEASURMENTS TO DATE = 40

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
12-MAY-71	7.20E+02	0.00E-01	15-JUL-71	5.60E+02	0.00E-01	5-NOV-71	5.20E+02	0.00E-01	6-JAN-72	9.30E+02	0.00E-01
9-MAY-72	6.30E+02	0.00E-01	5-MAR-73	9.40E+02	0.00E-01	30-APR-73	5.40E+02	0.00E-01	30-OCT-73	5.20E+02	0.00E-01
15-JAN-74	6.90E+02	0.00E-01	30-APR-74	7.00E+02	0.00E-01	8-JUL-74	5.70E+02	0.00E-01	21-JAN-75	6.00E+02	0.00E-01
29-APR-75	4.80E+02	0.00E-01	8-JUL-75	7.30E+02	0.00E-01	5-NOV-75	1.10E+03	0.00E-01	29-APR-76	7.40E+02	0.00E-01
14-JUN-76	9.40E+02	0.00E-01	4-FEB-77	6.50E+02	0.00E-01	26-APR-77	9.70E+02	0.00E-01	25-JUL-77	7.10E+02	0.00E-01
1-NOV-77	1.30E+03	0.00E-01	18-JAN-78	1.20E+03	0.00E-01	27-MAR-78	7.70E+02	0.00E-01	20-APR-78	9.40E+02	0.00E-01
5-JUL-78	7.10E+02	0.00E-01	21-JUN-79	4.90E+02	0.00E-01	7-JAN-80	5.00E+02	0.00E-01	28-MAR-80	6.80E+02	0.00E-01
18-JUN-80	1.80E+04	0.00E-01	9-SEP-80	4.20E+02	0.00E-01	9-JAN-81	4.50E+02	0.00E-01	23-MAR-81	5.60E+02	0.00E-01
8-JUN-81	1.90E+03	0.00E-01	17-MAR-82	3.70E+02	0.00E-01	31-AUG-82	3.80E+02	0.00E-01	9-DEC-82	3.90E+02	0.00E-01
17-MAR-83	-4.90E+02	4.90E+02	14-JUN-83	1.80E+01	4.60E+02	13-SEP-83	1.60E+03	4.40E+02	30-NOV-83	-1.70E+02	4.40E+02

CONTAMINANT DATA - WELL NO. 6 33 56

CONTAMINANT TYPE -- TOTAL BETA (PCI/L)
CONTAMINANT CODE = 2
MEASURMENTS TO DATE = 32

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
1-MAR-59	2.00E+02	0.00E-01	1-APR-59	2.00E+02	0.00E-01	1-MAY-59	2.00E+02	0.00E-01	1-JUN-59	2.00E+02	0.00E-01
1-JUL-59	2.00E+02	0.00E-01	15-JUL-71	1.50E+02	0.00E-01	5-NOV-71	1.60E+02	0.00E-01	6-JAN-72	1.60E+02	0.00E-01
9-MAY-72	1.50E+02	0.00E-01	5-MAR-73	1.50E+02	0.00E-01	30-APR-73	7.50E+01	0.00E-01	30-OCT-73	8.00E+01	0.00E-01
15-JAN-74	7.50E+01	0.00E-01	21-JAN-75	8.00E+01	0.00E-01	5-NOV-75	8.00E+01	0.00E-01	14-JUN-76	8.50E+01	0.00E-01
4-FEB-77	7.50E+01	0.00E-01	26-APR-77	7.50E+01	0.00E-01	25-JUL-77	7.50E+01	0.00E-01	1-NOV-77	7.50E+01	0.00E-01
18-JAN-78	7.50E+01	0.00E-01	27-MAR-78	7.50E+01	0.00E-01	20-APR-78	7.50E+01	0.00E-01	5-JUL-78	7.50E+01	0.00E-01
21-JUN-79	7.50E+01	0.00E-01	7-JAN-80	7.50E+01	0.00E-01	28-MAR-80	7.50E+01	0.00E-01	18-JUN-80	7.50E+01	0.00E-01
9-SEP-80	7.50E+01	0.00E-01	9-JAN-81	7.50E+01	0.00E-01	23-MAR-81	7.50E+01	0.00E-01	8-JUN-81	7.50E+01	0.00E-01

CONTAMINANT DATA - WELL NO. 6 33 56

CONTAMINANT TYPE -- TOTAL GAMMA (PCI/L)
CONTAMINANT CODE = 26
MEASURMENTS TO DATE = 4

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
17-MAR-82	0.00E-01	0.00E-01	31-AUG-82	0.00E-01	0.00E-01	9-DEC-82	0.00E-01	0.00E-01	17-MAR-83	0.00E-01	0.00E-01

9413286.1221

CONTAMINANT DATA - WELL NO. 6 33 56

CONTAMINANT TYPE -- NITRATE (MG/L)
CONTAMINANT CODE = 4
MEASURMENTS TO DATE = 59

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
1-MAR-59	3.00E+00	0.00E-01	1-APR-59	2.00E+00	0.00E-01	1-MAY-59	1.00E+00	0.00E-01	1-JUN-59	1.00E+00	0.00E-01
1-JUL-59	1.00E+00	0.00E-01	30-NOV-60	1.00E-01	0.00E-01	4-JAN-61	1.20E-01	0.00E-01	26-APR-61	1.00E-01	0.00E-01
24-MAY-61	1.40E-01	0.00E-01	28-JUN-61	0.00E-01	0.00E-01	26-JUL-61	5.30E-01	0.00E-01	27-SEP-61	2.30E-01	0.00E-01
25-OCT-61	5.30E+00	0.00E-01	29-NOV-61	4.10E-01	0.00E-01	27-DEC-61	4.80E-01	0.00E-01	11-FEB-63	1.00E+00	0.00E-01
11-MAR-63	5.60E+00	0.00E-01	10-JUL-63	1.00E+01	0.00E-01	12-MAY-71	5.00E-01	0.00E-01	15-JUL-71	5.00E-01	0.00E-01
5-NOV-71	5.00E-01	0.00E-01	6-JAN-72	5.00E-01	0.00E-01	28-FEB-72	5.00E-01	0.00E-01	9-MAY-72	5.00E-01	0.00E-01
6-JUL-72	5.00E-01	0.00E-01	5-MAR-73	5.00E-01	0.00E-01	30-APR-73	5.00E-01	0.00E-01	30-OCT-73	5.00E-01	0.00E-01
15-JAN-74	5.00E-01	0.00E-01	30-APR-74	5.00E-01	0.00E-01	8-JUL-74	1.40E+00	0.00E-01	21-JAN-75	5.90E+00	0.00E-01
29-APR-75	7.80E+00	0.00E-01	8-JUL-75	1.10E+01	0.00E-01	5-NOV-75	6.30E+00	0.00E-01	29-APR-76	6.40E+00	0.00E-01
14-JUN-76	1.10E+01	0.00E-01	4-FEB-77	8.90E+00	0.00E-01	26-APR-77	8.70E+00	0.00E-01	25-JUL-77	8.10E+00	0.00E-01
1-NOV-77	8.30E+00	0.00E-01	18-JAN-78	8.00E+00	0.00E-01	27-MAR-78	9.40E+00	0.00E-01	20-APR-78	7.60E+00	0.00E-01
5-JUL-78	7.90E+00	0.00E-01	21-JUN-79	6.80E+00	0.00E-01	7-JAN-80	5.60E+00	0.00E-01	28-MAR-80	5.80E+00	0.00E-01
18-JUN-80	8.30E+00	0.00E-01	9-SEP-80	1.90E+01	0.00E-01	9-JAN-81	7.00E+00	0.00E-01	23-MAR-81	6.40E+00	0.00E-01
8-JUN-81	6.60E+00	0.00E-01	17-MAR-82	6.60E+00	0.00E-01	31-AUG-82	7.70E+00	0.00E-01	9-DEC-82	6.80E+00	0.00E-01
17-MAR-83	6.60E+00	0.00E-01	13-SEP-83	5.20E+00	0.00E-01	30-NOV-83	6.60E+00	0.00E-01			

WELL NO. 6-34-51 TOTAL DEPTH= 385.00

DATE: 091048
DRILLER:
FORMAN: ROW

EOLIAN SEDIMENTS

DEPTH	MATERIALS PENETRATED
25.	DUNE SAND & BASALT & WHITE SAND W/LOTS OF SILT

GLACIOFLUVIAL SEDIMENTS

DEPTH	MATERIALS PENETRATED
26.	BLACK & WHITE SAND W/VERY SMALL AMOUNT OF COARSE GRAVEL
27.	BLACK & WHITE SAND
30.	FINE BLACK & WHITE SAND W/QUITE A FEW COARSE GRAVELS & SOME SILT; CAVED
35.	BLACK & WHITE SAND & LITTLE GRAVEL
49.	BLACK & WHITE SAND & CLAYEY SILT
53.	CLAYEY SILT, BLACK & WHITE SAND
64.	GRAY & BLACK SAND & GRAVEL; GRAY & BLACK SAND, FINE GRAVEL & CLAYEY SILT; SAND SETTLED IN AT 54'
90.	GRAY & BLACK SAND, CLAYEY SILT; MORE CLAYEY SILT 70' TO 75'
96.	GRAY SAND, BLACK & WHITE SAND
100.	CLAYEY SILT, GRAY & BLACK SAND
105.	NO RECORD, PROBABLY CLAYEY SILT, GRAY & BLACK SAND
110.	CLAYEY SILT, GRAY & BLACK SAND
115.	CLAYEY SILT, GRAY & WHITE SAND, SHOWING FINE GRAVEL & CLAYEY SILT
117.	NO RECORD, PROBABLY GRAY & WHITE SAND, CLAYEY SILT
117.	NO RECORD, PROBABLY GRAY & WHITE SAND, CLAYEY SILT
120.	GRAY & WHITE SAND, CLAYEY SILT
140.	GRAY SAND & TAN SILT MUD
215.	BLACK & WHITE SAND, TAN SILT, MUD
220.	BLACK & WHITE SAND, TAN SILT, MUD, 50% BASALT & SMALL GRAVEL
225.	COARSE SAND & GRAVEL (FINE), SILT & BASALT 35%
227.	NO RECORD
233.	FINE GRAVEL & COARSE SAND, 25% SILT
235.	GRAVEL, BLACK & WHITE SAND & SILT, AT 234' PICKED UP FINE GRAVEL; 50% BASALT CHIPS, VERY LITTLE SAND, 25% SILT
236.	GRAVEL, BASALT CHIPS, 50% SAND & SILT; GRAVEL COARSER, ABOUT SIZE OF HEN EGGS
240.	GRAVEL, BASALT CHIPS, 50% SAND (BLACK & WHITE) VERY LITTLE SILT; LESS GRAVEL, MORE BLACK & WHITE SAND, 50% BASALT, VERY LITTLE SILT
244.	VERY LITTLE GRAVEL; 240' TO 250' BLACK & WHITE S
250.	BLACK & WHITE SAND, SILT & CALICHE
258.	FINE BROWN & WHITE SAND, LOTS OF SILT & CALICHE; CAVES
260.	FINE BLACK & WHITE SAND, SILT & CALICHE
270.	FINE BLACK & WHITE SAND, PEA SIZE GRAVEL & SILT;260'-275' LAYERS OF BLACK & WHITE SAND, SILT & GRAVEL UP TO EGG SIZE BASALT CHIPS & CALICHE
273.	BASALT CHIPS, SMALL GRAVEL & SILT
275.	BASALT CHIPS, PEA GRAVEL, BLACK & WHITE SAND & SILT
278.	BLACK & WHITE SAND
285.	FINE BLACK & WHITE SAND (80%), SILT, BASALT CHIPS, PEA TO EGG SIZE GRAVEL & SOME CALICHE
287.	PURE CLAY, CORE SAMPLE
290.	HEAVY CLAY & BASALT CHIPS; 286' TO 289.5' PURE CLAY
293.	99.5% FINE BLACK & WHITE SAND-SILT, .5% COARSE SAND
295.	FINE BLACK & WHITE SILT & SAND 99.5% W/.5% GRAVEL
298.	80% FINE BLACK & WHITE SILT & SAND 99.5% W/.5% GRAVEL

[redacted]

300.	BLACK & WHITE SAND & SILT, 4" BOULDER & GRAVEL
302.	BLACK & WHITE SAND & SILT, BOULDERS & GRAVEL; LOST SAMPLER IN HOLE
305.	4" OF GRAVEL, SAND BASALT CHIPS & SILT
310.	GRAVEL, SAND, BASALT CHIPS & SILT BINDER
315.	HEAVY GRAVEL, SILT, SANDY BINDER; CAVES, LOST CORE PIPE
325.	GRAVEL & SANDY SILT BINDER; DRILLED UP CORING PIPE
330.	MEDIUM GRAVEL, BASALT, BLACK & WHITE SAND; CAVING; CORE PIPE BROKE OFF IN THREADS AT 115'

RINGOLD FORMATION

DEPTH	MATERIALS PENETRATED
332.	GRAVEL, BASALT, BLACK & WHITE SAND, DRILLING UP CORE PIPE
333.	MEDIUM GRAVEL, BASALT, GRAY WHITE & BLACK SAND; CAVING, WATER TABLE AT -333 FEET
335.	MEDIUM TO COARSE GRAVEL, GRAY SAND, WHITE & BLACK SAND, BASALT; CAVING
338.	COARSE GRAVEL & SAND; CAVING, LOST SAND PUMP ; FISHED IT OUT, STILL SOME CORE PIPE IN HOLE
339.	COARSE GRAVEL, BASALT, GRAY SAND; CAVING
340.	QUARTZITE, MEDIUM BASALT, GRAVEL, MEDIUM GRAVEL & GRAY QUICKSAND
344.	MEDIUM TO COARSE GRAVEL, BASALT, GRAY SAND
345.	GRAVEL, BASALT & CLAY SILT
347.	COARSE GRAVEL & BASALT; CAVING
350.	MOSTLY COARSE GRAVEL, SOME MEDIUM & BASALT, LESS CLAYEY SILT
353.	COARSE GRAVEL, BASALT, GRAY SAND & CLAYEY SILT
355.	COARSE BASALT ROCKS; COARSE ROCKS, ALL COLORS GRAVEL, BASALT GRAVEL; CAVES
357.	FINE GRAY SAND, BLACK & WHITE SAND; CAVES; ALSO MEDIUM GRAVEL, BASALT GRAVEL
359.	MEDIUM GRAVEL, BASALT GRAVEL, GRAY SAND, BLACK & WHITE SAND
360.	MEDIUM BASALT GRAVEL & GRAY WATER SAND; MEDIUM GRAVEL ALL COLORS
365.	COARSE GRAVEL, BASALT GRAVEL, SOME GRAY WATER SAND
370.	COARSE GRAVEL, BASALT GRAVEL, ROCKS, BASALT ROCKS, GRAY WATER SAND OR QUICKSAND
372.	LOT OF ROCKS & BASALT ROCKS, MEDIUM GRAVEL, BASALT GRAVEL, SOME GRAY SAND; CAVES
380.	GRAVEL & FINE SAND; WATER GRAVEL FINE TO 3", FINE TO COARSE SAND, SOME CLAY & SILT
385.	FINE TO COARSE GRAVEL, FINE TO COARSE SAND, CLAY & SILT; 380' TO 381' CORE SAMPLE SHOWED FINE GRAY SAND

CONTAMINANT DATA - WELL NO. 6-34-51

CONTAMINANT TYPE -- TRITIUM (PCI/L)
CONTAMINANT CODE = 3
MEASURMENTS TO DATE = 51

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
12-JUN-63	1.00E+03	0.00E-01	9-OCT-63	1.10E+04	0.00E-01	14-JAN-64	8.80E+02	0.00E-01	13-FEB-69	5.00E+02	0.00E-01
20-MAY-69	5.30E+02	0.00E-01	11-JAN-71	4.80E+02	0.00E-01	30-JUN-71	5.40E+02	0.00E-01	9-NOV-71	8.10E+02	0.00E-01
12-JAN-72	6.00E+02	0.00E-01	9-MAY-72	9.50E+02	0.00E-01	20-SEP-72	7.70E+02	0.00E-01	5-MAR-73	1.00E+03	0.00E-01
30-APR-73	6.20E+02	0.00E-01	30-JUL-73	4.80E+02	0.00E-01	26-NOV-73	9.40E+02	0.00E-01	29-JAN-74	6.00E+02	0.00E-01
1-APR-74	5.00E+02	0.00E-01	29-JUL-74	4.80E+02	0.00E-01	30-SEP-74	8.00E+02	0.00E-01	31-MAR-75	5.00E+02	0.00E-01
28-JUL-75	5.10E+03	0.00E-01	29-MAR-76	8.60E+02	0.00E-01	3-AUG-76	6.70E+02	0.00E-01	28-OCT-76	1.00E+03	0.00E-01
4-FEB-77	1.40E+03	0.00E-01	26-APR-77	1.40E+03	0.00E-01	25-JUL-77	1.00E+03	0.00E-01	18-JAN-78	3.20E+03	0.00E-01
20-APR-78	5.60E+02	0.00E-01	5-JUL-78	5.90E+02	0.00E-01	12-JAN-79	1.00E+03	0.00E-01	27-MAR-79	5.50E+02	0.00E-01
21-JUN-79	5.80E+03	0.00E-01	17-SEP-79	1.30E+03	0.00E-01	7-JAN-80	5.50E+01	0.00E-01	28-MAR-80	4.10E+02	0.00E-01
18-JUN-80	5.00E+02	0.00E-01	9-SEP-80	5.60E+02	0.00E-01	9-JAN-81	4.60E+02	0.00E-01	23-MAR-81	3.80E+02	0.00E-01
8-JUN-81	2.40E+03	0.00E-01	8-SEP-81	1.00E+03	0.00E-01	6-JAN-82	6.50E+02	0.00E-01	17-MAR-82	4.30E+02	0.00E-01
10-JUN-82	3.00E+02	0.00E-01	31-AUG-82	4.10E+02	0.00E-01	9-DEC-82	6.70E+02	0.00E-01	17-MAR-83	-4.90E+02	4.90E+02
14-JUN-83	-1.50E+02	4.60E+02	13-SEP-83	6.20E+02	4.30E+02	30-NOV-83	3.00E+02	4.40E+02			

CONTAMINANT DATA - WELL NO. 6 34 51

CONTAMINANT TYPE -- TOTAL BETA (PCI/L)
CONTAMINANT CODE = 2
MEASURMENTS TO DATE = 57

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
1-MAR-52	5.50E+00	0.00E-01	1-SEP-52	3.80E+00	0.00E-01	1-DEC-52	3.30E+01	0.00E-01	1-JUN-53	5.40E+00	0.00E-01
1-AUG-53	1.10E+01	0.00E-01	1-DEC-53	1.30E+02	0.00E-01	1-MAR-54	1.10E+01	0.00E-01	1-JUN-54	1.20E+01	0.00E-01
1-AUG-54	1.20E+01	0.00E-01	1-JAN-55	2.20E+01	0.00E-01	1-JUN-55	2.30E+01	0.00E-01	1-SEP-55	3.30E+01	0.00E-01
1-FEB-56	4.30E+00	0.00E-01	1-MAR-59	2.00E+02	0.00E-01	1-APR-59	2.00E+02	0.00E-01	1-MAY-59	2.00E+02	0.00E-01
1-JUN-59	2.00E+02	0.00E-01	1-JUL-59	2.00E+02	0.00E-01	16-NOV-62	2.10E+02	0.00E-01	10-DEC-62	4.90E+01	0.00E-01
22-APR-69	1.60E+02	0.00E-01	20-MAY-69	1.50E+02	0.00E-01	6-JUN-69	1.50E+02	0.00E-01	30-OCT-69	1.50E+02	0.00E-01
9-MAY-72	1.50E+02	0.00E-01	20-SEP-72	1.50E+02	0.00E-01	5-MAR-73	1.50E+02	0.00E-01	30-APR-73	7.50E+01	0.00E-01
30-JUL-73	7.50E+01	0.00E-01	26-NOV-73	7.50E+01	0.00E-01	29-JAN-74	7.50E+01	0.00E-01	1-APR-74	7.50E+01	0.00E-01
29-JUL-74	7.50E+01	0.00E-01	30-SEP-74	7.50E+01	0.00E-01	31-MAR-75	7.50E+01	0.00E-01	28-JUL-75	7.50E+01	0.00E-01
29-MAR-76	8.00E+01	0.00E-01	3-AUG-76	8.50E+01	0.00E-01	28-OCT-76	7.50E+01	0.00E-01	4-FEB-77	7.50E+01	0.00E-01
26-APR-77	7.50E+01	0.00E-01	25-JUL-77	7.50E+01	0.00E-01	18-JAN-78	7.50E+01	0.00E-01	20-APR-78	7.50E+01	0.00E-01
5-JUL-78	7.50E+01	0.00E-01	12-JAN-79	7.50E+01	0.00E-01	27-MAR-79	7.50E+01	0.00E-01	21-JUN-79	7.50E+01	0.00E-01
17-SEP-79	7.50E+01	0.00E-01	7-JAN-80	7.50E+01	0.00E-01	28-MAR-80	7.50E+01	0.00E-01	18-JUN-80	7.50E+01	0.00E-01
9-SEP-80	7.50E+01	0.00E-01	9-JAN-81	7.50E+01	0.00E-01	23-MAR-81	7.50E+01	0.00E-01	8-JUN-81	7.50E+01	0.00E-01
8-SEP-81	7.50E+01	0.00E-01									

CONTAMINANT DATA - WELL NO. 6-34-51

CONTAMINANT TYPE -- TOTAL GAMMA (PCI/L)
CONTAMINANT CODE = 26
MEASURMENTS TO DATE = 7

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
8-SEP-81	0.00E-01	0.00E-01	6-JAN-82	0.00E-01	0.00E-01	17-MAR-82	0.00E-01	0.00E-01	10-JUN-82	0.00E-01	0.00E-01
31-AUG-82	0.00E-01	0.00E-01	9-DEC-82	0.00E-01	0.00E-01	17-MAR-83	0.00E-01	0.00E-01			

9413286.1227

CONTAMINANT DATA - WELL NO. 6 34 51

CONTAMINANT TYPE -- NITRATE (MG/L)
CONTAMINANT CODE = 4
MEASURMENTS TO DATE = 83

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
12-NOV-57	2.50E+00	0.00E-01	5-DEC-57	2.70E+00	0.00E-01	8-APR-58	3.70E+00	0.00E-01	7-MAY-58	2.40E+00	0.00E-01
11-DEC-58	2.50E+00	0.00E-01	1-MAR-59	3.00E+00	0.00E-01	1-APR-59	3.00E+00	0.00E-01	1-MAY-59	3.00E+00	0.00E-01
1-JUN-59	3.00E+00	0.00E-01	1-JUL-59	3.00E+00	0.00E-01	30-NOV-60	1.00E-01	0.00E-01	4-JAN-61	2.60E+00	0.00E-01
24-MAY-61	3.50E+00	0.00E-01	28-JUN-61	3.00E+00	0.00E-01	26-JUL-61	2.20E+00	0.00E-01	27-SEP-61	3.00E+00	0.00E-01
25-OCT-61	1.60E+00	0.00E-01	29-NOV-61	8.20E-01	0.00E-01	27-DEC-61	2.40E+00	0.00E-01	15-MAY-62	2.90E+00	0.00E-01
30-OCT-62	2.70E-01	0.00E-01	13-MAR-63	2.70E+00	0.00E-01	10-JUL-63	3.00E+00	0.00E-01	20-MAY-69	3.20E+00	0.00E-01
30-OCT-69	7.20E+00	0.00E-01	11-JAN-71	4.50E+00	0.00E-01	10-MAR-71	3.30E+00	0.00E-01	4-MAY-71	4.20E+00	0.00E-01
30-JUN-71	5.00E-01	0.00E-01	10-SEP-71	2.70E+00	0.00E-01	9-NOV-71	1.10E+00	0.00E-01	12-JAN-72	4.00E+00	0.00E-01
28-FEB-72	5.00E-01	0.00E-01	9-MAY-72	3.80E+00	0.00E-01	6-JUL-72	2.50E+00	0.00E-01	20-SEP-72	5.00E-01	0.00E-01
5-MAR-73	1.40E+00	0.00E-01	30-APR-73	5.00E-01	0.00E-01	30-JUL-73	7.00E-01	0.00E-01	3-OCT-73	2.10E+00	0.00E-01
26-NOV-73	6.00E-01	0.00E-01	29-JAN-74	2.20E+00	0.00E-01	1-APR-74	1.10E+00	0.00E-01	3-JUN-74	9.30E+00	0.00E-01
29-JUL-74	1.00E+01	0.00E-01	30-SEP-74	9.80E+00	0.00E-01	25-NOV-74	9.50E+00	0.00E-01	31-MAR-75	7.40E+00	0.00E-01
27-MAY-75	9.90E+00	0.00E-01	28-JUL-75	7.50E+00	0.00E-01	29-SEP-75	8.30E+00	0.00E-01	24-NOV-75	6.90E+00	0.00E-01
26-JAN-76	8.80E+00	0.00E-01	29-MAR-76	6.50E+00	0.00E-01	1-JUN-76	8.00E+00	0.00E-01	3-AUG-76	8.40E+00	0.00E-01
28-OCT-76	1.00E+01	0.00E-01	4-FEB-77	7.80E+00	0.00E-01	26-APR-77	5.00E-01	0.00E-01	25-JUL-77	9.10E+00	0.00E-01
18-JAN-78	9.70E+00	0.00E-01	20-APR-78	6.70E+00	0.00E-01	5-JUL-78	8.50E+00	0.00E-01	12-JAN-79	7.30E+00	0.00E-01
27-MAR-79	6.30E+00	0.00E-01	21-JUN-79	7.80E+00	0.00E-01	17-SEP-79	7.50E+00	0.00E-01	7-JAN-80	4.90E+00	0.00E-01
28-MAR-80	6.30E+00	0.00E-01	18-JUN-80	7.00E+00	0.00E-01	9-SEP-80	7.10E+00	0.00E-01	9-JAN-81	5.10E+00	0.00E-01
23-MAR-81	5.90E+00	0.00E-01	8-JUN-81	7.10E+00	0.00E-01	8-SEP-81	3.30E+00	0.00E-01	6-JAN-82	4.50E+00	0.00E-01
17-MAR-82	6.40E+00	0.00E-01	10-JUN-82	6.20E+00	0.00E-01	31-AUG-82	7.00E+00	0.00E-01	9-DEC-82	4.70E+00	0.00E-01
17-MAR-83	5.70E+00	0.00E-01	13-SEP-83	6.80E+00	0.00E-01	30-NOV-83	5.20E+00	0.00E-01			

HYDROGRAPH DATA - WELL NO. 6-34-51

MEASURMENTS TO DATE = 150
CASING ELEVATION = 736.76(FT-MSL)
******* = DRY WELL

20-DEC-48	391.30	19-JAN-49	390.75	15-FEB-49	390.68
21-MAR-49	390.74	19-APR-49	390.70	24-MAY-49	390.71
24-JUN-49	390.71	27-JUN-49	390.73	25-JUL-49	390.62
9-SEP-49	390.76	10-OCT-49	390.76	21-NOV-49	390.87
27-DEC-49	391.25	21-JAN-50	391.01	14-FEB-50	391.31
21-FEB-50	390.95	14-MAR-50	391.31	18-APR-50	391.22
4-OCT-50	391.80	27-DEC-50	392.73	23-JAN-51	392.72
19-FEB-51	392.00	22-MAR-51	391.87	19-APR-51	392.82
18-MAY-51	392.07	12-JUN-51	392.32	17-JUL-51	392.37
16-AUG-51	392.32	14-SEP-51	392.27	18-OCT-51	392.67
14-NOV-51	392.49	3-JAN-52	392.78	31-JAN-52	392.72
19-MAR-52	392.62	17-APR-52	393.65	16-MAY-52	392.98
25-JUN-52	392.96	18-JUL-52	393.01	22-SEP-52	392.97
2-FEB-53	393.32	20-MAY-53	392.43	17-JUN-53	393.48
23-JUL-53	392.20	17-AUG-53	393.69	21-SEP-53	393.07
19-NOV-53	393.22	25-JAN-54	394.22	24-FEB-54	393.62
26-MAR-54	392.94	19-APR-54	393.22	28-MAY-54	393.30
20-JUL-54	393.07	30-AUG-54	393.23	20-OCT-54	393.11
30-NOV-54	393.20	28-DEC-54	393.14	21-APR-55	393.44
17-OCT-55	393.78	17-NOV-55	393.39	7-FEB-56	393.47
27-MAR-56	393.27	27-JUN-56	394.32	22-AUG-56	393.96
14-SEP-56	395.88	15-OCT-56	396.31	26-DEC-56	395.71
28-JAN-57	395.51	13-MAR-57	396.75	27-JUL-57	397.57
23-AUG-57	397.70	18-SEP-57	397.70	24-OCT-57	398.13
20-NOV-57	398.28	26-DEC-57	398.51	14-FEB-58	398.78
20-MAR-58	399.56	23-JUN-58	398.86	8-SEP-58	399.31
7-NOV-58	399.59	15-DEC-58	400.21	23-MAR-59	399.90
23-JUN-59	400.14	30-SEP-59	400.62	23-DEC-59	401.12
22-MAR-60	401.07	29-JUN-60	401.22	23-SEP-60	401.40
8-DEC-60	401.97	24-MAR-61	402.05	27-JUN-61	402.01
12-JUL-61	401.98	21-JUL-61	401.92	13-DEC-61	402.66
5-MAR-62	402.78	26-JUL-62	402.85	14-JAN-63	403.42
5-AUG-63	403.25	18-DEC-63	403.70	14-JAN-65	403.85
18-AUG-65	404.48	22-SEP-65	404.35	20-OCT-65	404.48
2-MAR-66	404.46	14-APR-66	404.57	20-MAY-66	404.62
28-JUL-66	404.18	31-OCT-66	404.38	4-JAN-67	404.84
19-MAR-67	404.84	28-MAR-67	404.62	22-APR-67	406.37
17-OCT-67	404.84	19-MAR-68	404.90	24-APR-69	406.43
18-MAY-70	405.37	14-SEP-71	404.57	16-SEP-71	404.51
20-MAR-72	404.79	12-JUL-72	404.65	24-OCT-72	403.91
8-JAN-73	404.67	13-APR-73	404.85	17-JUL-73	404.07
15-AUG-73	404.00	29-AUG-73	404.10	11-SEP-73	404.03
8-OCT-73	403.82	17-OCT-73	403.91	21-JAN-74	403.58
18-APR-74	403.52	10-JUL-74	403.23	16-JUL-74	403.17
18-OCT-74	403.14	8-JAN-75	403.46	14-APR-75	403.01
7-JUL-75	402.77	15-JUL-75	402.77	3-DEC-75	402.87
15-DEC-75	402.87	8-DEC-76	406.54	1-JUL-77	405.12
7-DEC-77	405.13	1-DEC-78	402.42	1-DEC-79	402.90
1-JUN-80	402.45	1-DEC-80	402.38	1-JUN-81	402.55
1-DEC-81	402.17	1-JUN-82	402.40	4-JUN-84	332.29

(See next page for readings) 941328.1229

699 31 53B	P	N 031160 W 052964	707.53	430	304	12.0	334	295-300	4-59	SCREEN 307-430 FT. SAMPLE PUMP
4520										
	O		707.86	320	306		320	300-320	4-65	
4659	P		707.86	430	304	1.5	404	410-430	8-63	
4660	Q		707.85	380		1.5			8-63	REMOVED

Dave-
here's a Wellsbook
excerp containing
your 5 wells
(now being updated
w/ recent info from
Vern)

Pam Mitchell

WELL DESIGNATION EMA NO.			COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699	31 65 4495		N 030536 P W 065357	683.09	450	242	8.0	310	240-450	8-57	699-30-65	
		O		683.35	260	242	1.5	260	240-260	4-65		
		P		683.35	430	243	1.5	353	410-430	6-64		
		Q		683.35	390	242	1.5	371	370-390	6-64		
		R		683.35	330	242	1.5	322	310-330	6-64		
699	31 84A		N 031316 P W 083729	625.05	4398		6.0			6-83	DC-16A	
699	31 84B			625.12	1600					12-82	DC-16B	
699	31 84C		N 031290 P W 084238	625.08	3854					10-82	DC-16C	
699	32 18		N 032062 P W 017582	452.64		56	6.0	60		0-80	GOLDER 86	
699	32 22 4794		N 032003 P W 021995	517.55	171	119	6.0	168	111-169	2-71		SAMPLE PUMP
699	32 26		N 031647 P W 026279	520.59	715		6.0			0-80	GOLDER 48	
699	31 31		N 031873 P W 031489	522.08		118	6.0	162		0-80	GOLDER 71A	
699	32 32		N 031860 P W 031504	520.53	780	117	6.0	147		0-80	GOLDER 71	
699	32 42 4777		N 032470 P W 042450	517.42	125	116	6.0	122	110-120	8-68		PLUG AT 122

WELL DESIGNATION / EMA NO.	COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 32 43 4778	N 032128 P W 042649	516.62	127	106	6.0	124	110-120	8-68		SAMPLE PUMP PLUG AT 124
699 32 49A	N 031983 P W 048959	713.47	250	DRY			NONE	6-69		
699 32 49B			309				NONE	6-69		
699 32 49C			250	DRY			NONE	6-69		
699 32 49D			250	DRY			NONE	6-69		
699 32 62 4550	N 031974 P W 061980	707.09	501	280	8.0	325	275-500	4-60		CEMENT PLUG AT 340FT
O		707.35	320		1.5	320	300-320	3-65		REMOVED
P		707.09	495	278	1.5	495	490-495	8-76		60 SLOT SCREEN
Q		707.09	370	274	1.5	370	365-370	8-76		60 SLOT SCREEN
R		707.35	350	112	1.5	280	340-350	6-64		REMOVED
699 32 70A	N 032065 P W 070345	666.00	295		8.0			7-57		ABANDONED AND BACKFILLED
699 32 70B 4492	N 032085 P W 070345	666.61	350	212	8.0	280	207-330	8-57		SAMPLE PUMP
699 32 72 4491	N 032481 P W 072041	668.16	580	218	8.0	415	210-485	7-57		CEMENT PLUG AT 415FT SAMPLE PUMP
O		668.42	230	210	1.5	230	210-230	0- 0		REMOVED
P		668.16	470	215	1.5	470	465-470	6-77		60 SLOT SCREEN
Q		668.42	480	218	1.5	479	460-480	6-64		REMOVED
R		668.42	410	210	1.5	403	390-410	6-64		REMOVED
S		668.42	360	210	1.5	360	340-360	6-64		REMOVED

WELL DESIGNATION EMA NO.	COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 32 77 4446	N 031812 P W 077032	653.74	290	185	8.0	222	175-290	5-51		CEMENT PLUG AT 222FT SAMPLE PUMP
699 32 83	N 031510 P W 083399	623.93	150		10.0			1-82	RRL-12	
699 33 6	N 032508 P W 006189	503.31	591	120	6.0	178		0-80	GOLDER 52	
699 33 14	N 033129 P W 014322	473.23	573	76	6.0	120		0-80	GOLDER 30	
699 33 21	N 032745 P W 021416	500.23	635		6.0			2-80	GOLDER 10	
699 33 30	N 033127 P W 029995	522.48	155		6.0			0-80	GOLDER 75	
699 33 38	N 033380 P W 038175	535.00	130		8.0	100	185-290	1-51	35-40-BR	CASING REMOVED
699 33 42 4779	N 032794 P W 042256	516.00	126	115	6.0	122	109-119	7-68		#20 SCREEN 109-119FT SAMPLE PUMP
699 33 56 4523	N 033000 P W 056000	717.03	440	315	12.0	440		10-58		10 IN SCREEN 315-409 PUMP INSTALLED
				402.03						
699 33 84			242					0-80	RRL-1	
699 34 E13		400.00						0- 0	NAGLES RANCH	FILLED IN
699 34 8	N 034069 P W 007852	486.25			6.0			0-80	GOLDER 119	

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WELL DESIGNATION EMA NO.		COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 34 19		N 033920 P W 019105	506.65			6.0			0-80	GOLDER 85	
699 34 20		N 033522 P W 020494	500.74	645		6.0	85		2-80	GOLDER 17	
699 34 39A 4448		N 034094 P W 038996	537.07	167	136	6.0	162	127-167	6-53	35-40A	SAMPLE PUMP PLUG AT 162
699 34 39B		N 034044 P W 038951	535.50	115		8.0	115		6-48	35-40B	CASING REMOVED
699 34 41 4789		N 034200 P W 041209	570.89	175	170	6.0	178	150-175	10-70		PLUG AT 178
699 34 42 4790		N 033554 P W 041778	540.20	182	139	6.0	145	123-182	10-70		SAMPLE PUMP PLUG AT 145
699 34 51 4414		N 033873 P W 051282	736.76	385 401.76	335	8.0	370	328-382	11-48	34.0-51.5	SAMPLE PUMP
699 34 88 4439		N 034404 P W 088207	632.82	688	161	8.0	210	156-605	12-48	34-88.5 34-89	CEMENT PLUG AT 210FT
	O		633.09	180	159	1.5	180	160-180	4-65		REMOVED
	P		633.06	688	187	1.5	518	668-688	6-64		REMOVED
	Q		633.06	600	187	1.5	588	590-600	6-64		REMOVED
	R		633.06	520	164	1.5	510	510-520	6-64		REMOVED
	S		633.06	440	164	1.5	433	430-440	6-64		REMOVED
	T		633.06	360	159	1.5	351	350-360	6-64		REMOVED
699 34 89A			643.00	441		8.0		233-353	6-81	RRL-6A	

WELL DESIGNATION EMA NO.	COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 34 89B	N 033507 P W 088816	643.44	4040		3.0			9-81	RRL-6B	
699 35 3	N 035004 P W 003062	486.36	480		6.0			0-80	GOLDER 53	DESTROYED
699 35 9 4419	N 034700 P W 009175	499.83	176	117	8.0	172	110-135	10-50	USGS NO.10 34.7-9.2	SAMPLE PUMP
699 35 16	N 034831 P W 015715	457.83	565	61	6.0	100		0- 0	GOLDER 29	
699 35 19A	N 034728 P W 019074	473.92	556		6.0			0-79	GOLDER 8	
699 35 19B	N 034671 P W 019026	482.08		82	6.0	106		0-79	GOLDER 8A	
699 35 27	N 034673 P W 027437	531.07	1403	159	2.0		NONE	12-73	DB-4	
699 35 28	N 034519 P W 028253	534.36	685	132	6.0	141		0-80	GOLDER 74	
699 35 66 4494	N 034860 P W 065758	725.65	450	288	8.0	307	280-317	6-57		CEMENT PLUG AT 322FT SAMPLE PUMP
699 35 70 4441	N 034523 P W 069988	693.72	325	240	8.0	266	235-320	9-48	34.5-69.5	6" LIN 0-233SCRN 233 -53,SAMPLE PUMP
699 35 78A 4445	N 035478 P W 078190	660.65	279	184	8.0	232	180-279	8-50	35.5-78 35-79	CEMENT PLUG AT 232FT SAMPLE PUMP
699 35 78B	N 035498 P W 078251	659.76	638		5.0			10-81	RRL-4	

WELL DESIGNATION (EMA NO.)	COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 35 95	N 035247 P W 094608	648.14	150		10.0			2-82	RRL-11	
699 36 E3	N 035506 P E 002889	465.68	375	101	6.0	353		0-80	GOLDER 100	4" PLASTIC LINER
699 36 1	N 036376 P W 001343	485.84	300		6.0	114		0-80	GOLDER 54	
699 36 2	N 035693 P W 002204	483.93	308	114	6.0	286		0-80	GOLDER 111	4" PLASTIC LINER
699 36 10	N 036394 P W 010251	526.99	603		6.0			0-81	GOLDER 115	
699 36 17	N 036438 P W 017029	440.44	508	48	6.0	118		0-79	GOLDER 6	
699 36 21	N 035780 P W 020625	486.74	120		6.0	87		0-81	GOLDER 84	
699 36 27	N 035913 P W 026551	532.32	655	129	6.0	142		0-80	GOLDER 70	
699 36 46P 4751	N 036195 P W 045612	705.45	533	299	1.0	507	510-520	4-66		
699 36 46Q 4752	N 036234 P W 045607	704.66	452	298	1.0		440-450	4-66		
699 36 46R 4753	N 036273 P W 045603	705.13	382	303	1.0		370-380	5-66		
699 36 46S 4767	N 036313 P W 045599	704.33	312	299	1.0		300-310	5-66		

WELL DESIGNATION / EMA NO.	COORDINATES	CASING ELEV. (FT-MSL)	DRILL DEPTH (FT)	D/W (FT)	DIA. (IN)	DEPTH TO BOTTOM (FT)	MIN-MAX PERFORATED DEPTH (FT)	DATE COMP. (M-Y)	FORMER DESIGNATION	COMMENTS
699 36 61A (4447)	N 036365 P W 060704	748.11	390	342 (406.11)	8.0	363	330-389	8-48	35.5-60.5 36-61	CEMENT PLUG AT 363FT SAMPLE PUMP
699 36 61B	N 036463 P	749.26	568	341	8.0	380	330-505	2-60		PLUG AT 380

Distance from U.S. Bradbury Site

36-61 406.11 1/4 mi NE

34-51 401.76 1/2

33-56 402.03 1/2

WELL NO. 6 31 53B TOTAL DEPTH= 430.50 9413286.1237

DATE: 021759
DRILLER:
FORMAN: LOECK

EOLIAN SEDIMENTS

DEPTH	MATERIALS PENETRATED
30.	SAND

GLACIOFLUVIAL SEDIMENTS

DEPTH	MATERIALS PENETRATED
40.	SILT & SAND
70.	NO RECORD
93.	CEMENTED SAND
120.	CEMENTED CLAY & SAND
140.	LITTLE CLAY-FINE SAND
150.	SAND
160.	GRAVEL
180.	FINE GRAVEL & SAND
215.	SAND
230.	SAND & GRAVEL-SOME COBBLESTONE
260.	SAND & CLAY
270.	MEDIUM SAND
288.	GRAVEL
306.	CONGLOMERATION, WATER TABLE AT -304 FEET

RINGOLD FORMATION

DEPTH	MATERIALS PENETRATED
312.	CEMENTED GRAVEL
318.	CONGLOMERATION
328.	GRAVEL
340.	ONE BOULDER-SAND & GRAVEL- LAYERS OF CEMENTED GRAVEL
352.	SAND & GRAVEL LAYERS CEMENTED
362.	SAND & GRAVEL SOME CEMENTED
365.	SAND & GRAVEL LITTLE CLAY
395.	SAND & GRAVEL LAYERS OF CLAY
403.	SANDY CLAY LAYERS CEMENTED GRAVEL
410.	CEMENTED GRAVEL
418.	SAND & GRAVEL SOME CEMENTED
430.	SAND-CLAY & GRAVEL CEMENTED
431.	CLAY

CONTAMINANT DATA - WELL NO. 6 31 538

CONTAMINANT TYPE -- TRITIUM (PCI/L)
CONTAMINANT CODE = 3
MEASURMENTS TO DATE = 42

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
28-SEP-66	2.00E+03	0.00E-01	19-DEC-66	4.30E+04	0.00E-01	14-SEP-67	1.80E+03	0.00E-01	13-FEB-69	5.00E+02	0.00E-01
20-MAY-69	5.30E+02	0.00E-01	22-JUL-69	5.10E+02	0.00E-01	19-JAN-71	6.30E+02	0.00E-01	12-MAY-71	6.80E+02	0.00E-01
15-JUL-71	5.60E+02	0.00E-01	9-NOV-71	5.20E+02	0.00E-01	12-JAN-72	7.70E+02	0.00E-01	9-MAY-72	8.70E+02	0.00E-01
20-SEP-72	1.10E+03	0.00E-01	5-MAR-73	1.40E+03	0.00E-01	30-APR-73	8.00E+02	0.00E-01	10-JUL-73	4.80E+02	0.00E-01
30-OCT-73	5.20E+02	0.00E-01	15-JAN-74	6.90E+02	0.00E-01	30-APR-74	8.00E+02	0.00E-01	8-JUL-74	1.30E+03	0.00E-01
31-DEC-74	1.40E+03	0.00E-01	29-APR-75	4.80E+02	0.00E-01	8-JUL-75	5.60E+02	0.00E-01	5-NOV-75	1.40E+03	0.00E-01
31-DEC-75	1.20E+03	0.00E-01	29-APR-76	2.20E+03	0.00E-01	29-JUN-76	1.20E+03	0.00E-01	29-OCT-76	1.90E+03	0.00E-01
4-FEB-77	9.00E+02	0.00E-01	26-APR-77	1.20E+03	0.00E-01	7-DEC-77	3.70E+04	0.00E-01	18-JAN-78	1.10E+03	0.00E-01
5-JUL-78	8.10E+02	0.00E-01	12-JAN-79	8.40E+02	0.00E-01	7-JAN-80	5.00E+02	0.00E-01	20-MAY-80	5.90E+02	0.00E-01
19-NOV-80	4.50E+02	0.00E-01	2-JUN-81	2.00E+03	0.00E-01	25-MAY-82	3.00E+02	0.00E-01	3-JAN-83	4.00E+02	0.00E-01
14-JUN-83	-2.30E+02	4.60E+02	27-DEC-83	-5.40E+01	4.30E+02						

9413286.1239

CONTAMINANT DATA - WELL NO. 6 31 53B

CONTAMINANT TYPE -- TOTAL BETA (PC1/L)
CONTAMINANT CODE = 2
MEASURMENTS TO DATE = 16

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
28-JUL-66	7.00E+02	0.00E-01	22-APR-69	1.50E+02	0.00E-01	20-MAY-69	1.50E+02	0.00E-01	6-JUN-69	1.50E+02	0.00E-01
22-JUL-69	1.50E+02	0.00E-01	30-OCT-69	1.50E+02	0.00E-01	19-JAN-71	1.50E+02	0.00E-01	12-MAY-71	1.50E+02	0.00E-01
15-JUL-71	1.50E+02	0.00E-01	9-NOV-71	1.50E+02	0.00E-01	12-JAN-72	1.50E+02	0.00E-01	6-JUL-72	1.50E+02	0.00E-01
30-OCT-73	7.50E+01	0.00E-01	15-JAN-74	7.50E+01	0.00E-01	5-NOV-75	7.50E+01	0.00E-01	31-DEC-75	7.50E+01	0.00E-01

HYDROGRAPH DATA - WELL NO. 6 31 53B

MEASURMENTS TO DATE = 57
CASING ELEVATION = 707.53(FT-MSL)
******* = DRY WELL

21-FEB-59	399.74	24-APR-59	399.88	23-JUN-59	400.02
30-SEP-59	400.39	23-DEC-59	401.09	22-MAR-60	401.11
29-JUN-60	401.24	23-SEP-60	401.43	8-DEC-60	401.89
21-MAR-61	401.84	27-JUN-61	403.08	13-DEC-61	402.81
5-MAR-62	402.84	26-JUL-62	402.99	14-JAN-63	403.59
26-JUL-63	403.14	23-DEC-63	404.12	29-JUL-64	403.67
18-JAN-65	404.16	2-APR-65	403.63	19-AUG-65	404.81
23-SEP-65	404.35	19-OCT-65	404.52	14-APR-66	404.99
16-MAY-66	404.48	28-JUL-66	404.81	31-OCT-66	404.81
28-MAR-67	405.00	19-MAR-68	404.92	22-APR-69	406.80
15-MAY-70	405.58	14-SEP-71	404.84	10-MAR-72	405.99
11-JUL-72	406.03	24-OCT-72	405.74	5-JAN-73	405.13
13-APR-73	405.04	17-JUL-73	404.64	13-AUG-73	404.26
29-AUG-73	404.22	14-SEP-73	404.33	1-OCT-73	404.08
17-OCT-73	404.13	15-APR-74	404.02	9-JUL-74	403.59
18-OCT-74	403.47	8-JAN-75	403.91	14-APR-75	403.57
7-JUL-75	403.45	3-DEC-75	403.24	15-JUN-76	403.38
15-DEC-76	402.73	7-DEC-77	403.37	1-JUN-78	403.31
1-JUN-80	403.26	1-DEC-80	403.14	1-JUN-81	403.42

9413286.1241

CONTAMINANT DATA - WELL NO. 6 31 53D

CONTAMINANT TYPE -- NITRATE (MG/L)
CONTAMINANT CODE = 4
MEASURMENTS TO DATE = 51

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
30-NOV-60	1.90E+00	0.00E-01	4-JAN-61	1.90E+00	0.00E-01	26-APR-61	6.00E-02	0.00E-01	24-MAY-61	1.00E-01	0.00E-01
28-JUN-61	0.00E-01	0.00E-01	26-JUL-61	1.20E+00	0.00E-01	27-SEP-61	3.10E+00	0.00E-01	25-OCT-61	1.60E+00	0.00E-01
27-DEC-61	4.30E+00	0.00E-01	27-FEB-62	2.90E+00	0.00E-01	15-AUG-62	1.40E+00	0.00E-01	10-JUL-63	1.10E+00	0.00E-01
22-JUL-69	4.60E+00	0.00E-01	30-OCT-69	3.30E+00	0.00E-01	19-JAN-71	4.90E+00	0.00E-01	12-MAY-71	6.10E+00	0.00E-01
15-JUL-71	4.20E+00	0.00E-01	9-NOV-71	2.50E+00	0.00E-01	12-JAN-72	4.80E+00	0.00E-01	28-FEB-72	9.90E+00	0.00E-01
9-MAY-72	3.80E+00	0.00E-01	6-JUL-72	5.00E+00	0.00E-01	20-SEP-72	5.60E+00	0.00E-01	5-MAR-73	5.90E+00	0.00E-01
30-APR-73	6.60E+00	0.00E-01	10-JUL-73	7.10E+00	0.00E-01	30-OCT-73	8.80E+00	0.00E-01	15-JAN-74	9.00E+00	0.00E-01
30-APR-74	6.40E+00	0.00E-01	8-JUL-74	6.80E+00	0.00E-01	31-DEC-74	4.80E+00	0.00E-01	29-APR-75	5.80E+00	0.00E-01
8-JUL-75	1.00E+01	0.00E-01	5-NOV-75	3.70E+00	0.00E-01	31-DEC-75	5.50E+00	0.00E-01	29-APR-76	5.10E+00	0.00E-01
29-JUN-76	5.90E+00	0.00E-01	29-OCT-76	5.50E+00	0.00E-01	4-FEB-77	6.20E+00	0.00E-01	26-APR-77	6.00E+00	0.00E-01
7-DEC-77	5.10E+00	0.00E-01	18-JAN-78	5.20E+00	0.00E-01	5-JUL-78	5.30E+00	0.00E-01	12-JAN-79	7.60E+00	0.00E-01
7-JAN-80	2.80E+00	0.00E-01	20-MAY-80	4.80E+00	0.00E-01	19-NOV-80	4.00E+00	0.00E-01	2-JUN-81	6.60E+00	0.00E-01
25-MAY-82	3.70E+00	0.00E-01	3-JAN-83	4.20E+00	0.00E-01	27-DEC-83	5.70E+00	0.00E-01			

WELL NO. 6 32 62 TOTAL DEPTH= 501.00

DATE: 022360
DRILLER:
FORMAN: BACH

GLACIOFLUVIAL OR EOLIAN SEDIMENTS

DEPTH	MATERIALS PENETRATED
40.	FINE SAND; SAND ALMOST TOO FINE TO STAY IN DRIVE BARREL
55.	NO RECORD, PROBABLY SAND
140.	FINE SAND
145.	HARD GRAVEL
160.	HARD PACKED SAND
180.	HARD PACKED SAND; JUST A LITTLE BROWN CLAY IN IT
190.	FINE HARD PACKED SAND; SEEMS TO HAVE A LITTLE BROWN CLAY IN IT
200.	FINE PACKED SAND; STILL HARD PACK W/A LITTLE BROWN CLAY OR SILT IN IT
215.	HARD PACKED SAND & CLAY; THIS SAND HAS MORE BROWN CLAY IN IT

PALOUSE FORMATION

DEPTH	MATERIALS PENETRATED
223.	FINE SAND

RINGOLD FORMATION

DEPTH	MATERIALS PENETRATED
245.	CEMENTED GRAVEL; AT ABOUT 223' HIT SOME HARD GRAVEL & COBBLES, SEEM TO BE CEMENTED W/A BROWN MATERIAL; BROWN CLAY
260.	CEMENTED GRAVEL; MORE DENSE W/CLAY, SOMEWHAT LARGER GRAVEL, CEMENTED IN GRAY OR BLUE LIKE MATERIAL
265.	CEMENTED GRAVEL; SAME KIND OF FORMATION AS BEFORE BUT LESS CEMENTED
270.	CEMENTED COBBLES; IN SOME LARGER COBBLES, THEY AREN'T CEMENTED AS MUCH AS THE GRAVEL
280.	BROWN SOIL W/GRAVEL, WATER TABLE AT -278 FEET
295.	GRAVEL, LITTLE CLAY
300.	SAND & GRAVEL; GRAVEL, PIPE DRIVING HARD
350.	SAND & GRAVEL; SAND & GRAVEL PACKED TOO HARD TO USE DRIVE BARREL
380.	GRAVEL & SAND; HARD PACKED SAND & GRAVEL
390.	GRAVEL & SAND; HARD PACKED SAND & GRAVEL
403.	GRAVEL & SAND
410.	YELLOW CLAY
458.	BLUE CLAY
470.	SAND ; CLAY
475.	SAND ; CLAY; FINE SILTY SAND AT 470', A LITTLE CLAY
492.	SILTY SAND
501.	SILTY SAND W/SMALL GRAVEL

[redacted]

WELL STRUCTURES DOCUMENTATION WELL - 6 32 9413286.1243
(MEASUREMENTS IN FEET UNLESS OTHERWISE NOTED)

CASING DATA:

LENGTHS ADDED				SUBTOTAL	DIAMETER
23.00	11.33	11.33	11.33	56.99	0.00
11.33	11.33	11.33	11.33	102.31	0.00
11.33	11.33	11.33	11.33	147.63	0.00
11.33	11.33	11.33	11.33	192.95	0.00
11.33	10.68	77.33	11.33	303.62	0.00
11.33	11.33	11.33	0.00	337.61	0.00

WELL STRUCTURES DOCUMENTATION WELL - 6 31 538
(MEASUREMENTS IN FEET UNLESS OTHERWISE NOTED)

CASING DATA:

LENGTHS ADDED				SUBTOTAL	DIAMETER
22.17	19.33	21.67	20.00	83.17	0.00
21.42	20.17	20.25	20.92	165.93	0.00
20.67	20.17	21.50	19.75	248.02	0.00
20.92	20.67	20.33	19.50	329.44	0.00

TOTAL = 329.44

HAND CALCULATED TOTAL = 329.50
TOTAL ERROR IN LENGTH = -0.06
TOTAL CASING PULLED = 0.00

PERFORATIONS

FROM	TO	HOLES/ROUND	SPACING	TYPE OF CUT
301.00	423.00	10	16"	REGULAR

COMMENTS: SCREEN DATA AVAILABLE NOT ENOUGHT TO PUNCH

COMMENTS: PIEZ. Q REMOVED

PIEZOMETER TUBES:

TUBE	LENGTH	PERFORATIONS FROM	TO
P	419.	400.	420.

1 No Data
for Total Area

6 32 62

9413286.1245

CONTAMINANT DATA - WELL NO. 6 32 62

CONTAMINANT TYPE -- TRITIUM (PCI/L)
CONTAMINANT CODE = 3
MEASURMENTS TO DATE = 40

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
13-FEB-69	6.20E+02	0.00E-01	20-MAY-69	5.30E+02	0.00E-01	21-JUL-69	5.10E+02	0.00E-01	20-JAN-71	5.40E+02	0.00E-01
15-JUL-71	5.60E+02	0.00E-01	5-NOV-71	5.20E+02	0.00E-01	6-JAN-72	5.20E+02	0.00E-01	28-SEP-72	5.20E+02	0.00E-01
8-MAR-73	5.50E+02	0.00E-01	30-AUG-73	8.10E+03	0.00E-01	15-JAN-74	5.00E+02	0.00E-01	30-APR-74	5.00E+02	0.00E-01
8-JUL-74	9.00E+02	0.00E-01	8-JUL-75	5.60E+02	0.00E-01	5-NOV-75	7.90E+02	0.00E-01	31-DEC-75	7.80E+02	0.00E-01
29-APR-76	1.10E+03	0.00E-01	29-JUN-76	1.10E+03	0.00E-01	26-APR-77	1.10E+03	0.00E-01	25-JUL-77	7.00E+02	0.00E-01
1-NOV-77	1.60E+03	0.00E-01	26-JAN-78	6.10E+02	0.00E-01	13-JUL-78	3.30E+03	0.00E-01	30-APR-79	2.10E+03	0.00E-01
18-JUL-79	9.10E+02	0.00E-01	2-OCT-79	6.90E+02	0.00E-01	23-JAN-80	6.60E+02	0.00E-01	17-APR-80	1.40E+03	0.00E-01
10-JUL-80	2.30E+03	0.00E-01	7-OCT-80	4.70E+06	0.00E-01	26-NOV-80	6.10E+02	0.00E-01	27-JAN-81	5.90E+02	0.00E-01
20-APR-81	4.90E+02	0.00E-01	29-SEP-81	6.10E+02	0.00E-01	21-JAN-82	5.20E+02	0.00E-01	20-JAN-83	5.50E+02	0.00E-01
15-APR-83	5.40E+02	4.90E+02	8-JUL-83	2.80E+02	4.40E+02	5-OCT-83	8.20E+02	4.40E+02	19-JAN-84	3.30E+02	4.40E+02

CONTAMINANT DATA - WELL NO. 6 32 62

CONTAMINANT TYPE -- TOTAL BETA (PCI/L)
CONTAMINANT CODE = 2
MEASURMENTS TO DATE = 11

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
23-APR-69	1.50E+02	0.00E-01	20-MAY-69	1.50E+02	0.00E-01	6-JUN-69	1.50E+02	0.00E-01	21-JUL-69	1.50E+02	0.00E-01
30-OCT-69	1.50E+02	0.00E-01	20-JAN-71	1.50E+02	0.00E-01	12-MAY-71	1.50E+02	0.00E-01	15-JUL-71	1.50E+02	0.00E-01
5-NOV-71	1.50E+02	0.00E-01	6-JAN-72	1.50E+02	0.00E-01	8-FEB-77	7.50E+01	0.00E-01			

CONTAMINANT DATA - WELL NO. 6 32 62

CONTAMINANT TYPE -- NITRATE (MG/L)
CONTAMINANT CODE = 4
MEASURMENTS TO DATE = 58

DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR	DATE	VALUE	+- ERROR
8-NOV-60	3.50E+00	0.00E-01	22-NOV-60	3.50E+00	0.00E-01	13-DEC-60	1.00E+01	0.00E-01	20-DEC-60	6.20E+01	0.00E-01
10-JAN-61	2.70E+01	0.00E-01	11-APR-61	4.60E+01	0.00E-01	18-APR-61	4.20E+01	0.00E-01	16-MAY-61	1.00E+01	0.00E-01
23-MAY-61	1.90E+01	0.00E-01	13-JUN-61	4.20E-01	0.00E-01	11-JUL-61	1.10E+01	0.00E-01	15-AUG-61	7.90E+00	0.00E-01
12-SEP-61	2.00E+00	0.00E-01	14-NOV-61	7.30E-01	0.00E-01	21-NOV-61	2.00E+00	0.00E-01	12-DEC-61	1.90E+00	0.00E-01
17-DEC-61	1.00E-01	0.00E-01	22-MAY-62	9.90E+00	0.00E-01	6-NOV-62	9.70E-01	0.00E-01	10-JUL-63	9.30E+00	0.00E-01
30-OCT-69	5.00E-01	0.00E-01	20-JAN-71	1.10E+00	0.00E-01	12-MAY-71	5.00E-01	0.00E-01	15-JUL-71	5.00E-01	0.00E-01
5-NOV-71	4.90E+00	0.00E-01	6-JAN-72	5.00E-01	0.00E-01	17-MAY-72	5.00E-01	0.00E-01	28-SEP-72	5.00E-01	0.00E-01
8-MAR-73	5.00E-01	0.00E-01	7-JUN-73	5.00E-01	0.00E-01	30-AUG-73	5.00E-01	0.00E-01	15-JAN-74	5.00E-01	0.00E-01
30-APR-74	5.00E-01	0.00E-01	8-JUL-74	5.00E-01	0.00E-01	8-JUL-75	2.00E+01	0.00E-01	5-NOV-75	7.00E-01	0.00E-01
31-DEC-75	2.10E+00	0.00E-01	29-APR-76	2.30E+00	0.00E-01	29-JUN-76	7.00E-01	0.00E-01	26-APR-77	2.60E+01	0.00E-01
25-JUL-77	2.20E+01	0.00E-01	1-NOV-77	2.70E+01	0.00E-01	26-JAN-78	2.40E+01	0.00E-01	13-JUL-78	2.80E+01	0.00E-01
30-APR-79	2.50E+01	0.00E-01	18-JUL-79	2.80E+01	0.00E-01	2-OCT-79	2.80E+01	0.00E-01	23-JAN-80	2.50E+01	0.00E-01
17-APR-80	2.10E+01	0.00E-01	10-JUL-80	2.50E+01	0.00E-01	27-JAN-81	2.60E+01	0.00E-01	20-APR-81	2.60E+01	0.00E-01
29-SEP-81	2.70E+01	0.00E-01	21-JAN-82	2.50E+01	0.00E-01	20-JAN-83	2.60E+01	0.00E-01	15-APR-83	2.50E+01	0.00E-01
5-OCT-83	2.40E+01	0.00E-01	19-JAN-84	1.80E+01	0.00E-01						

HYDROGRAPH DATA - WELL NO. 6 32 62

MEASUREMENTS TO DATE = 60
CASING ELEVATION = 707.09(FT-MSL)
******* = DRY WELL

22-FEB-60	420.92	28-SEP-60	421.45	7-DEC-60	421.55
23-MAR-61	422.48	27-JUN-61	422.79	13-DEC-61	423.57
5-MAR-62	423.80	26-JUL-62	424.10	14-JAN-63	424.75
26-JUL-63	424.92	19-DEC-63	425.49	19-JAN-65	426.44
20-AUG-65	426.57	22-SEP-65	426.75	18-OCT-65	426.85
29-DEC-65	427.31	1-MAR-66	426.72	11-APR-66	427.41
16-MAY-66	427.07	1-AUG-66	427.23	31-OCT-66	427.22
3-JAN-67	427.65	28-MAR-67	428.00	16-OCT-67	428.09
19-MAR-68	428.00	23-APR-69	429.67	15-MAY-70	429.47
14-SEP-71	429.42	10-MAR-72	429.72	10-JUL-72	428.29
24-OCT-72	429.33	8-JAN-73	429.20	13-APR-73	429.69
17-JUL-73	429.09	15-AUG-73	429.45	31-AUG-73	429.45
14-SEP-73	428.97	4-OCT-73	429.50	18-OCT-73	429.43
18-APR-74	429.32	10-JUL-74	428.60	8-JAN-75	427.84
14-APR-75	430.11	7-JUL-75	429.33	3-DEC-75	429.03
15-JUN-76	429.30	8-DEC-76	429.15	1-JUL-77	429.69
7-DEC-77	429.48	1-JUN-78	429.65	1-DEC-78	429.16
1-JUN-80	429.04	1-DEC-80	430.22	1-JUN-81	429.88
1-DEC-81	429.84	1-JUN-82	429.87	1-DEC-82	429.66
1-JUN-83	429.89	1-DEC-83	429.36	29-MAY-84	246.98

WA 8967
9-14-93
7a

SEP 14 1993

Ms. Mary Riveland, Director
State of Washington
Department of Ecology
P. O. Box 47600
Olympia, WA 98504-7600

Dear Ms. Riveland:

STATE LEASEHOLD LOCATED ON HANFORD RESERVATION

Reference: Letter, J.D. Wagoner, RL, to M. Riveland, Director, Department of Ecology, "State Leasehold Land on Hanford Reservation", dated May 12, 1993.

This letter is to follow up on the May 12, 1993, letter (Reference 1, enclosed) regarding the unutilized 900 acres of the 1,000 acre tract leased to the State of Washington (State) under a lease signed September 10, 1964. Under Article 10 of this lease between the United States of America, represented by the Atomic Energy Commission (Commission), and the State of Washington, the Commission may at any time following the expiration of ten years from the signing of the lease, recapture unutilized portions of the leased premises by giving the State sixty (60) days written notice.

The Department of Energy, Richland Operations Office (RL), the successor agency to the Commission, has recently completed a siting evaluation for the optimal location of an Environmental Restoration Disposal Facility (ERDF) necessary to support environmental restoration activities at the Hanford Site. The evaluation concluded that the optimal siting for ERDF would include the 900 acres presently leased to the State but not currently utilized. This siting allows for the lowest cost of construction and operation of the facility, and further, conforms to the recommendation of the Hanford Future Site Uses Working Group that all waste disposal activities be centralized to the extent possible on the 200 Area plateau.

Please be advised that in accordance with Article 10 of Lease Contract AT (45-1) 1835, RL is hereby notifying the State that we are terminating the lease on the unutilized 900 acres of land effective sixty (60) days from date of receipt of this notice. This termination will not affect the 100 acres of the leased premises currently utilized under a sub-lease to U. S. Department of Ecology, and the primary lease will continue in full force and effect between the United States of America and the State as to the 100 acre leasehold.

RL is still willing to discuss the availability of other Hanford lands to support the original purposes of the leasehold. If you would like to discuss the subject further, please contact Charles Pasternak on (509) 376-6354.

Sincerely,

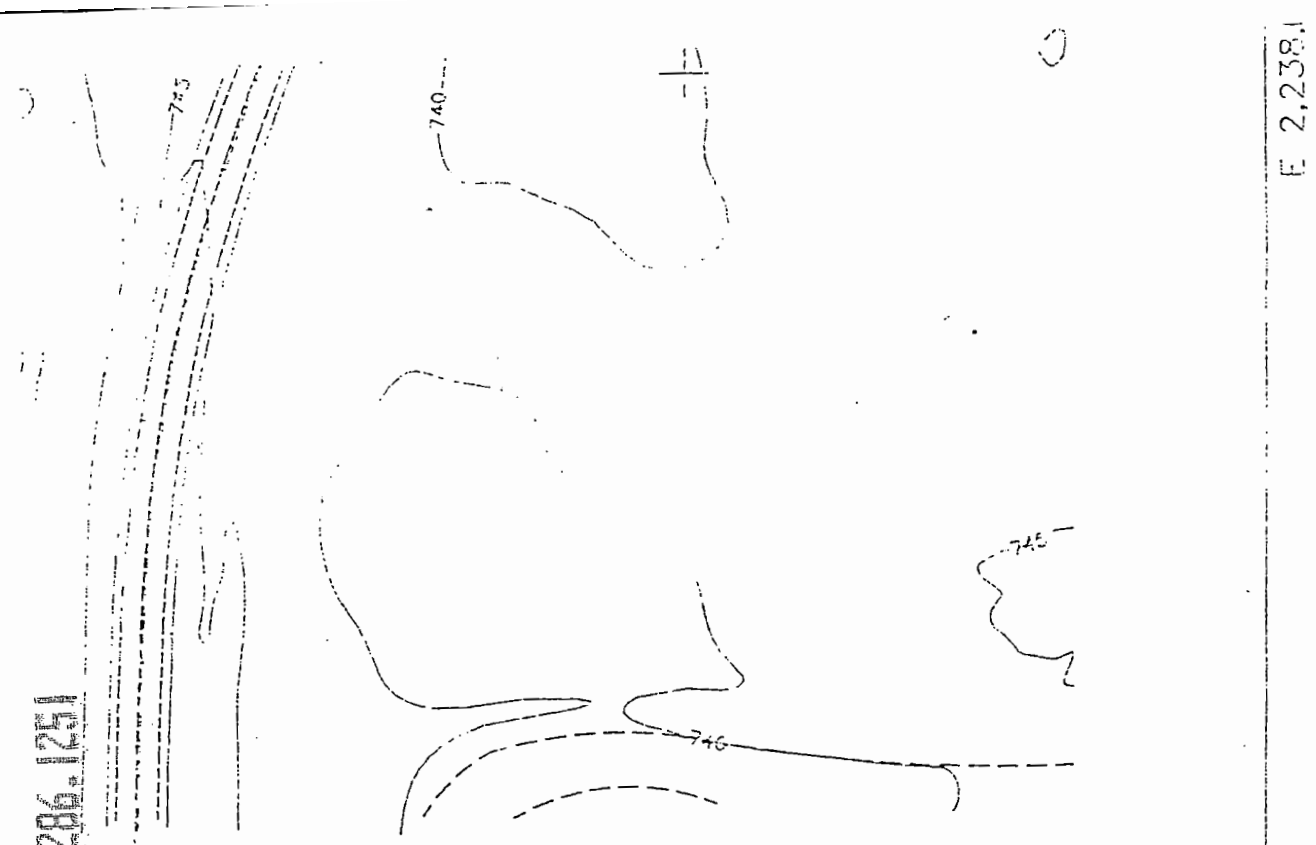
Original signed by:
John D. Wagoner
Manager

John D. Wagoner
Manager

SID:CRP

Enclosure

cc: Jeff Breckel
Dan Silver



N 442,500

Rev	Drawn	Check	Appr	PE Appr	Date	Description
2	MDM	HWA	RES	HWA	2.27.91	MODIFIED ENVIRONMENTAL SAMPLING POINTS
1	MDM	HWA	RES	HWA	1.17.91	ADDED FUTURE TRENCHES, MODIFIED ENVIRONMENTAL SAMPLING POINTS
0	MDM	HWA	RES	HWA	8.30.90	COMPREHENSIVE FACILITY UTILIZATION PLAN

REVISIONS

Reference Drawings

Drawing No. WN-200-TOP-000

Revision No. 2

END

PROPER

FENCE

EXISTING

FUTURE

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E 2,236,000 E 2,236,500 E 2,237,000 E 2,237,500 E 2,238,000

TRENCH 15 TRENCH 16 TRENCH 17 TRENCH 18 TRENCH 19 TRENCH 20 TRENCH 21 TRENCH 22 TRENCH 23 TRENCH 24 TRENCH 25 TRENCH 26 TRENCH 27 TRENCH 28 TRENCH 29 TRENCH 30 TRENCH 31 TRENCH 14 TRENCH 13 PROPOSED TRENCH 12 TRENCH 11-A TRENCH 10 TRENCH 9 TRENCH 8 TRENCH 7 TRENCH 7-A TRENCH 6 TRENCH 5 TRENCH 4 TRENCH 4-A TRENCH 4-B TRENCH 3 TRENCH 2 TRENCH 1 CHEMICAL TRENCH RXT TRENCH

IF-300 CAISSON FUTURE

IF-300 CAISSON EXISTING

RESIN TANKS

003 005 008 010

MAP produced under general direction of
HOWARD W. ALTHOUSE P.E.
STATE of WASHINGTON REGISTRATION NO. 23042

Howard W. Althouse
FEBRUARY 27, 1991

GROUND CONTROL BY
ROGERS SURVEYING Inc. P.S.
RICHLAND, WASHINGTON

PHOTOGRAMMETRY BY
WALKER AND ASSOCIATES, Inc.
SEATTLE, WASHINGTON

0 2 4 6 8 10 20
WIND IN EACH DIRECTION (%)

PERCENT OF TIME (%)
HANFORD METEOROLOGICAL STATION NUMBER
PERCENT OF CALM (%)

0' 50 100' 50 200' 300' 400'
SCALE 1" = 100'
CONTOUR INTERVAL 1'
DATE OF PHOTOGRAPHY 3-5-87

LATITUDE N 46° 32' 17"
LONGITUDE W 119° 33' 29"
The horizontal control is based on N.G.S. North American datum of 1927, adjusted 1947, Lambert Grid system, Washington South Zone. The reference points used were station "PUG" (Quad 461194, Station No. 1047) and "CABLE" (Quad 461191, Station No. 1011).

The vertical control is based on U.S.C. & G.S. datum, 1947 adjustment of second-order leveling from B.M. No. J-317.

LEGEND

- PROPERTY LINE
- FENCE
- EXISTING TRENCH
- FUTURE CONSTRUCTION
- o003 MONITORING WELLS
- MONTHLY TLD
- QUARTERLY TLD
- 3 SOIL, VEGETATION, AND AIR MONITORING STATIONS

LOW — LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY

PREPARED FOR

US Ecology, Inc.
RICHLAND, WASHINGTON

SUBSIDIARY OF

US Ecology
an *American Ecology* company

Rev	Drawn	Check	Appr	PE Appr	Date	Description
2	MJH	Howard	KB	Howard	2/27/91	MODIFIED ENVIRONMENTAL SAMPLING POINT
1	MJM	HWA	RES	HWA	1.17.91	ADDED FUTURE TRENCHES, MODIFIED ENVIRONMENTAL SAMPLING POINTS
0	MJM	HWA	RES	HWA	8.30.90	COMPREHENSIVE FACILITY UTILIZATION PLAN

REVISIONS

Reference Drawings

Drawing No. WN-200-TOP-000

Revision No. 2

14 of 18
Denver

(P)
7B
WA 8967

HANFORD SITE
US ECOLOGY, INC.
RICHLAND, WASHINGTON

RCRA FACILITY ASSESSMENT REPORT

6-22-92

FINAL REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	R10057
EPA Region	:	10
Date Prepared	:	June 22, 1992
Contract No.	:	068-W9-0009
Site	:	US Ecology, Inc.
Prepared by	:	PRC Environmental Management, Inc.
PRC Project Manager	:	Gwen Herron
Telephone	:	206/624-2692
EPA Work Assignment Manager	:	Christy Ahlstrom
Telephone	:	206/553-8506

Signature: Christy Ahlstrom Date: 7-20-92

____ This report requires revision based on comments provided by EPA.

✓ This report is approved as the final RFA report.

Note: Upon receipt of this RFA report cover sheet signed by the EPA WAM, the contractor shall forward a copy to the EPA RPO and RFA tracking contacts in the RCRA Permits Section (Diane West) and the RCRA Compliance Section (Cheryl Williams).

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1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received work assignment no. 12R10057 from the U.S. Environmental Protection Agency (EPA) under contract no. 68-W9-0009 to support EPA enforcement of the Resource Conservation and Recovery Act (RCRA). The U.S. Department of Energy (DOE) is applying for a RCRA hazardous waste permit for the Hanford Site. As a part of the permit process, all solid waste management units (SWMU) on the facility must be assessed. This work assignment consists of conducting a RCRA facility assessment (RFA) at US Ecology, Inc. (US Ecology) low-level radioactive waste disposal facility, formerly Nuclear Engineering Co., Inc., located near Richland, Washington on the Hanford Site. PRC conducted a preliminary file review and visual site inspection of the US Ecology facility as part of the RFA process. A draft RFA report presenting the findings of the preliminary file review and the site inspection was submitted to EPA. This final RFA report incorporates EPA comments.

An RFA is performed to evaluate a facility's past and present solid waste management practices. If these practices pose a threat to human health or the environment, corrective action is required. The RFA focuses on the facility's SWMUs. A SWMU includes any unit of the facility from which hazardous constituents might migrate, irrespective of whether the units are intended for management of solid or hazardous waste (Federal Register, July 15, 1985). The SWMUs are evaluated for past and potential releases of hazardous waste or constituents. A RCRA facility investigation may then be required to define the nature and extent of release and determine the need for corrective action.

An RFA represents a first step in the process for implementing the corrective action provisions of the 1984 Hazardous and Solid Waste Amendments to RCRA. Specifically, RCRA sections 3004(u), 3004(v), and 3008(h) grant EPA the authority to require corrective actions for releases of hazardous waste and constituents from SWMUs at RCRA-regulated facilities. An RFA generally consists of three steps: preliminary review, visual site inspection, and sampling visit, if needed. The purpose of the preliminary review and site inspection is to compile and evaluate available information about the facility to accomplish the following:

- Identify and gather information on releases of hazardous waste and constituents at the RCRA facility
- Identify SWMUs and areas of concern at the facility and evaluate them for releases of hazardous waste
- Screen from further investigation those SWMUs that do not pose a threat to human health or the environment

- Determine the need for additional investigations, such as a sampling visit, and interim measures at the facility

The preliminary review was conducted in accordance with procedures outlined in the EPA (1986) RFA guidance document. File reviews and interviews were conducted at the EPA Region 10 office and the Office of Nuclear and Mixed Waste Management Program, Washington Department of Ecology (Department of Ecology), Olympia, Washington. Personnel contacted at these agency offices are listed below:

Paul Stasch	Department of Ecology Office of Nuclear and Mixed Waste Management Program
Dan Duncan	EPA Region 10 Federal Facilities Branch
Wayne Pierre	EPA Region 10 Federal Facilities Branch

During the visual site inspection conducted November 20, 1991, all areas of interest specified in the preliminary review report were examined. PRC and EPA were accompanied during the inspection by the following individuals:

Joe Witczak	Department of Ecology
Ron Brunke	Westinghouse Hanford Company
Randy Krekel	DOE
Tom Hayes	US Ecology
Bob Bidstrup	US Ecology
Barry Bede	American Ecology

Appendix C of this document contains a summary of the site inspection activities.

2.0 ENVIRONMENTAL SETTING

This section describes the environmental setting in the vicinity of the US Ecology low-level radioactive waste disposal facility.

2.1 CLIMATE

The US Ecology facility is located near the center of the Hanford Site in the Pasco basin of southern Washington. The Hanford Site is located near the confluence of the Yakima and Columbia rivers.

The Pasco basin, located in the rain shadow of the Cascade Mountains, receives an average annual rainfall of about 6.3 inches, classifying the area as a mid-latitude semiarid desert. Average monthly temperatures vary from 29°F in January to 76°F in July. Prevailing winds in the vicinity of the site are predominantly from the northwest, and winds vary from 6 to 7 mph in the winter to 8 to 10 mph in the summer. Winds from the southwest are common during spring and fall. In an average year, there are about 26 days in which peak wind gusts exceed 40 mph (US Ecology, 1985b).

2.2 TOPOGRAPHY

The topography of the central Hanford Site consists of a gentle rise covered with dunes and small closed basins. Local prominent land forms surrounding the facility include Gable Mountain and Gable Butte to the north, Yakima Ridge to the west, and Rattlesnake Hills and Red Mountain to the south. The Columbia River is located about 12 miles east of the facility. The Yakima River is located approximately 13 miles south of the facility at its closest point, flowing from west to east. Cold Creek, a small ephemeral stream, flows through the Hanford Site.

The elevation of the US Ecology disposal facility is approximately 720 feet above mean sea level. At this elevation, the facility is well above any floodplain of the Yakima River, Columbia River, or Cold Creek.

The original topography of the US Ecology disposal facility site was characterized by a series of dunes and small closed basins typical of the surrounding area. This topography changed during facility development and grading. The disposal site is now characterized by a gentle (1 percent) slope from north to south. Since it is located near the crest of a gentle rise, the facility is subject to localized stormwater runon from the east.

2.3 GEOLOGY AND HYDROGEOLOGY

This subsection provides a discussion of the regional and local geology and subsurface hydrogeology of the US Ecology facility.

2.3.1 Regional Geology and Hydrogeology

The Hanford Site is located within the Pasco basin, a structural, sediment-filled basin within the Columbia plateau (Figure 1). From top to bottom, the sediments of Pasco basin are divided into the following lithologic units: surficial Holocene eolian and fluvial sediments, glaciofluvial deposits of the Pleistocene Hanford Formation, local early Palouse soil predominantly of eolian origin, local Pliocene-Pleistocene alluvial deposits, and the Miocene-Pliocene Ringold Formation (Figure 2).

The bulk of the sediments at the Hanford Site are assigned to the Hanford and Ringold Formations. The Hanford Formation consists of sands, silts, clays, and some gravels that were deposited in alluvial fans. The Hanford Formation is divided from top to bottom into two units: the Touchet Beds, which are a silt and sand deposit, and the Pasco Gravels, which are predominantly sand and gravels. The Ringold Formation is mostly sands, silts, and clays with some gravels and cobbles and is either partially or well cemented. The Hanford and Ringold Formations extend from the surface to a depth of about 510 feet near the US Ecology facility.

The Miocene Columbia River Basalt Group underlies the sediments at the Site. This thick sequence of flood basalts covers a large area of eastern Washington, western Idaho, and northwestern Oregon reaching a thickness in excess of 10,000 feet in the downwarped Pasco basin. The Saddle Mountain Basalt Formation is the uppermost unit of the Columbia River Basalt Group. Sedimentary interbeds of the Ellensberg formation occur within the Saddle Mountain Basalts.

Geologic structures and stratigraphy have a major influence on the hydrogeology in the Pasco basin. The basalt and lower portion of the Ringold Formation were folded predominantly by north-south compression during the Miocene-Pliocene epochs, creating a series of easterly-trending asymmetric synclines and anticlines. The synclines are generally broad areas of thick sediment accumulation, while the anticlines are more tightly folded, ridge-forming bedrock (DOE, 1990a). Groundwater is concentrated in the axis of the synclines.

Aquifers within the Pasco basin occur in the unconsolidated and consolidated sediments and in the underlying basalt and sedimentary interbeds. The major aquifers include a near-surface unconfined aquifer in the middle portion of the Ringold Formation, as well as in the confined interbeds, flow tops, and flow bottoms of the Saddle Mountain Basalts. The uppermost

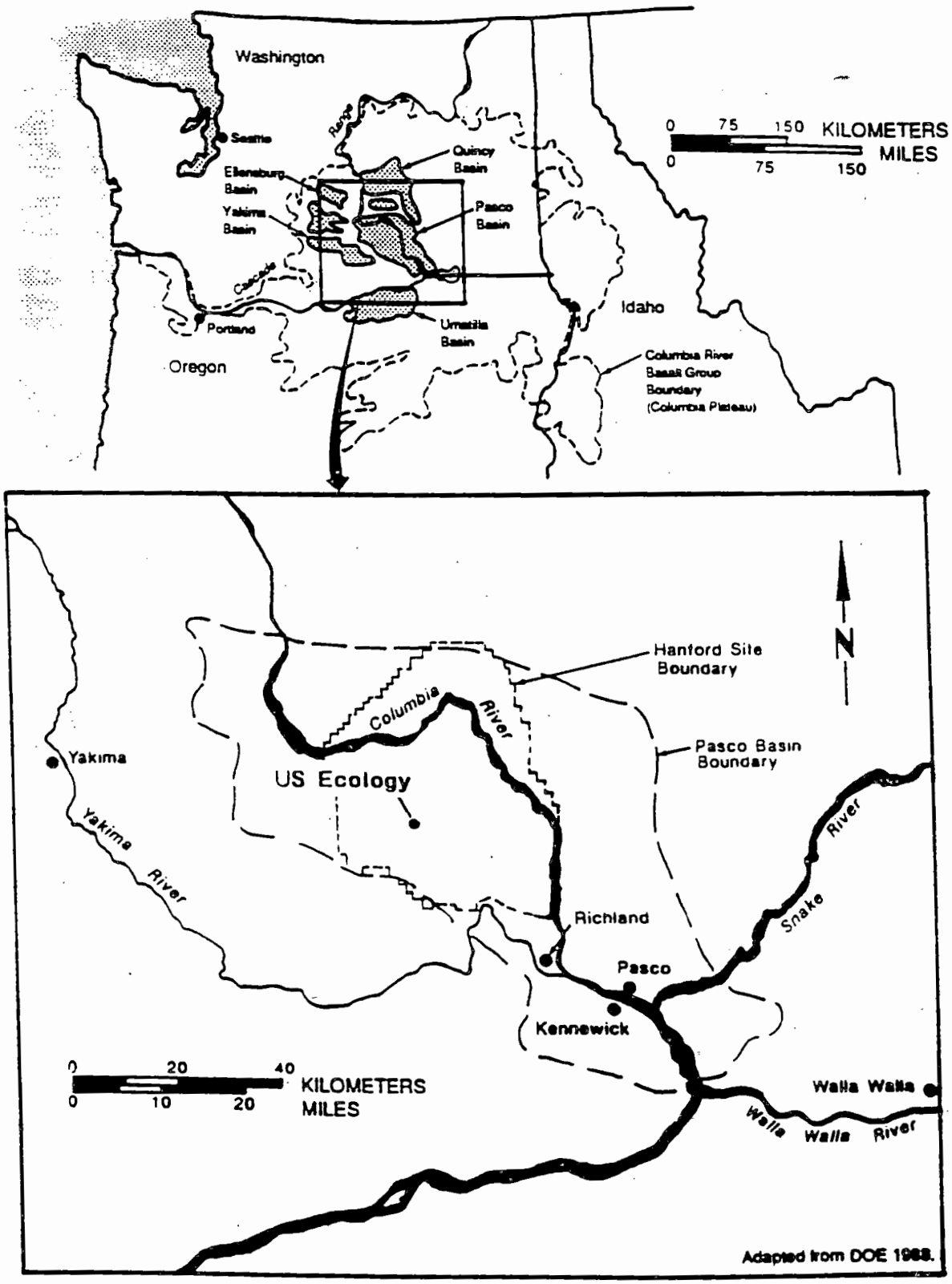
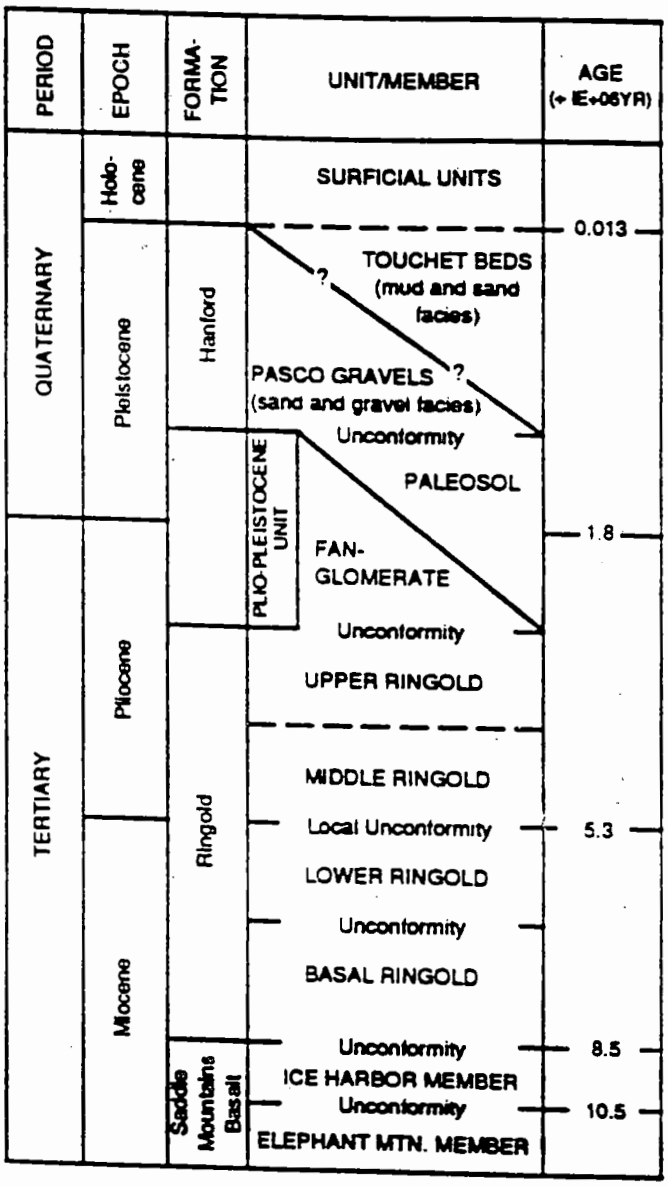


Figure 1
Location of US Ecology
Disposal Facility
Within the Pasco Basin

Source: DOE, 1990a

PRC ENVIRONMENTAL MANAGEMENT, INC.



Source: DOE, 1990a

Figure 2
US Ecology
Stratographic Column
Pasco Basin

PRC ENVIRONMENTAL MANAGEMENT, INC.

aquifer found in the Pasco Gravels of the Hanford Formation and in the middle-lower portion of the Ringold Formation (Delaney, et al., 1991) is laterally extensive below most of the Hanford Site, with thicknesses ranging from 50 to 200 feet. Natural recharge to the unconfined aquifer occurs primarily from runoff from surrounding mountains, ridges, and hills (DOE, 1990a). The Yakima and Columbia rivers also contribute to the total natural recharge of the unconfined aquifer, as may groundwater from the deeper basalt aquifers (Delaney, et al., 1991). Percolation of rainwater directly to the uppermost aquifer appears to contribute little recharge (Delaney, et al., 1991). Groundwater flow in the uppermost aquifer is predominantly horizontal from west to east toward the Columbia River (DOE, 1990a). Groundwater flow in the confined aquifers is also generally toward the Columbia River (Delaney, et al., 1991).

Confined to semiconfined hydraulic conditions occur locally within the lower portion of the Ringold Formation. These aquifers are a result of the interfingering of impermeable silts with more permeable lenses of sand and gravel. These zones appear to be laterally discontinuous and likely merge with the unconfined system above.

A multiple confined aquifer system occurs within the Columbia River Basalt Group. The confined aquifers are hosted by interbeds within the basalt (Delaney, et al., 1991). The interbeds occur at lava flow contacts and consist of the flow top of the lower flow, intervening sedimentary deposits, and the flow bottom of the upper flow (DOE, 1990a). The dense inner flow material forms the aquitards separating the interbed aquifers. The uppermost interbed aquifers are found in the Saddle Mountain Basalt Formation. Interbed aquifers range in thickness from 20 to 110 feet.

2.3.2 Local Geology and Hydrogeology

Geologic and hydrogeologic information has been obtained at the US Ecology site from disposal unit excavations to approximately 50 feet in depth and installation of monitoring wells to 360 feet in depth (US Ecology, 1985b). The first 10 to 20 feet consist of colluvium, alluvium, and dune sands, with occasional layers of volcanic ash. The next 50 to 60 feet likely represent the Touchet silts of the Hanford Formation, consisting primarily of alluvial and colluvial materials with alternate layers of silt, fine sand, and medium to coarse sand. The next 100 to 200 feet consists of poorly sorted sands, silts, and gravels. These materials probably represent the Pasco Gravels of the Hanford Formation. The water table occurs in a well sorted sand and gravel, which is probably the upper to middle Ringold Formation (US Ecology, 1985b).

The water table occurs at an elevation of approximately 407 feet above mean sea level. Depth to water varies from 318 feet to 328 feet below ground surface. Thickness of the unconfined

aquifer at the site is estimated at 230 feet (US Ecology, 1985b). Aquifer characteristics have been determined by pump tests conducted in a number of monitoring wells. Groundwater flow in the vicinity of the facility is in an easterly to northeasterly direction. The hydraulic gradient based on data from 1983 is approximately 0.0008 feet per foot (ft/ft) and has been estimated to reach a maximum of 0.002 ft/ft (US Ecology, 1985b).

3.0 FACILITY DESCRIPTION

This section describes the facility location, past and present operations and hazardous waste management practices, and regulatory history of the US Ecology low-level radioactive waste disposal facility.

3.1 FACILITY LOCATION

The US Ecology low-level radioactive waste disposal facility is located near the center of the DOE Hanford Site within a 1,000-acre state-leased tract of land near latitude 46° 32' 17" north, longitude 119° 33' 29" west (US Ecology, 1985b). US Ecology subleases approximately 100 acres from Washington state in the southeast quadrant of Section 9 for the disposal facility. As shown in Figure 1, the US Ecology facility is located near the center of the Hanford Site and over 6 miles from the nearest Hanford Site boundary. The closest population center to the facility is Richland, Washington, approximately 3 miles south of the southernmost boundary of the Hanford Site.

3.2 FACILITY OPERATIONS

US Ecology currently operates as a commercial, low-level radioactive waste disposal facility. The site was initially licensed and opened for commercial disposal in September 1965 (Department of Ecology, 1985b). Historical and current disposal practices consist of random disposal of containerized wastes in unlined trenches. There are 15 closed low-level radioactive waste trenches and one closed chemical waste trench. No attempt by US Ecology has been made to record the exact location of individual shipments of waste within a trench. According to US Ecology, this was done purposely to discourage unauthorized recovery of waste (US Ecology 1985b). Since beginning operation, US Ecology has received approximately 12 million cubic feet of low-level radioactive waste (US Ecology, 1991).

All the facility trenches are constructed in an east-west orientation. Appendix B contains a topographic map detailing the locations of existing trenches, facility buildings, and future

trenches. Initially, trenches were constructed by excavation with a bulldozer and towed scraper, later using a dragline. Trench size was determined by the expected rate of receipts and the capabilities of the available equipment. Depths of the trenches vary; Trench 10 is the deepest at 45 feet below ground surface (US Ecology, 1985b). Trench 14 is active but nearing capacity. Trench 16 has been excavated for future disposal once Trench 14 is full. Trenches 12 and 15 are proposed trenches that will be excavated at a future date as disposal space is needed.

US Ecology also received nonradioactive chemical waste for disposal until 1972 (US Ecology, 1990). Disposal occurred in the unlined chemical trench. Wastes were disposed of in containers; however, there is suspicion that uncontainerized liquid wastes were also disposed of in the chemical trench. A former US Ecology employee told Department of Ecology staff that past facility practices included disposal of bulk liquid waste in the chemical trench (AT Kearney, 1987). However, this statement is not confirmed by US Ecology.

US Ecology acknowledges the receipt of scintillation fluids containing scintillating material and solvents such as xylene, toluene, and benzene. Scintillation fluids that meet the current definition of a mixed waste, as well as other hazardous or mixed wastes, were disposed of in trenches prior to November 1985 (US Ecology, 1985a,b). Documents from the Department of Ecology indicate US Ecology accepted scintillation fluids prior to November 1985 (Department of Ecology, 1985c) and identify disposal of other types of mixed waste such as discarded lead shielding (Department of Ecology, 1985b).

The facility has installed five groundwater monitoring wells on site (Figure 3). According to a US Ecology monitoring report (1991), one well is positioned upgradient, and four wells are downgradient. Samples from these wells are analyzed quarterly for radioactivity and physical and chemical parameters. The physical parameter analyses are limited to temperature, specific conductivity, total organic carbon, and nitrates (US Ecology, 1991). The parameters measured do not include RCRA hazardous constituents.

3.3 REGULATORY HISTORY

US Ecology operates a low-level radioactive waste disposal site under a license granted by the Nuclear Regulatory Commission and overseen by the Washington State Department of Health. US Ecology originally notified EPA of its hazardous waste activities and was assigned an EPA hazardous waste identification number (WAD 060048360) in early 1980 (Department of Ecology, 1985b). A RCRA Part A treatment, storage, and disposal permit application dated November 18, 1980 was submitted to EPA. This application was incomplete and was accompanied by a letter

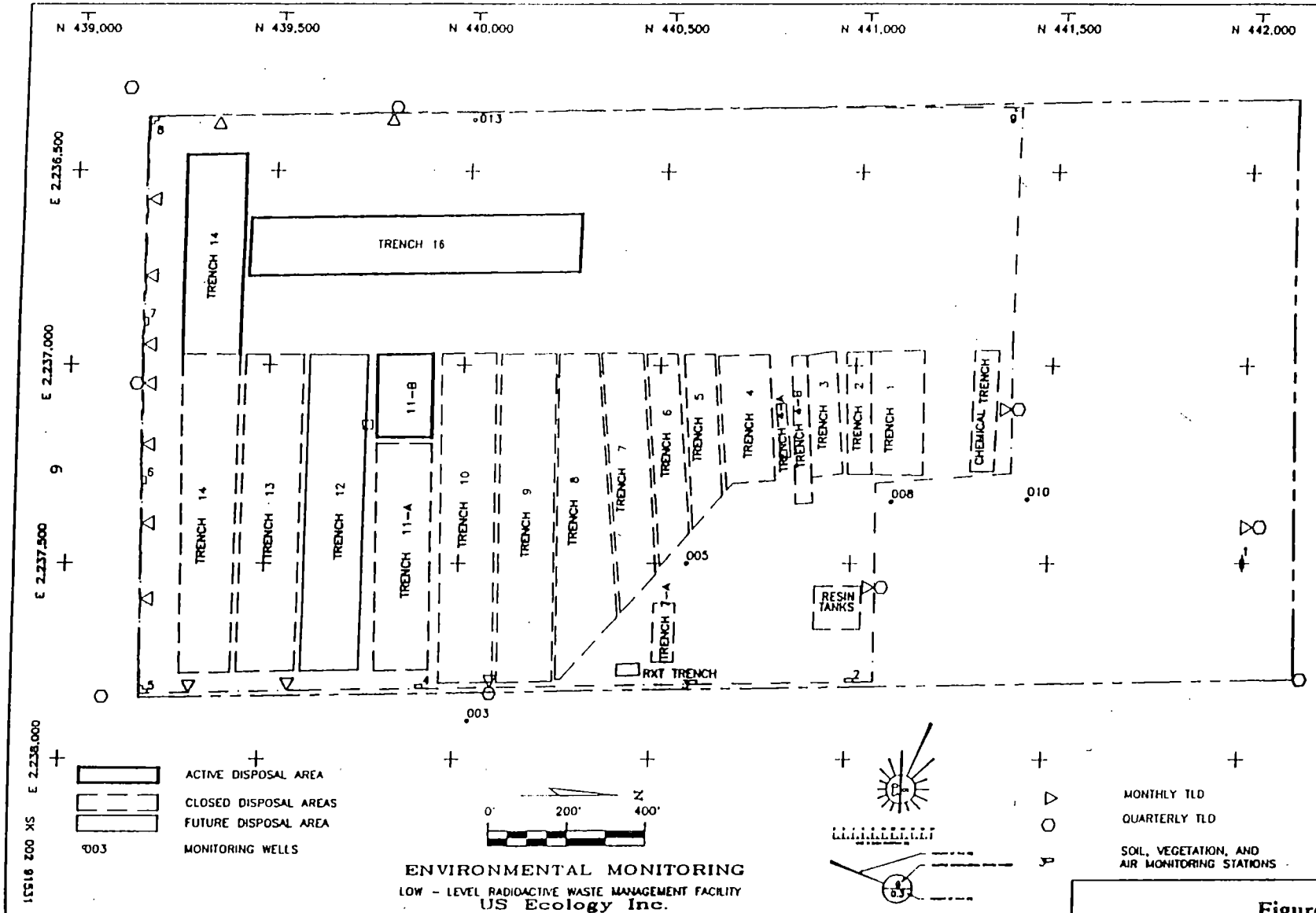


Figure 3
US Ecology
Groundwater Monitoring
Well Locations

Source: US Ecology, 1991

PRC ENVIRONMENTAL MANAGEMENT, INC.

from the company vice president expressing uncertainty as to the regulatory status of the facility under RCRA. In early 1985, EPA and the Department of Ecology separately requested that US Ecology submit a Part B permit application for operating a hazardous waste facility (Department of Ecology, 1985a; EPA, 1985). In addition, the Department of Ecology requested that US Ecology revise and update its Part A application. US Ecology responded by filing a Part B application for a closure and postclosure plan, dated October 29, 1985, with the Department of Ecology (Department of Ecology, 1985b). Accompanying the Part B application was another letter expressing US Ecology's uncertainty about being subject to RCRA. According to a Department of Ecology memo, US Ecology lost interim status on November 8, 1985 because of failure to comply with the RCRA groundwater requirements (Department of Ecology, 1987). Currently, US Ecology is not permitted to receive RCRA-regulated wastes for storage, treatment, or disposal.

US Ecology acknowledges disposing of mixed waste in the past. Mixed waste is defined by EPA as waste that contain hazardous waste subject to RCRA and radioactive waste subject to the Atomic Energy Act. EPA has not pursued enforcing postclosure requirements at the facility because of the tenuous applicability of RCRA to mixed waste disposed of before 1986. Prior to the clarification notice in the Federal Register (July 3, 1986), it was unclear whether mixed waste was regulated under RCRA. The Federal Register clarified that the hazardous waste component of mixed waste was subject to RCRA. EPA considers July 3, 1986 as the official date that mixed waste became subject to RCRA. Mixed waste activities conducted before this date would not have been subject to RCRA. Therefore, since there is no evidence at this time that US Ecology received mixed wastes after 1986, there are no mixed waste units subject to postclosure requirements.

4.0 SOLID WASTE MANAGEMENT UNITS

This section describes the SWMUs identified during the preliminary review process and inspected during the site visit. The text includes a description of each unit and wastes managed.

4.1 SWMU 1 - CHEMICAL TRENCH

The chemical trench is located in the north-central portion of the 100-acre property controlled by US Ecology. The trench is an irregularly shaped quadrangle that was used between approximately 1968 and 1972 for disposal of approximately 17,000 cubic feet of unspecified nonradioactive materials (US Ecology, 1990). Facility records do not contain detailed information

regarding the nature and quantities of the material disposed of in this trench (US Ecology, 1985b).

Unit Status

This unit is inactive and was never subject to RCRA permitting because the unit closed prior to 1980, the effective date of RCRA.

Wastes Managed

The types of chemical wastes disposed of in this trench are not known because of the incomplete facility records. File searches conducted by US Ecology reveal only the disposal of solid beryllium/copper metal shavings, scintillation fluids, and phenolic waste from three generators (US Ecology, 1990). These documented wastes included hazardous constituents such as benzene and toluene. Past disposal practices for this trench may have included disposal of additional uncontainerized bulk liquid waste (AT Kearney, 1987). The undocumented wastes may also have components that are RCRA hazardous constituents.

Release Controls and History of Releases

The chemical trench is unlined and is not covered with an impervious cap. There are no documented releases from this unit.

4.2 SWMUs 2 THROUGH 13 - TRENCHES 1 THROUGH 11A

Trenches 1 through 11A are located south of the chemical trench and were used primarily for disposal of low-level radioactive wastes. None of these trenches was in use after 1985; however, Trench 11A was used in 1985. Trenches 1, 2, 3, 4, and 5 were used prior to 1980 and the implementation of RCRA. Trenches 1, 2, 3, and 4 contain wastes that were deposited in metal drums, fiberboard drums, and cardboard boxes (US Ecology, 1985b). Since scintillation fluids were received until 1985, and since the chemical trench was closed in 1972, it is likely that this type of mixed waste was disposed of in Trenches 1 through 11A.

Additionally, the US Ecology closure permit application (1985b) states that Trenches 1 through 11A all contain minor amounts of randomly placed low-level radioactive waste that may meet the definition of RCRA hazardous waste. A Department of Ecology compliance report (1985b) notes that discarded shielding containers and resin waste also appear to qualify as mixed waste due to lead and other potential metals contamination. These trenches, either in use in 1985 or before,

most likely received mixed waste containing hazardous constituents. Waste management practices changed in 1985, when US Ecology discontinued receipt of scintillation vials. After November 1985, US Ecology no longer received mixed waste (US Ecology, 1985b).

Unit Status

Trenches 1 through 11A are filled and closed. The period of activity for Trenches 1 through 11A is as follows:

Trench 1	09-16-1965	through	09-12-1966
Trench 2	08-18-1966	through	11-30-1971
Trench 3	12-01-1971	through	03-31-1975
Trench 4	05-01-1975	through	08-10-1978
Trench 4A	05-30-1982	through	06-18-1982
Trench 5	05-29-1978	through	09-05-1979
Trench 6	08-22-1979	through	06-10-1980
Trench 7	10-29-1982	through	10-12-1983
Trench 8	05-05-1980	through	05-22-1981
Trench 9	09-09-1983	through	11-30-1984
Trench 10	05-05-1981	through	12-20-1982
Trench 11A	10-29-1984	through	11-07-1985

Wastes Managed

The exact type of mixed waste disposed of in the trenches is not conclusively known. However, it is likely that the trenches received scintillation fluids comprising toluene, benzene, or xylene, since the facility received this waste as late as 1985 (Department of Ecology, 1985c). In addition, discarded shielding as well as resin waste were accepted on site and most likely were disposed of in these trenches.

Release Controls and History of Releases

These trenches are unlined and are not covered with an impervious cap. When filled, each trench was covered with several feet of soil and capped with a layer of gravel to protect against wind erosion (US Ecology, 1985b). There are no documented releases from these units.

4.3 SWMUs 14 THROUGH 16 - TRENCHES 11B, 13, 14

Trench 11B is located adjacent to Trench 11A. Trenches 13 and 14 are located south of Trenches 11B and 11A. These trenches were used for disposal of radioactive waste after 1985. US Ecology ceased receipt and disposal of mixed waste in November 1985. It is assumed that only low-level

radioactive waste was disposed of in these trenches. Wastes were randomly disposed of in steel drums and boxes in Trenches 13 and 14. Wastes deposited in Trench 11B are placed in corrugated steel culverts for additional protection.

Unit Status

Trench 11B is still active, and the west end of Trench 14 is active. Trench 13 and the remaining portion of Trench 14 have been closed.

Waste Managed

Low-level radioactive waste was dispose of in these trenches.

Release Controls and History of Releases

These trenches are unlined and are not covered with an impervious cap. When filled, each trench is covered with several feet of soil and capped with a layer of gravel. There are no documented releases from these units.

4.4 SWMU 17 - UNDERGROUND RESIN TANKS

In the late 1960s, five underground steel tanks were installed on site for experimental treatment and disposal of liquid low-level radioactive resin wastes by solar evaporation. When the treatment failed, the wastes were left in place until 1985 (AT Kearney, 1987). The tanks were officially closed in 1988 (US Ecology, 1988).

Unit Status

The unit is closed. At least one of the tanks was discovered to be leaking in 1985. US Ecology developed a waste removal and closure plan for the tanks following guidance from the Department of Ecology. According to correspondence between the Department of Ecology and US Ecology (1988), all of the pumpable resin waste was removed from the tanks prior to closure. Two of the tanks were removed and disposed of shortly after the discovery of a leak in 1985. The extracted resin was solidified in drums and disposed of on site in Trench 11A. The contents of the remaining tanks were sampled and analyzed. Testing of the tank contents indicated that both low-level radioactive waste and organic wastes were placed in the tanks (AT Kearney, 1987). Soil and vegetation surrounding the tank area were sampled on August 6, 1986. Analyses of the samples taken after the removal of two of the tanks indicated elevated concentrations of

Cobalt-60. According to a Department of Ecology memo, the presence of the hazardous constituents such as metals in the resin may designate the resin as a Washington state dangerous waste. However, because of radiation exposure concerns (Department of Ecology, 1986), the remaining three tanks were filled with concrete, solidifying the remaining resin.

Wastes Managed

Liquid low-level radioactive resin was managed in the underground tanks.

Release Controls and History of Releases

The tanks did not have secondary containment, and it is unlikely that the tanks were double walled. In 1985, it was discovered that the tanks were leaking and the surrounding soil was contaminated (Department of Ecology, 1985b). Material leaked from a welded joint, releasing 120 gallons of material. The leak was controlled by reducing the liquid level to below the area of the defective weld. Two tanks were removed, and three tanks were left in place. Soil that was excavated to access the tanks was disposed of on site. The tank farm was closed on August 12, 1988.

4.5 SWMU 18 - WASTE OIL TANK AND WASTE ANTIFREEZE STORAGE AREA

Currently, waste oil and waste antifreeze are stored on site until they are sent off site for recycling. The waste oil is periodically collected by a waste oil collection service, where it is burned for energy recovery. The waste antifreeze is sent off site to be reclaimed. These wastes are stored outside the facility maintenance building. Waste oil is stored in a 280-gallon aboveground tank situated on a cement pad, and the waste antifreeze is stored in drums on wooden pallets.

Unit Status

The storage area is active. The area is not presently regulated by RCRA as a hazardous waste management unit because the waste oil is stored as a recyclable material, and the antifreeze has not been determined to be a hazardous waste.

Wastes Managed

Waste oil and waste antifreeze are stored temporarily in this area.

Release Controls and History of Releases

The waste oil tank is stored on an unbermed cement pad, and the antifreeze drums are stored on wooden pallets placed on the ground. The storage area is uncovered. There is no documentation of releases from this area or physical evidence of any release.

4.6 SWMU 19 - GREASE WASTE STORAGE AREA

A storage area containing metal wastes and a barrel of crane grease on a covered concrete pad is located on the south side of the maintenance building. This barrel has been accumulating crane grease for several months. According to facility personnel, once the barrel is full, it will be shipped off site for disposal.

Unit Status

The grease barrel storage area is in use; however, it is not currently managed by the facility as a RCRA hazardous waste management unit, because the facility considers the waste to be nonhazardous.

Wastes Managed

Grease removed from the mechanical portions of the on site disposal cranes is stored in a drum. This waste has not been analyzed to determine whether it is considered a RCRA hazardous waste.

Release Controls and History of Releases

The closed barrel is stored on a covered concrete pad. There is no documentation of releases from this area, nor is there any evidence of leakage.

5.0 ENVIRONMENTAL RECEPTORS AND PATHWAYS

Potential receptors include the workers employed at the US Ecology facility and terrestrial biota. Potential exposure pathways for humans include inhalation and ingestion of contaminated soil particles, dermal exposure to contaminated soils, and inhalation of volatile organic compounds. Because of the arid and somewhat windy climate, inhalation is a primary pathway of concern. Dermal exposure and ingestion may occur if workers are careless. Since US Ecology is located at

the center of the Hanford Site, approximately 10 miles from the nearest population center, risk to persons not employed at or visiting the facility is low.

There is no surface water on the US Ecology site. The nearest surface water is West Lake, approximately 4 miles to the north (DOE, 1990b). The facility location minimizes the potential for groundwater contamination. Groundwater is found at a depth of 328 feet below ground surface. The area receives an average annual precipitation of 6.3 inches, and the estimated annual evaporation rate is 53 inches. The deepest trench constructed as of 1985 is approximately 45 feet deep with slit trenches down to 53 feet. Groundwater elevations are not expected to rise and come in contact with buried waste (US Ecology, 1985b). Although the threat to groundwater and surface water appears to be low, contaminant infiltration is possible in this environment (AT Kearney, 1987). There are no domestic or municipal wells on site or within several miles of the facility (PRC, 1991).

The terrestrial flora exposure pathways may include uptake from soil and respiration. The facility is predominantly covered by a sagebrush/cheatgrass/Sandburg's bluegrass plant community, while several other shrub-grassland communities are also present. These native plants stabilize the soil and provide food, cover, and shelter for many animals (US Ecology, 1985b).

Terrestrial fauna exposure pathways include ingestion, inhalation, and dermal exposure. Burrowing animals are at greatest risk, since waste is buried in the soil. Plants and animals on site are used as a food source by other animals. Incidental soil ingestion is another exposure pathway for fauna (US Ecology, 1985b).

No federally designated threatened or endangered animal species are known to inhabit the US Ecology facility or leasehold. However, the bald eagle *(Haliaectus leucocephalus)*, a threatened species, and the peregrine falcon *(Falco peregrinus)*, an endangered species, have been seen on the Hanford Site and may pass over the facility. Possible exposure pathways are inhalation of contaminated soil particles and ingestion of contaminated prey (US Ecology, 1985b).

6.0 SUMMARY AND RECOMMENDATIONS

The US Ecology facility is located near the center of the Hanford Site near Richland, Washington. The US Ecology facility is licensed by the Nuclear Regulatory Commission as a low-level radioactive waste disposal facility. The facility is not authorized to receive mixed or hazardous waste but has accepted mixed waste such as scintillation fluids in the past. The

Hanford Site is seeking a RCRA permit to handle hazardous waste, and the US Ecology facility, as part of the Site, is therefore subject to investigation for corrective action.

Nineteen SWMUs have been identified based on the preliminary review and site inspection. Table 1 provides a summary of the SWMUs. It is likely that there have been environmental releases from SWMU 1 (chemical trench). Chemicals were disposed of in this unlined trench in drums and cardboard boxes. A former US Ecology employee alleged that past US Ecology practices included dumping uncontained liquid wastes directly into the chemical trench (AT Kearney, 1987). Also, it is likely that waste disposal containers buried in this unit 20 years ago have begun deteriorating and releasing their contents into the soil. However, no evidence of release was observed during the VSI.

Environmental releases could have occurred from SWMUs 2 through 13 (Trenches 1 through 11A). These trenches are unlined and have been used for disposal of undetermined amounts of mixed waste and low-level radioactive wastes in drums and boxes. As with SWMU 1, the containers have probably begun deteriorating and releasing their contents into the soil. SWMU 14 through 16 also consist of unlined trenches that receive some low level radioactive waste in steel drums which may ultimately deteriorate in the trench.

SWMUs 1 through 16 are not capped with impermeable materials, and it is possible that precipitation has infiltrated into the units. SWMUs 1 through 16 require further investigation. Soil borings should be collected around the trenches, particularly around the chemical trench, which is reported to contain more liquids and older containers. The soil borings should be analyzed to help determine whether constituents have migrated from the units. In addition, groundwater samples from the existing monitoring wells should be collected and analyzed for specific hazardous constituents (such as benzene and toluene) that may have migrated from the units.

According to Department of Ecology (1985b) records, the resin tanks (SWMU 17) have released radioactive and hazardous constituents into the soil. The release was abated, and the tank contents were removed. Two of the tanks were removed, and the remaining three tanks were filled with concrete. Contaminated soil was excavated, containerized, and disposed of on site in a low-level radioactive trench. This unit was closed in place due to radiation exposure concerns. SWMU 17 may warrant further investigation such as soil sampling for corrective action purposes. However, the radioactivity of the unit should be considered when determining whether future activity is necessary.

There is no visual or documented evidence of past releases from the aboveground waste oil storage tank and waste antifreeze storage drums (SWMU 18). The concrete pad and the aboveground tank appear to be in good condition, and the concrete pad and surrounding soil appear unstained. The storage drums and pallets are also in good condition. No further action is necessary for SWMU 18.

The grease waste stored in SWMU 19 does not appear to have released any contaminants. The contents of the barrel should be analyzed for RCRA characteristics or the owner or operator should use his or her knowledge of the waste to determine whether the waste is subject to RCRA regulations. This should be done prior to shipment of the waste off site for disposal. If the waste is determined to be hazardous, it should be moved to the designated generator storage area.

TABLE 1
SOLID WASTE MANAGEMENT UNIT SUMMARY

	SWMU 1 CHEMICAL TRENCH	SWMU 2 - 13 LLRW TRENCHES 1-11A	SWMU 14-16 LLRW TRENCHES 11B, 13, 14	SWMU 17 RESIN TRENCHES
Description	Pre-RCRA disposal trench of non-radioactive chemical waste.	LLRW disposal trenches.	LLRW disposal trenches used post-1985.	Underground treatment tanks containing resin.
Operating Status	Inactive	Inactive	Active	Inactive
Waste Type	Scintillation fluids, phenolic wastes, and metal wastes. The remaining wastes are unknown.	LLRW and some mixed wastes such as scintillation fluids.	LLRW	Resign, possibly mixed waste due to metal content and organic compounds.
Waste Management	Burial of waste in an unlined trench.	Burial of waste in unlined trenches.	Burial of waste in unlined trenches.	No secondary containment of the tanks.
Release History	Unknown, no documentation of releases.	Unknown, no documentation of releases.	Unknown, no documentation of releases.	Leaking pipe. Contaminated soil.
Release Pathway	Trench is unlined. Releases would occur to the soil.	Trenches are unlined. Possible releases to soil if liquids are present in waste.	Trenches are unlined. Possible releases to soil if containers deteriorate and water infiltrates trenches.	Past operating practices resulted in release to soil.
Current Release Potential	High	Moderate	Low to moderate	Low to moderate
Potential Pathway Medium	Soil	Soil	Soil	Soil
Reason for Release Potential Rating	Liquid wastes, some possibly uncontained. Deteriorating containers could result in releases to soil.	Some liquid waste. Deteriorating containers could result in releases to soil.	No liquids; however, deteriorating containers could result in releases to soil.	Tanks and contents have been solidified with cement. Contaminated soil removed.
Recommendation for Further Investigation	Sample and analyze subsurface soil. Sample and analyze groundwater for hazardous constituents.	Sample and analyze subsurface soil. Sample and analyze groundwater for hazardous constituents.	Sample and analyze subsurface soil.	Sample and analyze subsurface soil. Sample and analyze groundwater for hazardous constituents.

TABLE 1
SOLID WASTE MANAGEMENT UNIT SUMMARY (Continued)

	SWMU 18 WASTE STORAGE AREA	SWMU 19 GREASE BARREL
Description	Active temporary storage area for waste oil and antifreeze.	One 55-gallon drum containing crane grease.
Operating Status	Active	Active
Waste Type	Waste oil and waste antifreeze.	Waste grease
Waste Management	Storage in an aboveground tank and drums.	Storage in steel drum.
Release History	None documented. No visible signs of releases.	None documented. No visible signs of releases.
Release Pathway	Not applicable.	Not applicable.
Current Release Potential	Low	Low
Potential Pathway Medium	Soil	Soil
Reason for Release Potential Rating	Containers are in good condition.	Grease barrel in adequate condition.
Recommendation for Further Investigation	None	Test waste to determine RCRA status.

SWMU - solid waste management unit
LLRW - low-level radioactive waste
RCRA - Resource Conservation and Recovery Act

7.0 REFERENCES

AT Kearney, 1987. Closure and Perpetual Care and Maintenance of the Commercial Low-Level Radioactive Waste Disposal Facility on the Hanford Reservation, Phase One Report. AT Kearney, September 1987.

Delaney, C.D., K.A. Kindsey, S.P. Reidel, 1991. Geology and Hydrology of the Hanford Site: A Standardized Text for Use in the Westinghouse Hanford Company Documents and Reports. Westinghouse Hanford Co. Richland, Washington. September 1991.

Department of Ecology, 1985a. Formal Request for Dangerous Waste Part A and Part B Permit Application - Facility No. WAD060048360-Hanford Site. Washington Department of Ecology. April 30, 1985.

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US Ecology, 1985a. Letter from Stephen Carpenter, Facility Manager, US Ecology to Roger Stanley, Department of Ecology. US Ecology, Richland, Washington. June 27, 1985.

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US Ecology, 1988. Letter from John H. DeOld to Earl Ingersoll and Roger Stanley, Department of Ecology, Richland, Washington, regarding closure of the resin tanks. US Ecology, Richland, Washington. August 15, 1988.

US Ecology, 1990. Comments from US Ecology to Gary Robertson of the Washington State Department of Health on Condition 58 of the Washington Radioactive Materials License WN-I019-2. US Ecology, Richland, Washington. June 29, 1990.

US Ecology, 1991. 1990 Environmental Monitoring Report for US Ecology's Low Level Radioactive Waste Disposal Site. US Ecology, Richland, Washington. June 21, 1991.

APPENDIX A

NOTIFICATION LETTER

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

EPA

November 5, 1991

Reply To
Attn Of: HW-074

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Tom Hayes
US Ecology, Inc.
Route 4
P.O Box 638
Richland, Washington 99352

Re: RCRA Facility Assessment at US Ecology, Inc.
EPA ID No.: WAD 06004 8360

Dear Mr. Hayes:

The Hazardous and Solid Waste Amendments of 1984 (HSWA) establish the authority in the Resource Conservation and Recovery Act (RCRA) program to address releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs). This program applies to operating, closed, or closing RCRA facilities. The RCRA Facility Assessment (RFA) is a mechanism which the U.S. Environmental Protection Agency (EPA) utilizes to carry out the corrective action authorities of HSWA.

Specifically, the RFA is the initial step in the corrective action process. In the RFA, EPA identifies all SWMUs at a facility and determines the potential for releases of waste from the units. The corrective action authorities allow the RCRA program to detect and correct releases from regulated waste management units as well as those units resulting from past waste management practices at RCRA-regulated facilities. Releases to all media (air, soils, and surface and ground waters) from all waste units are within the jurisdiction of the RCRA corrective action program. EPA is currently responsible for implementing this program in Washington, Oregon, and Alaska; Idaho is authorized to implement its own corrective action program.

EPA is currently conducting an RFA for the US Ecology, Inc. facility. Per your conversation with Dan Duncan of my staff, this letter is to confirm a visual site inspection (VSI) on November 20, 1991. The VSI will be performed by PRC Environmental Management, Inc. (PRC), a contractor to EPA. PRC is an authorized contractor of EPA (Contract No. 68-W9-0009) and is acting on behalf of EPA as field investigator. The PRC investigation team may be accompanied by representatives from EPA, the Washington Department of Ecology or both. Enclosed are an agenda for the VSI, including a proposed VSI schedule and a preliminary list of SWMUs and areas of concern to be inspected as

identified during our file review (Enclosure 1), and a list of specific information for you to provide to the inspection team (Enclosure 2).

Section 3007 of RCRA, 42 U.S.C. § 6927, authorizes EPA to request certain information from handlers of hazardous waste. Pursuant to Section 3007 of RCRA (and to facilitate the RFA process), you are requested to provide the information listed on Enclosure 2. All facility records should be reviewed in obtaining the requested information, including the personal recollections of longtime employees and past owners and operators. The requested information must be sent to EPA within thirty (30) days of the receipt of this letter. Please send all information to the following address:

Daniel Duncan
U.S. Environmental Protection Agency
Hanford RCRA Program Manager
1200 Sixth Avenue, HW-074
Seattle, WA 98101

If any information or records are not in your possesstion, please provide the current location and custodian of such records.

Failure to have the requested information ready at the time of the VSI may subject the facility to enforcement action under Section 3008 of RCRA, 42 U.S.C. § 6928. Such enforcement action could include the assessment of substantial penalties, up to $25,000 per day of noncompliance.

The facility may assert a claim of confidentiality for any information entitled to protection under 40 CFR, Part 2, Subpart B, by designating the information you believe is entitled to such protection.

We will contact you in the next two weeks to confirm the inspection and make any necessary final arrangements.

If you have any questions regarding this letter or the RFA process, please contact Daniel Duncan, at (206) 553-6693.

Sincerely,

Randall F. Smith, Acting Director
Hazardous Waste Division

Enclosures

cc: Paul Stasch/Toby Michelena, Ecology
Paul Day, EPA
Vicky Tapang, EPA

APPENDIX B

FACILITY TOPOGRAPHIC MAP

APPENDIX C

TRIP REPORT

VISUAL SITE INSPECTION
TRIP REPORT
US ECOLOGY, INC.

NOVEMBER 20, 1991

At 9:10 a.m., the PRC Environmental Management, Inc. (PRC) field team consisting of Gwen Herron and Jerry Shuster arrived at the US Ecology, Inc. facility. The team met Dan Duncan of the U.S. Environmental Protection Agency, Ron Brunke of Westinghouse Hanford Company, Randy Krekel of the U.S. Department of Energy (DOE), Tom Hayes and Bob Bidstrup of US Ecology, and Barry Bede of American Ecology at the facility. After the arrival of Joe Witczak of the Washington Department of Ecology at 9:25 a.m., Barry Bede began the meeting with a historical overview of US Ecology and low-level radioactive waste (LLRW) disposal.

The following information was obtained verbally during the site inspection. unless otherwise noted.

Mr. Hayes explained that the facility has currently disposed of approximately 13 million cubic feet of LLRW onsite. Currently, LLRW is being disposed of in Trench 14, which is rapidly approaching capacity. Trench 16 is to be used for disposal when Trench 14 is full. There are currently no trenches labeled 12 or 15.

The team inspected the equipment maintenance area where solvents are used to degrease machine parts. US Ecology leases two parts washers from Safety-Kleen, a solvent distribution and reclamation business. These parts washers are relatively closed units that store the degreasing solvent until needed and automatically collect the spent solvent after use. Mr. Hayes explained that the parts washers are picked up at regular intervals by Safety-Kleen for disposal. No stored waste solvent was observed nor any spills or leakage of spent solvent. The maintenance building does not have sumps to collect spills.

A drum of grease from cleaning a disposal crane was stored behind the maintenance building on a covered concrete slab. According to Mr. Bidstrup, the barrel of grease has not been tested to determine if it exhibits Resource Conservation and Recovery Act (RCRA) characteristics but is destined for disposal at EnviroServices in Tacoma, Washington as a solid waste. Uncovered drums of scrap metal to be recycled are also stored in this area. The scrap metal in the containers is not considered solid wastes as long as the material is not being speculatively accumulated.

Mr. Witczak asked whether there are any drinking water wells within a 1-mile radius of the facility. Mr. Hayes stated that there are no such wells in the vicinity of the facility. US

Ecology receives its water by pipe from DOE. Mr. Hayes said he thinks US Ecology receives water from the 200 East Area, where it is probably taken from the Columbia River.

South and down a small incline from the maintenance building is the storage area for waste oil and waste antifreeze and a storage building for flammable products. Waste oil collected onsite from engine oil changes is stored in a 280-gallon aboveground tank. The waste oil tank is situated on a concrete pad without secondary containment. Mr. Bidstrup stated that the waste oil is collected about every 6 months by Doobins, a waste oil collection service, and taken to Harbor Oil, where it is burned for energy recovery on ships. Mr. Bidstrup also stated that the waste oil is analyzed after each oil change, before it is placed in the tank. However, the analyses do not determine the hazardous waste status of the waste. The tests are conducted to determine the condition of the engines by examining the oil for metals. US Ecology does not handle the waste oil as federal or Washington state hazardous waste.

Empty antifreeze drums and drums containing waste antifreeze are stored in the general area of the used oil tank. According to Mr. Bidstrup, the waste antifreeze is not handled as a hazardous waste nor is it tested to determine whether it is hazardous. These drums are periodically collected by Western State, a local tractor company that filters the waste antifreeze to remove large solid contamination. After filtering, the antifreeze is returned to US Ecology, where it is mixed with product antifreeze for reuse onsite.

Following the tour of the maintenance area, the inspection team entered the restricted LLRW disposal area. In this area, the team inspected the old chemical disposal trench, Trenches 1 through 11A, Trenches 14 and 16, and the underground resin evaporation tanks.

The PRC team examined the chemical disposal trench, which is completely covered with soil and closed. It was impossible to visually ascertain whether there have been any releases from this unit. The trench is marked by a mounted plaque inscribed with the opening and closing dates of the trench. Each trench is marked with a similar plaque. While the inspection team was at the chemical trench, Mr. Witczak told Mr. Hayes that a former US Ecology employee had related to the Department of Ecology that past practices sometimes included the disposal of uncontainerized waste into the chemical trench. Mr. Hayes responded that rumors abound but that uncontainerized waste disposal was not US Ecology's practice.

Trenches 1 through 11A were similarly covered and closed. These trenches are not in use and are closed. Trench 11B is designated as the "hot" trench, and wastes containing higher radioactivity levels are placed in large cylinders in this trench. The cylinders are corrugated steel culverts placed vertically in the trenches to create disposal cells. This trench is open and active and handles only radioactive waste.

The inspection team observed disposal of LLRW into Trench 14. The LLRW is randomly placed in the trench and covered with soil. This trench is nearing capacity. Trench 16 is located perpendicular to Trench 14 and will receive the LLRW once Trench 14 is full.

LLRW is stored on the ground next to Trench 16 while waiting for disposal. According to Mr. Bidstrup, the US Ecology Nuclear Regulatory Commission license for LLRW disposal allows LLRW to be stored onsite for 6 months prior to disposal.

After viewing the disposal trenches and prior to examining the resin tanks, Mr. Bidstrup explained that US Ecology has installed five groundwater monitoring wells and nine air monitoring stations. The groundwater wells do not monitor RCRA Appendix IX groundwater constituents.

At the area where the underground resin tanks are located Mr. Bidstrup stated that the experimental resin evaporation tanks had not worked properly. The resin remained in the tanks until 1985, when the liquids were removed and the tanks filled with concrete. From the surface, the inspection team could not visually inspect the tanks. The team could only see a flat soil surface roped off and marked with a plaque identifying the area as the resin tanks site. No stained sand or soil was observed.

Following the tour of the trenches, the inspection team entered the inspection building. Drums are visually inspected in this building to verify the physical characteristics of the waste and to ensure that the wastes do not contain liquids. The drums are opened in a special area designed to reduce radiation emissions. The samples are analyzed onsite.

Prior to leaving the restricted area, the inspection team was monitored for radiation contamination with a Geiger Counter.

The team returned to the facility office and concluded the site visit with an exit interview. During the exit interview, the PRC team discussed the information request letter EPA had submitted previously to US Ecology. It was determined that the facility would provide the following information to the team:

- Existing topographic map of the facility
- Copy of a blank manifest
- Condition 58 report

- Copies of the most recent Management Inspection and Washington Department of Health Inspection reports
- Aerial photographs of the facility

US Ecology agreed to send copies of their Environmental Monitoring Reports to Gwen Herron.

The visual inspection was concluded at approximately 12:35 p.m.

APPENDIX D

PHOTOGRAPH LOG

Photo No. 1

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southeast

Picture Description: Waste oil tank

Photo No. 2

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: North

Picture Description: Flammable storage area

Photo No. 3

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Northeast

Picture Description: Waste anti-freeze awaiting recycling (the 2 red drums and one blue drum sharing a pallet are empty)

Photo No. 4

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: West

Picture Description: Waste anti-freeze empty drums (same as 3)

Photo No. 5

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: East

Picture Description: Storage behind main building

Photo No. 6

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: North

Picture Description: Waste grease from crane

Photo No. 7

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: West

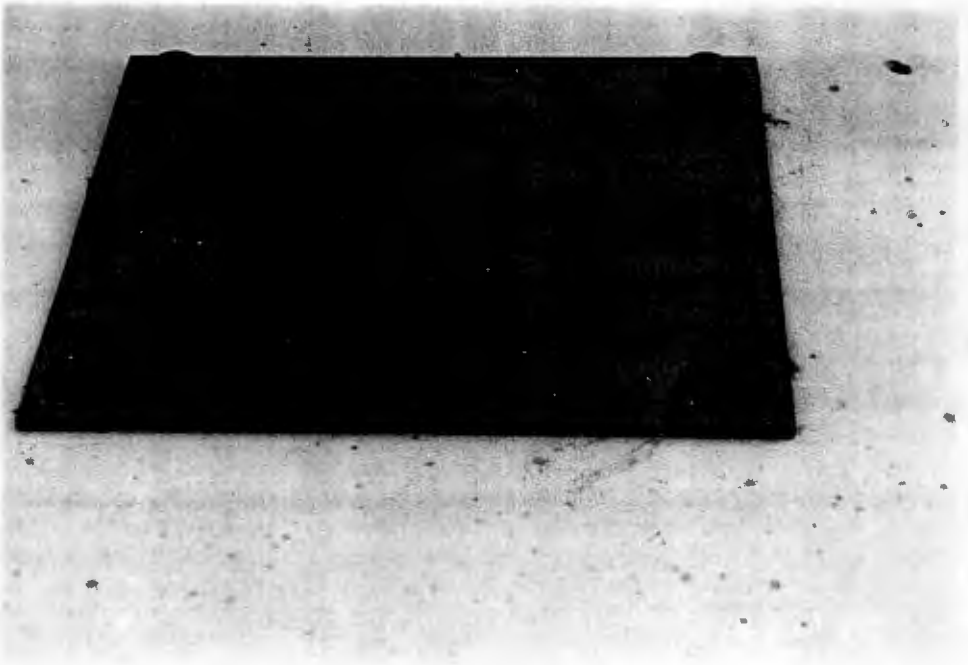
Picture Description: On top of chemical waste trench

Photo No. 8

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: South

Picture Description: Active trench viewed from old chemical trench

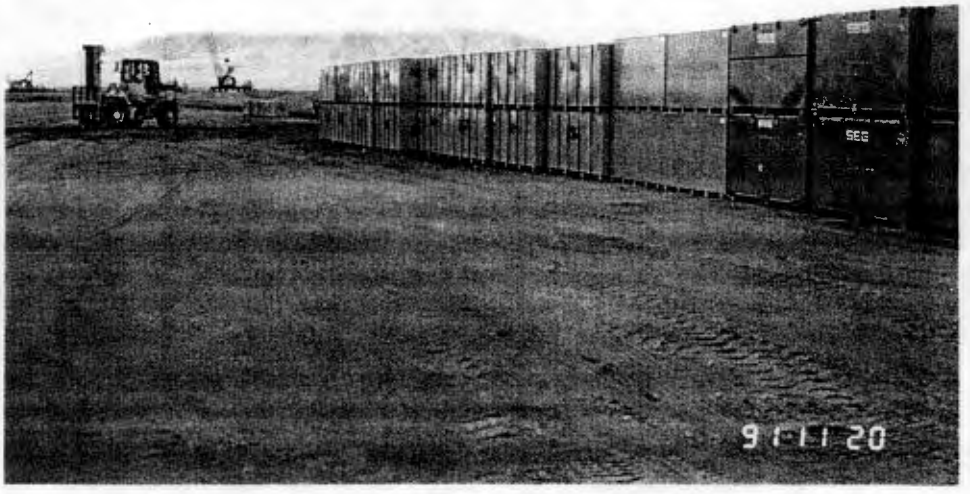
Photo No. 9



Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: East

Picture Description: Trench monument at center line

Photo No. 10



Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

Picture Description: Low-level waste awaiting burial (1 of 2)

Photo No. 11

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

Picture Description: Low-level waste awaiting burial (2 of 2)

Photo No. 12

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

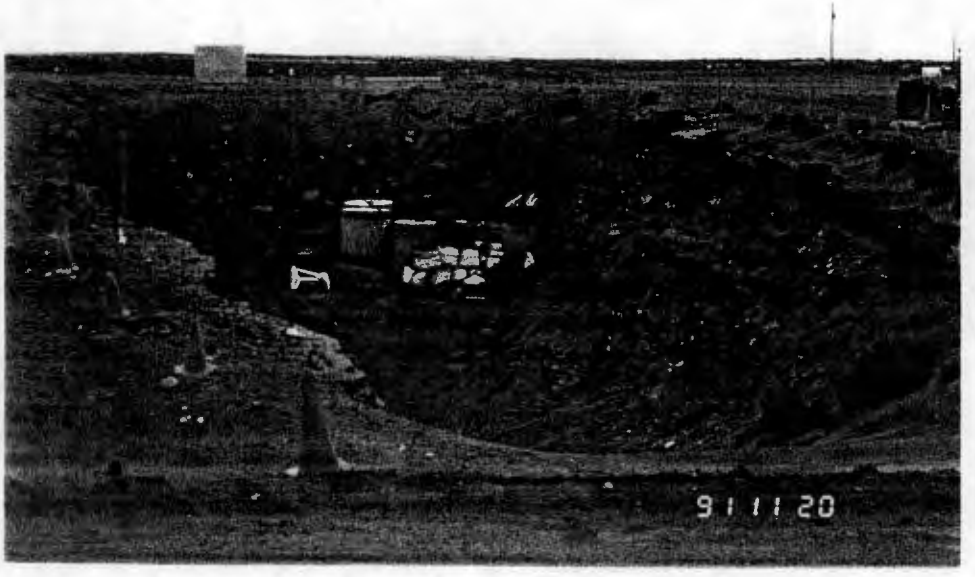
Picture Description: New open active trench

Photo No. 13

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: East

Picture Description: Off-loading low-level radioactive waste. Health physics technician monitoring the waste.

Photo No. 14



Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: East

Picture Description: Trench with highest level of radioactivity

Photo No. 15

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

Picture Description: Trench 14, partially backfilled

Photo No. 16

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

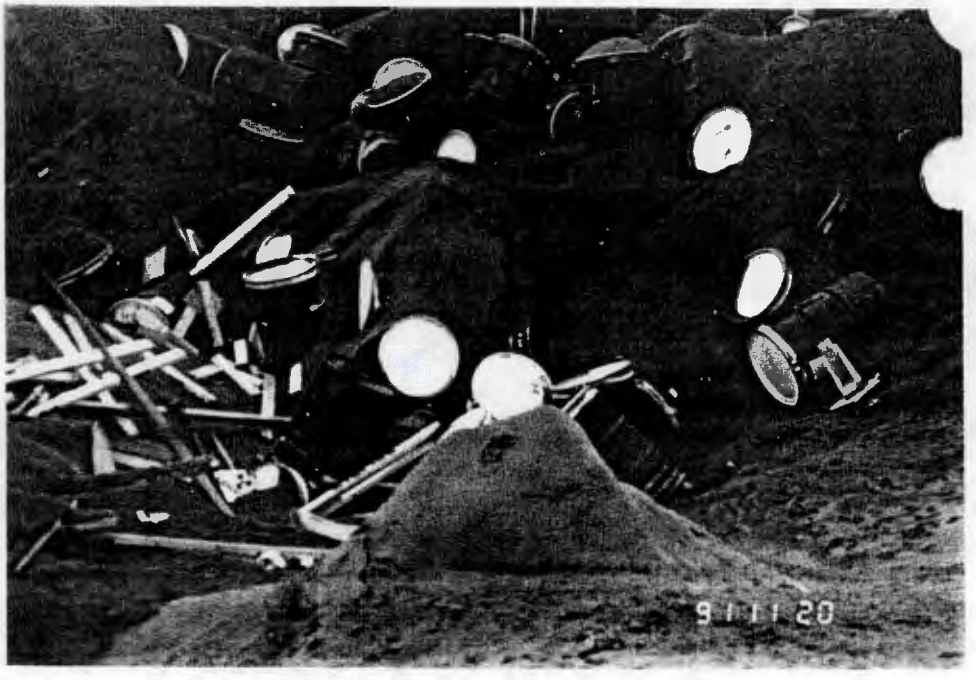
Picture Description: Trench 14

Photo No. 17

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: West

Picture Description: High integrity containers (6-inch concrete) in trench

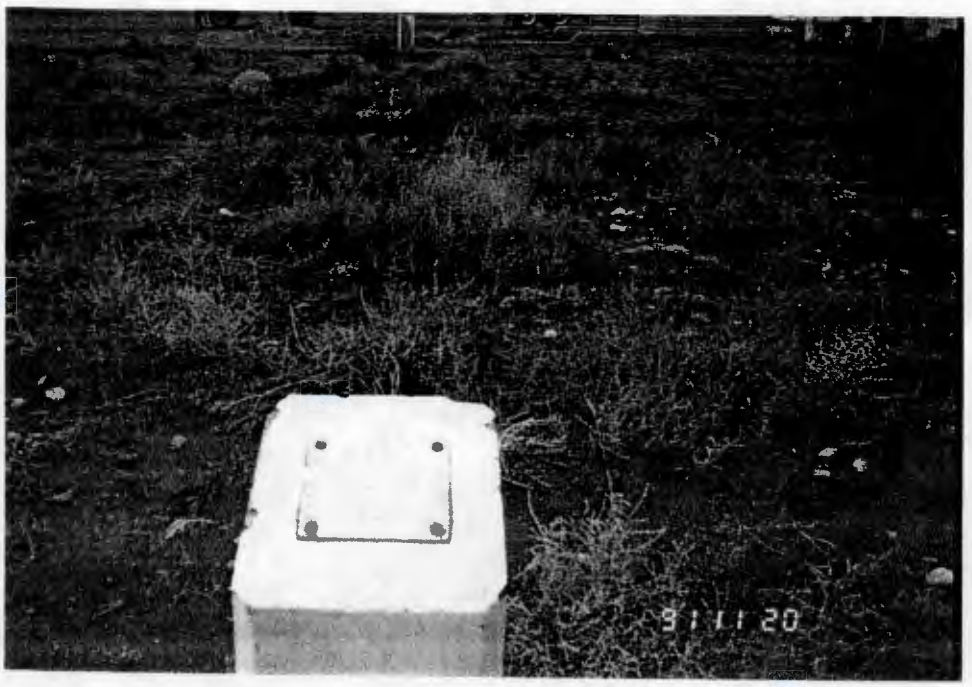
Photo No. 18



Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: South

Picture Description: Rusted and dented drums in Trench 14

Photo No. 19



Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: West

Picture Description: Former tank farm area

Photo No. 20

Date: 11/20/91 Picture Taken By: Jerry Shuster Direction Facing: Southwest

Picture Description: Package inspection area/laboratory

U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Contract No. 68-W9-0009

TES 12

Technical Enforcement Support at Hazardous Waste Sites Zone IV Regions 8, 9, and 10

PRC Environmental Management, Inc.

PERKINS COIE

A LAW PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1201 THIRD AVENUE, 40TH FLOOR • SEATTLE, WASHINGTON 98101-3099
(206) 583-8888 • FACSIMILE (206) 583-8500

August 18, 1993

Dan Duncan
U.S. Environmental Protection Agency
Park Place Building
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Duncan:

Enclosed are the comments of US Ecology on the HSWA portion of the draft RCRA permit. We look forward to the meeting on August 23, 1993.

Very truly yours,

David Dabroski

DD:sab

Enclosure

[13813-0008/SL932300.185]

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1201 THIRD AVENUE, 40TH FLOOR • SEATTLE, WASHINGTON 98101-3099
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US ECOLOGY COMMENTS ON DRAFT HSWA PORTION OF THE HANFORD RCRA PERMIT

INTRODUCTION

These are the comments of US Ecology on the Draft HSWA Portion of the Hanford RCRA Permit, which were presented orally on August 13, 1993 at EPA, Region 10. These comments focus on some of the practical problems for the Permit, which were presented orally on August 13, 1993 at EPA, Region 10. These comments focus on some of the practical problems for the Permittee Department of Energy (DOE) and the permitting agencies, U.S. Environmental Protection Agency (EPA) and Washington Department of Ecology (WDOE) as a result of US Ecology's inclusion in the permit. US Ecology's comments concerning the illegality of applying the permit in its entirety to the facility and operations of US Ecology have already been provided. US Ecology continues to oppose its inclusion in the permit.

I.B.1.

The Permit requires DOE to invade the private rights of US Ecology and infringes on its regulation as a permit holder

to the disposal of low-level radioactive waste under applicable and appropriate federal and state authority. This is illustrated by some of the other comments below.

I.D.2.

US Ecology has rights of appeal of the Permit even though it is not the Permittee. US Ecology would seek the automatic stay of any contested provision.

I.K. and II.B.

DOE cannot consent to inspection and entry of the US Ecology facility by either of the permitting agencies, or their delegated contractors or consultants. RCRA authority does not apply to the US Ecology facility and therefore EPA cannot rely on it to gain entry and to inspect US Ecology. Even if RCRA applied, EPA cannot gain access to the site for Permittee DOE as a delegated contractor or consultant. If not raised at an earlier time, US Ecology's challenge to the applicability of the Permit to its facility could be raised in the context of a challenge to the execution of a search warrant to gain access.

I.L.5. and I.U.

Assuming DOE obtains information from the US Ecology site pursuant to the Permit, it does not provide a means by which DOE can claim or adequately protect confidential business

information (CBI) or other proprietary information on behalf of US Ecology, nor provide a means by which US Ecology can make such claims on its own behalf.

I.M.

US Ecology has no duty to give prior notice to EPA or the Permittee of any planned physical alterations or additions to its facility. How is DOE expected to comply with this provision with respect to any such changes at the US Ecology facility?

I.P.

Again, how can DOE be expected to comply with this reporting obligation with respect to any such incidents at the US Ecology facility.

III.B.

Please read US Ecology's previous comments regarding: (1) why there is no factual basis in the administrative record to conclude that there has been any release of a hazardous substance at its facility that requires further investigation; and (2) why neither RCRA nor the state's Dangerous Waste authority apply.

III.E. and III.G.

The permitting agencies are able to determine at this time that any corrective action or remedial measures with respect to hazardous substances pursuant to RCRA and Dangerous Waste authorities at the US Ecology facility are technically impracticable and unlawful.

Assuming mixed wastes are present at the US Ecology facility, neither agency has considered how any remedial measures pursuant to RCRA or Dangerous Waste authority to address the possible release of hazardous substances can be reconciled with the totally inconsistent federal and state authority for disposing and managing low-level radioactive waste.

III.I.

Again, how can DOE be expected to submit a corrective measures plan with respect to the US Ecology facility that will be lawfully consistent with US Ecology's low-level radioactive waste permit and closure plan?

CONCLUSION

US Ecology wishes to address any concerns of either EPA or WDOE regarding any hazardous substances at its facility. But legally and practically this must be accomplished through its permit and closure plan administered by the Washington Department of Health. Since July 1992 US Ecology has repeatedly sought a meeting with EPA to discuss any concerns it had that may be able to be addressed through the facility's low-level radioactive waste permit and closure plan to the extent such concerns are not addressed already. US Ecology looks forward to the meeting on August 24, 1993 to address the agencies' concerns in a meaningful and legally defensible manner.

WA 8967
7-28-92 FC

Department of Energy
Richland Field Office
P.O. Box 550
Richland, Washington 99352

92-RPB-179

JUL 28 1992

RECEIVED
JUL 29 1992
RCRA PERMITS SECTION

Mr. Dean B. Ingemansen
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Ingemansen:

LEGAL DESCRIPTION AT HANFORD FEDERAL FACILITY

In response to your letter of July 15, 1992, to Mr. Robert Carosino please find enclosed a revised legal description for the Hanford Facility. Our review indicated that the Legal Description enclosed as Attachment "N" to the DOE Richland Field Office (RL) comments of March 16, 1992, of the draft initial Hanford Facility permit was essentially correct. However, the description of the land leased to the Washington Public Power Supply System (Supply System) was modified to properly reflect the additional lands leased to the Supply System for commercial plants 1 and 4. In addition, pursuant to your request, the Bonneville Power Administration (BPA) Ashe Substation site, operated under a use permit from RL, is no longer excluded from the facility description.

We have reviewed the topographical map (Drawing H-6-958) provided to the U.S. Environmental Protection Agency (EPA) as Appendix 2A of the Hanford Facility Dangerous Waste Permit Application and have determined that it appropriately reflects the 640-acre site owned by the State of Washington, the 1000-acre site leased to the State of Washington, and the lands leased to the Supply System for WNP plants 1, 2, and 4. The land leased to the Supply System for plants 1, 2, and 4 is provided under two separate lease agreements and is delineated as exclusions E and F in our facility definition. However, the leased area for plants 1, 2, and 4 form a contiguous block of land and, therefore, are shown as a single block on the enclosed topographical map.

Also enclosed with this letter are additional larger scale maps of the land leased to the Supply System for the Hanford Generating Plant (HGP) and the BPA's independently owned Midway Site. The BPA's independently owned Midway Site includes the substation and community area. It also includes some disposal areas. However, the access road from Highway 240 to the Midway Site forms the property boundary and any landfills north of the access road would be on RL property.

I understand that the recent site inspection of the Supply System HGP and WNP sites 1, 2, and 4 were successfully conducted and that the parties were able to determine whether solid waste management units were within or outside of the leased areas. RL program offices will continue to provide personnel to help make such determination if other site inspections are necessary.

While we understand that you consider use permit areas such as the Ashe Substation to be part of the Hanford Facility under the Hanford Federal Facility Agreement and Consent Order for corrective action, it should be understood that the activities conducted by BPA at that site are conducted independently of RL. BPA is the operator of that facility and certain other substation facilities. BPA would be independently responsible for conducting its activities in compliance with environmental laws and regulations, at such sites including obtaining a Resource Conservation and Recovery Act permit for its activities if regulated Treatment, Storage or Disposal (TSD) activities were conducted by BPA.

As you know the actual TSD activities at Hanford involve a much smaller area than the contiguous Hanford Facility land area. We would appreciate your views on whether it would be appropriate to further limit the area encompassed by the legal description. For example, no TSD activities are conducted on the Arid Lands Ecology Preserve which encompasses that portion of the site on the side west of Highway 240. Similarly, TSD units are not located in most other areas of the site outside of operational areas. This land and other portions not actively used by RL may be transferred to other parties in the future and it is not clear how the inclusion of such land in the legal description would affect this matter. EPA's experience in dealing with such issues at other sites could be extremely useful and we solicit your input.

If you desire further information, please contact me or Mr. R. M. Carosino on (509) 376-4264 or Mr. C. E. Clark of my staff on (509) 376-9333.

Sincerely

R. D. Izatt, Program Manager
Office of Environmental Assurance,
Permits, and Policy

RPB:RNK

Enclosures

cc:
C. Ahlstrom, EPA
P. Day, EPA
D. Duncan, EPA
J. Schuster, PRC w/encl.
D. Jansen, Ecology
T. Michelena, Ecology
J. Witczak, Ecology
C. Geier, WHC
P. Mackey, WHC
S. Price, WHC

HANFORD FACILITY LEGAL DESCRIPTION

The Hanford Site being a tract of land located in Benton County, WA, the aforesaid tract being more particularly described as follows:

Commencing at the point of intersection of the E.-W. centerline of sec. 14, T.10N., R.28E. Willamette Meridian, with the western navigation line of the Columbia River;

Thence northerly 200 feet along said line of navigation to the TRUE POINT OF BEGINNING;

Thence W. to a point on the W. right-of-way line of George Washington Way, which line is the boundary of the City of Richland;

Thence southerly 100 feet or less, along said right-of-way line of George Washington Way to a point on the N. right-of-way line of Horn Rapids Road, an unplatted road;

Thence W. along the N. right-of-way line of Horn Rapids Road approximately 1/2 mile to the E. right-of-way line of Stevens Drive, an unplatted road;

Thence S. along said E. right-of-way line to a point on the N. right-of-way line of Spengler Street, a platted street;

Thence W. 145 feet to the W. right-of-way line of Stevens Drive;

Thence S. to a point 30 feet N. of the S. line of sec. 27, T.10N., R.28 E.W.M.;

Thence W. along a line 30 feet N. of, and parallel with, the S. line of sec. 27 to the E. line of the S.W. 1/4 of the S.E. 1/4 of said section;

Thence N. along the E. line of the S.W. 1/4 of the S.E. 1/4 of sec. 27 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of said sec. 27;

Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the W. line of the E. 1/2 of sec. 27;

Thence N. along the W. line of the E. 1/2 of sec. 27, and of the E. 1/2 of sec. 22 and the E. 1/2 of sec. 14 to the N. right-of-way line of Horn Rapids Road;

Thence westerly and northwesterly along the N. right-of-way line of Horn Rapids Road 26,000 feet more or less to the line's intersection with the N. right-of-way line of State Highway 240, in the N.E. 1/4 of sec. 11, T.10N., R.27E.W.M.;

Thence northwesterly along said N. right-of-way line of the highway, 75 feet N. of and parallel with the centerline of said highway to a point in sec. 3, T.10N., R.27E.W.M., which point is on the eastward extension of the N. right-of-way line of a county road from Horn Rapids to Benton City;

Thence along the northerly and westerly right-of-way line of said road, 75 feet northerly and westerly of, and parallel with, the center line of said road to a point on the E. line of sec. 8, T.10N., R.27E.W.M.;

Thence N. to the E. quarter corner of said section;

Thence W. to the S.W. corner of the E. 1/2 of the N.E. 1/4 of sec. 12, T.10N., R.26E.W.M.;

Thence N. to the N. line of said sec. 12;

Thence W. to the N.E. corner of the N.W. 1/4 of the N.W. 1/4 of the N.W. 1/4 of sec. 11, T.10N., R.26E.W.M.;

Thence S. 660 feet;

Thence W. 660 feet to the E. line of sec. 10, T.10N., R.26E.W.M.;

Thence S. to the S.E. quarter corner of said sec. 10;

Thence W. along the E.-W. centerline of sec. 10 to the W. line of said section;

Thence N. along the W. section line to the S.E. corner of sec. 4, T.10N., R.26E.W.M.;
Thence W. along the S. line of sec. 4 and sec. 5 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of sec. 5;
Thence N. to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of sec. 5;
Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;
Thence N. to the S.E. corner of the N. 1/2 of the N.W. 1/4;
Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of sec. 5;
Thence N. to the S.E. corner of sec. 31, T.11N., R.26E.W.M.;
Thence W. along the S. line of the E. 1/2 of the S.E. 1/4 of sec. 31 to the E. line of said E. 1/2 of the S.E. 1/4 of sec. 31;
Thence N. along the W. line of the E. 1/2 of the S.E. 1/4 to the S.E. corner of the S.W. 1/4 of the N.E. 1/4 of sec. 31;
Thence W. along the S. line of the S.W. 1/4 of the N.E. 1/4 to the S.W. corner of the S.W. 1/4 of the N.E. 1/4;
Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 to the S.E. corner of the N. 1/2 of the N.W. 1/4 of said sec. 31;
Thence W. along the S. line of the N. 1/2 of the N.W. 1/4 to the W. line of said sec. 31;
Thence N. along the W. line of sec. 31 to the S.E. corner of sec. 25, T.11N., R.25E.W.M.;
Thence W. along the S. line of sec. 25 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of said sec. 25;
Thence N. along the W. line of the S.E. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4;
Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;
Thence N. along the W. line of the N.W. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of sec. 25;
Thence W. along the S. line of the N.W. 1/4 of sec. 25 to the W. line of sec 25;
Thence N. along the W. line of sec. 25 and the W. line of sec. 24 to the N. line of the S. 1/2 of the S. 1/2 of sec. 23;
Thence W. along the N. line of the S. 1/2 of the S. 1/2 of sec. 23 and the N. line of the S. 1/2 of the S. 1/2 of sec. 22 and the N. line of the S. 1/2 of the S. 1/2 of sec. 21 to the E. line of sec. 20;
Thence S. to the S.E. corner of sec. 20;
Thence W. along the S. line of sec. 20 and the S. line of sec. 19 to the S.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence N. to the N.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence W. to the W. line of sec. 19, all being in T.11N., R.25E.W.M.;
Thence continuing W. to the S.W. corner of the N.E. 1/4 of the S.E. 1/4 of sec. 24, T.11N., R.24E.W.M.;
Thence N. to the N.W. corner of said N.E. 1/4 of the S.E. 1/4 of sec. 24;
Thence W. to the S.W. corner of the S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence N. to the N.W. corner of said S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence W. to the W. line of sec. 24;
Thence N. to the N.W. corner of sec. 24;
Thence W. to the S.E. quarter corner of sec. 14;
Thence N. to the N.W. quarter corner of sec. 14;
Thence W. along the N. line of sec. 14 to the N.W. corner of sec. 14;

Thence N. along the W. line of sec. 11 and sec. 2 to the N.W. corner of sec. 2, all being in T.11N., R.24E.W.M., and continuing N. along the W. lines of secs., 35, 26, 23, 14, 11, and 2, all being in T.12N., R.24E.W.M.;

Thence continuing N. along the W. lines of secs. 35 and 26 in T.13N., R.24E.W.M., to the N.W. corner of sec. 26;

Thence W. along the S. line of sec. 22 to the S.E. quarter corner of sec. 22;

Thence N. along the N.-S. centerline of sec. 22 to the N.E. quarter corner of sec. 22;

Thence W. along the S. line of sec. 15 to the S.W. corner of sec. 15;

Thence N. along the W. line of sec. 15 to the S.W. corner of the N. 1/2 of the N.W. 1/4 of sec. 15;

Thence E. along the S. line of the N. 1/2 of the N.W. 1/4 of sec. 15 to the S.W. corner of the N.W. 1/4 of the N.E. 1/4 of sec. 15;

Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 of sec. 15 and continuing N. along the centerline of sec. 10 to the W. navigation line of the Columbia River, following said navigation line easterly, northerly, and southerly to a point directly W. of the S. line of Tract 4 of Ringold Tracts according to the plat filed in the records of Franklin County.

Thence southerly along the said W. line of navigation to the TRUE POINT OF BEGINNING.

EXCEPTING FROM THE ABOVE-DESCRIBED LAND THE FOLLOWING PARCELS, EXCLUDING that portion of the Hanford Railroad and any Hanford Site access roads which may traverse these parcels.:

PARCEL A) The N. 1/2 of the N.W. 1/4, and that portion of the N.W. 1/4 of the N.E. 1/4 in sec. 14, T.13N., R.24E.W.M. in the ownership and jurisdiction of the BONNEVILLE POWER ADMINISTRATION.

PARCEL B) Sec. 1, T.11N., R.26E.W.M. in the ownership under quitclaim deed, of the STATE OF WASHINGTON.

PARCEL C) A tract of land leased to the STATE OF WASHINGTON lying in sections 7, 8, and 9, T.12N., R.26E.W.M., containing 1,000 acres more or less, more particularly described as follows: That part of the S. 1/2 of said sec. 7 bounded on the W. and N. by the following described line: BEGINNING at a point on the S. line of said sec. 7, which point is S. 88° 44' 47" W. 4,515.30 feet from the S.E. corner of the sec., and at coordinates N. 438,868.46 and E. 2,222,800.00 on the Washington State Grid System, South Zone; thence N. 1,781.54 feet; thence E. 2,200.00 feet; thence N. 907.19 feet more or less to the N. line of said S. 1/2 of the sec.; thence N. 88° 38' 43" E. along said line 2,275.48 feet more or less to the E. quarter corner of said sec. 7. The S. 1/2 of sec. 8. The S. 1/2, and the S. 1/2 of the N. 1/2 of sec. 9, EXCEPT that portion lying easterly of the following described line: BEGINNING at a point on the E. line of said sec. 9, which point is N. 0° 53' 09" W. 3,071.71 feet from the S.E. corner of the sec., and at coordinates N. 442,268.92 and E. 2,237,790.19 on the Washington State Grid System, South Zone; thence northwesterly along a 1,055.37 foot radius curve to the right an arc distance of 1,064.64 feet (the chord of said arc bears N. 30° 21' 08" W. 1,020.05 feet) to a point on the N. line of the S. 1/2 of the N. 1/2 of said sec. 9, said point being at coordinates N. 443,149.16 and E. 2,237,274.74 on the Washington State Grid System, South Zone.

Three tracts of land leased to the WASHINGTON PUBLIC POWER SUPPLY SYSTEM more particularly described as follows:

PARCEL D) a tract of land (for the Hanford Generating Plant), commencing at the S.E. corner of sec. 28, T.14N., R.26E.W.M., said point having Washington State Coordinates, South Zone, of N. 486,994.01, and E. 2,236,672.11; thence N. 72° 02' 15" W. 3,483.15 feet, thence N. 67° 11' 41" W. 1,810 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, which point is the TRUE POINT OF BEGINNING: thence S. 67° 11' 41" E. 1,810 feet more or less to a point, having Washington State Coordinates, South Zone, of N. 488,068.19 and E. 2,233,358.73, thence N. 22° 48' 19" E. a distance of 1,595 feet to a point, having Washington State Coordinates, South Zone, of N. 489,538.48 and E. 2,233,976.96, thence N. 67° 11' 41" W. 1,108 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, thence southwesterly along the said line of ordinary high water to the TRUE POINT OF BEGINNING, containing 53.42 acres more or less; THIS PARCEL AMENDED BY DELETING THE FOLLOWING: Beginning at the S.E. corner of the leased parcel, which point is at coordinates N. 488,068.19 and E. 2,233,358.73 on the Washington State Coordinate, South Zone; thence N. 22° 48' 19" E. 1,060 feet; thence N. 67° 11' 41" W. 200 feet; thence S. 22° 48' 19" W. 1,060 feet; thence S. 67° 11' 41" E. 200 feet to the point of beginning; containing 4.85 acres, more or less;

PARCEL E) A tract of land (for WNP Site 2), beginning at the S.W. corner of sec. 11, T.11N., R.28E.W.M., said corner having Washington State coordinates, South Zone, of N. 408,335.30 and E. 2,307,653.50, thence N. 0° 41' 08" E. 8,065.28 feet to the TRUE POINT OF BEGINNING; thence W. 11,153.57 feet; thence S. 01° 01' 23" E. 3,000.48 feet; thence S. 88° 53' 54" W. 5,200.96 feet; thence N. 0° 31' 41" W. 3,690.15 feet; thence E. 1,430.00 feet; thence N. 1,865.69 feet; thence N. 87° 46' 08" E. 3,703.83 feet; thence S. 01° 01' 23" E. 1,600.25 feet; thence E. 11,189.29 feet; thence N. 01° 01' 23" E. 1,800.29 feet; thence N. 89° 07' 55" E. 3,300.38 feet to the line of Navigation of the W. bank of the Columbia River, thence southerly along said line of Navigation to a point that bears N. 89° 15' 21" E. from the TRUE POINT OF BEGINNING; thence S. 89° 15' 21" W. 3,850.32 feet more or less to the TRUE POINT OF BEGINNING.

PARCEL F) A tract of land (for WNP Sites 1 and 4) lying in Section 4 of Township 11 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 65°-17'-03" West 12113.14 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 413,400.00 and East 2,296,650.00); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01°-01'-23" East 3000.48 feet to a

point; thence West 5280.00 feet more or less to the TRUE POINT OF BEGINNING, containing 363.69 acres more or less; and

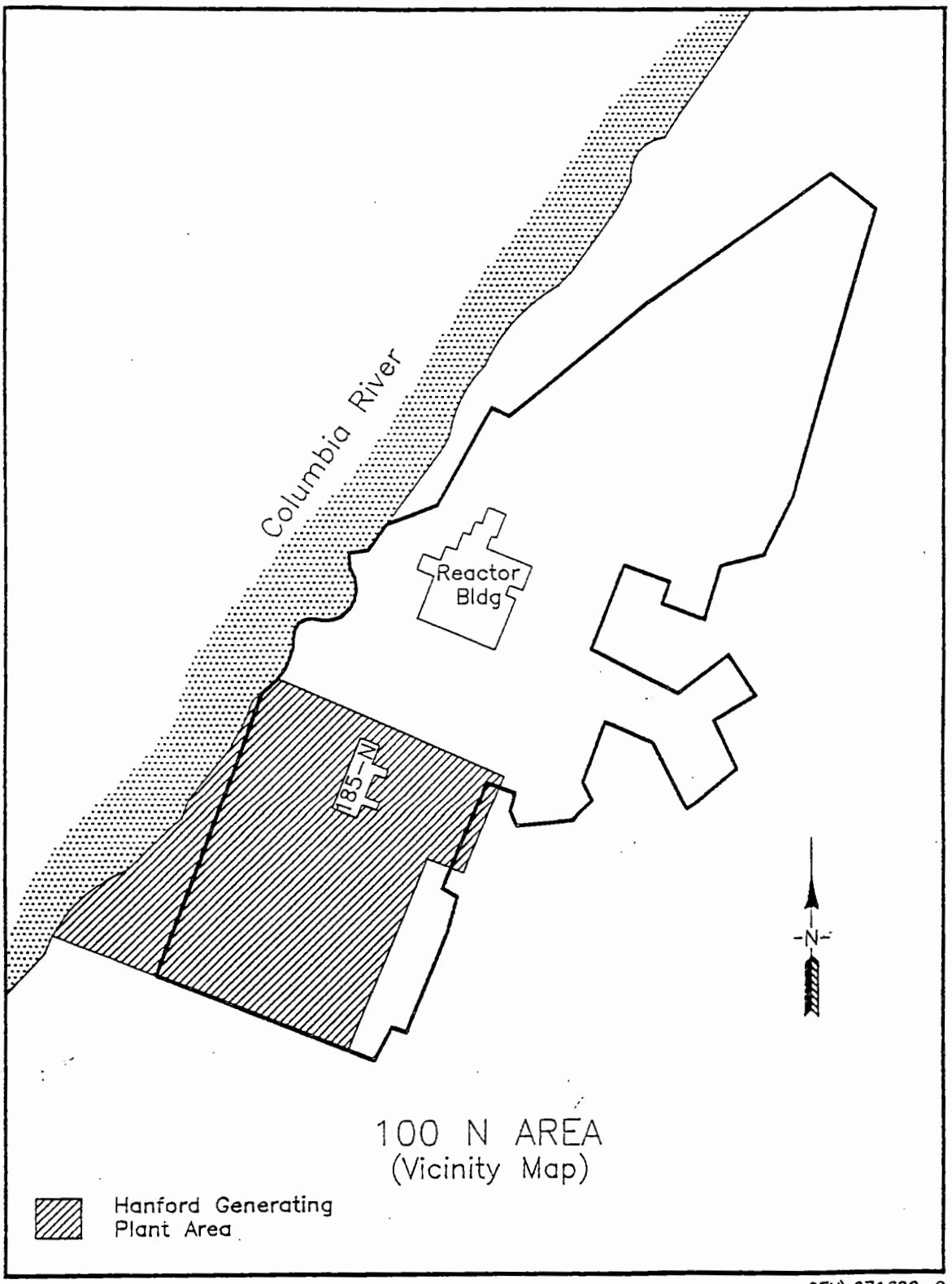
A parcel of land lying in Sections 3 and 4 of Township 11 North, Range 28 East, and Sections 33 and 34 of Township 12 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 50°-42'-00" West 14,311.63 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 417,400.00 and East 2,296,578.57); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5,280.00 feet to a point; thence South 01°-01'-23" East 1200.19 feet to a point; thence East 5,973.57 feet to a point; thence South 1°-01'-23" West 1800.29 feet to a point; thence West 11,189.29 feet more or less to the TRUE POINT OF BEGINNING, containing 609.15 acres more or less.

For purposes of application of Part IV Corrective Action of this permit only, the facility also includes PARCELS C, D, E, and F of the lands identified as Excepted from the ABOVE-DESCRIBED LAND, in the foregoing legal description.

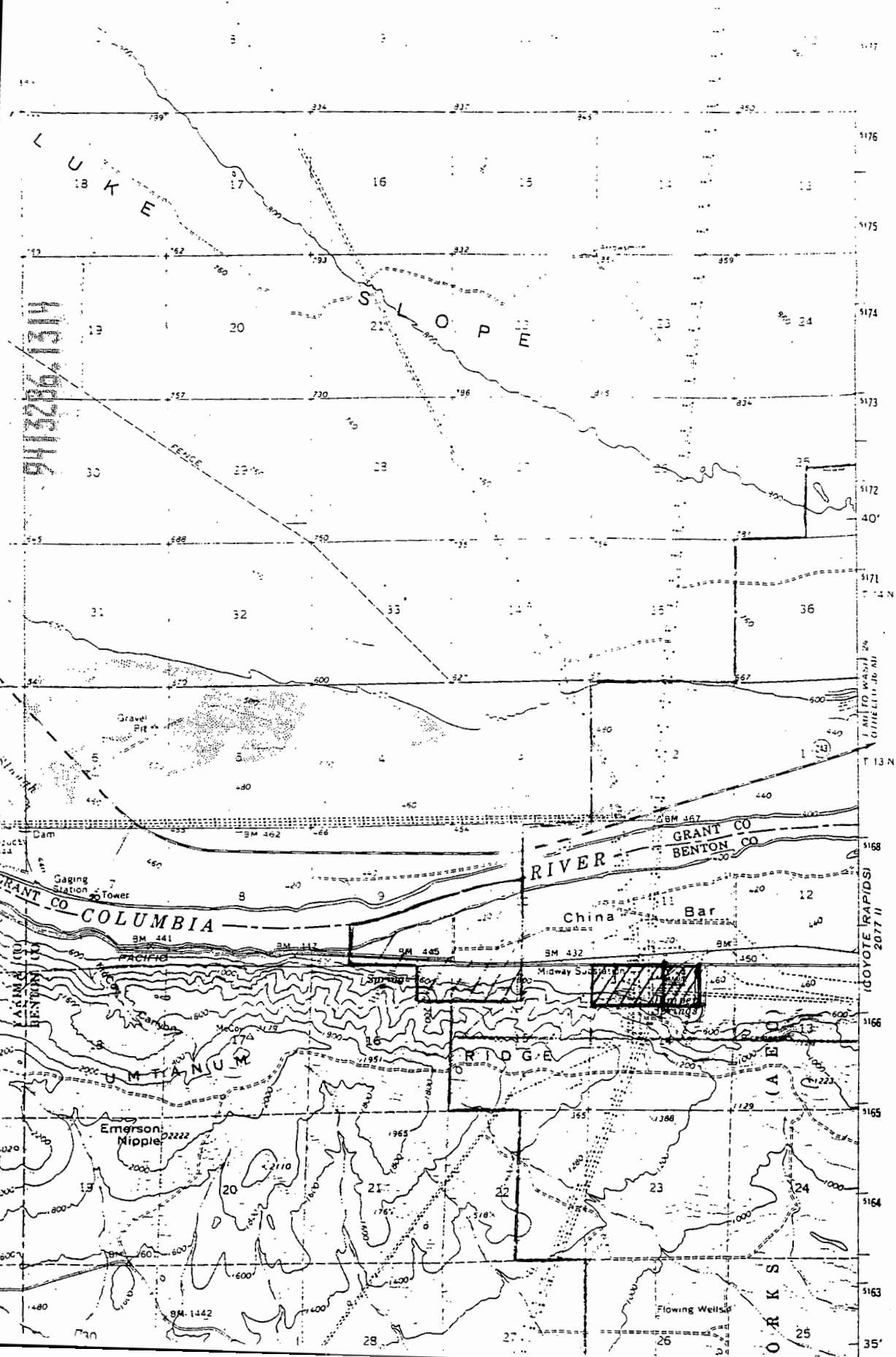
Enclosure 3

Washington Public Power Supply System
Hanford Generating Plant



Enclosure 4

Bonneville Power Administration
Midway Site



BPA Midway Site

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

WA 8967

7-15-92 TC

EPA

JUL 15 1992

Reply To
Attn Of: SO-155

BY FACSIMILE AND REGULAR MAIL

Robert Carosino, Esq.
United States Department of Energy
Richland Operations Office
P.O. Box 550, A4-52
Richland, Washington 99352

Re: Legal Descriptions at the Hanford Federal Facility

Dear Mr. ~~Carosino~~ Bob:

As you are aware, the United States Environmental Protection Agency (EPA) is in the process of completing the RCRA Facility Assessment (RFA) for the leased lands at the Hanford Federal Facility. During the course of completing this RFA, it has become evident that the facility legal description submitted as Attachment N to your comments regarding the draft RCRA permit is not accurate and/or complete. In order to correctly identify parcels which will be subject to the corrective action requirements of the RCRA permit rather than the Federal Facility Agreement and Consent Order, it is essential that this legal description be completely accurate.

Please provide an updated facility legal description which clearly identifies all parcels within the Hanford reservation which are owned by other parties (e.g. the State of Washington, the Bonneville Power Administration (BPA), etc.) and those parcels which are leased to other parties (e.g. the State of Washington, Washington Public Power Supply System (WPPSS), etc.). Parcels which are operated by the BPA under use permits should not be included, as it is our understanding that these use permits are revocable at will by the Department of Energy (DOE). As such, these use permits are more similar to a contract rather than a lease and therefore those tracts of land are considered by the Region to be part of the Hanford Federal Facility for purposes of corrective action.

In addition, please provide maps of the leased area or property boundary for each parcel excluded from the legal definition of the Hanford "facility". Provide maps showing the location of each parcel relative to the overall Hanford facility. Particular attention should be paid to the following areas:

1. Midway substation and community. Please clarify whether the property owned by BPA includes the substation and community area, or if the Midway substation is being operated under a use permit from DOE. Also clarify whether the Midway community landfills are located on BPA's property (the map provided by BPA indicates that these units are located outside BPA's property line).

2. WPPSS Hanford Generating Plant. Maps obtained from WPPSS and from DOE during the file review for this RFA show substantially different lease boundaries. Please clearly identify the boundaries of the parcel leased to WPPSS for the Hanford Generating Plant.

3. WPPSS Plants 1, 2, and 4. WPPSS has indicated that the WPPSS Plant 2 facility is leased separately from Plants 1 and 4. Please clearly identify the boundaries of each leased area, and indicate whether the leased parcels are contiguous.

Thank you for your assistance in this matter. Please contact me at (206) 553-1744, or Christy Ahlstrom of EPA Region 10's RCRA Permit Section at (206) 553-8506, if you have any questions.

Sincerely,

Dean B. Ingemansen
Assistant Regional Counsel

cc: Christy Ahlstrom, EPA Region 10
Dan Duncan, EPA Region 10
Jerry Schuster, PRC

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

0032502

WA 8967

EPA

November 5, 1991

11-5-91

TC

Reply To
Attn Of: HW-074

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Ms. Elizabeth A. Bracken, Director
Environmental Restoration Division
Department of Energy
Richland Operations Office
P.O. Box 550 (A6-95)
Richland, Washington 99352

Re: RCRA Facility Assessment at Hanford Federal Facility
EPA ID Number: WAD 7890008967

Dear Ms. Bracken:

The Hazardous and Solid Waste Amendments of 1984 (HSWA) establish the authority in the Resource Conservation and Recovery Act (RCRA) program to address releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs). This program applies to operating, closed, or closing RCRA facilities. The RCRA Facility Assessment (RFA) is a mechanism which the U.S. Environmental Protection Agency (EPA) utilizes to carry out the corrective action authorities of HSWA.

Specifically, the RFA is the initial step in the corrective action process. In the RFA, EPA identifies all solid waste management units at a facility and determines the potential for releases of waste from the units. The corrective action authorities allow the RCRA program to detect and correct releases from regulated waste management units, as well as those units resulting from past waste management practices at RCRA regulated facilities. Releases to all media (air, soils, and surface and ground waters) from all waste units are within the jurisdiction of the RCRA corrective action program. EPA is currently responsible for implementing this program in Washington, Oregon, and Alaska; Idaho is authorized to implement its own corrective action program.

EPA is currently conducting an RFA for the Hanford Federal Facility. **The scope of the RFA covers those SWMUs at the Hanford Facility that are not included under the current Hanford Federal**

Facility Agreement and Consent Order. This letter is to notify you of a visual site inspection (VSI) scheduled for November 18, and 22, 1991, beginning at 8:00 a.m. The VSI will be performed by PRC Environmental Management, Inc. (PRC) a contractor to EPA. PRC is an authorized contractor of EPA (Contract No. 68-W9-0009) and is acting on EPA's behalf as field investigators. The two (2) investigators may be accompanied by other representatives from EPA, the Washington Department of Ecology, or both. The investigators will be on the Hanford Site performing VSIs at the Bonneville Power Administration substations, the U.S. Ecology site, and the Washington Public Power Supply System Plant number two on November 19-21, 1991.

Enclosed are an agenda for the VSI, including a proposed VSI schedule and a preliminary list of SWMUs and areas of concern to be inspected as identified during our file review (Enclosure 1), and a list of information needs for the areas of interest for you to provide to the inspection team (Enclosure 2).

Section 3007 of RCRA, 42 U.S.C. § 6927, authorizes EPA to request certain information from handlers of hazardous waste. Pursuant to § 3007 of RCRA (and to facilitate the RFA process), you are requested to provide the information listed on Enclosure 2. All facility records should be reviewed in obtaining the requested information, including the personal recollections of longtime employees and past owners and operators. The requested information must be sent to EPA within thirty (30) days of the receipt of this letter. Please send all information to the following address:

Daniel Duncan
U.S. Environmental Protection Agency
Hanford RCRA Program Manager
1200 Sixth Avenue, HW-074
Seattle, WA 98101

If any information or records are not in your possession, please provide the current location and custodian of such records.

The facility may assert a claim of confidentiality for any information entitled to protection under 40 C.F.R., Part 2, Subpart B, by designating the information you believe is entitled to such protection.

We will be contacting you in the next two weeks to confirm the inspection and make any necessary final arrangements. If you have any questions regarding this letter or the RFA process, please contact Daniel Duncan at (206)553-6693.

Sincerely,

Randall F. Smith, Acting Director
Hazardous Waste Division

Enclosures

cc: Paul Stasch/Toby Michelena, Ecology
Paul Day, EPA
Vicky Tapang, EPA

ENCLOSURE 1

RCRA FACILITY ASSESSMENT
VISUAL SITE INSPECTION AGENDA

FACILITY: HANFORD FEDERAL FACILITY

EPA ID NUMBER: WA 798008967

FACILITY CONTACT: Cliff Clark, Department of Energy

EPA/CONTRACTOR/STATE PERSONNEL:

Dan Duncan, EPA
Paul Stasch, Ecology
Jerry Shuster, PRC
Jim Wright, PRC

PURPOSE OF INSPECTION:

The Hazardous and Solid Waste Amendments of 1984 (HSWA) broaden the scope of EPA's authority under RCRA by requiring corrective action for releases of hazardous wastes and hazardous constituents at facilities that manage hazardous wastes. The RCRA Facility Assessment (RFA) is conducted to evaluate the potential for releases to the environment and the need for corrective action.

The RFA includes a preliminary review of available file information, a visual site inspection (VSI) of the facility and, if necessary, a sampling visit.

The purpose of the VSI is to:

(1) Identify solid waste management units (SWMUs) and other areas of concern. **A SWMU is defined as any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.**

(2) Interview site representatives and review or collect facility information provided by site representatives.

(3) Perform visual inspection with the site representative.

(4) Take photographs of the site, including photographs of all SWMUs and other areas of concern.

PROPOSED VSI SCHEDULE:

I. Introductory Meeting

The Inspection team will meet with facility personnel to discuss:

- Purpose of visit
- Agenda
- Safety and health considerations
- Facility history and operations
- Additional information needs pertaining to the SWMUs identified during the preliminary review including processes which may result in the generation of waste streams.

II. Inspection Tour

The inspection team will tour the facility and examine potential SWMUs and areas of concern, listed below, identified during the preliminary file review. Additional SWMUs and areas of interest will be identified during the inspection, based on the team's tour and review of the facility information.

SWMUs and Areas of Concern Previously Identified:

- 400 Aggregate Area (November 18th)
- 600 Aggregate Area which includes:
  - Basalt Waste Isolation Project (BWIP) Mud Pits/Test Drilling Sites (November 18th)
  - Near Surface Test Facility (NSTF)/Gable Mountain (November 18th)
  - North Slope (including the Wahluke Slope Nike Missile Base) (November 22nd)
  - Miscellaneous SWMUs (November 22nd)
- All gravel/borrow pits (November 22nd)

III. Closing Meeting

The inspection team will meet with facility personnel to conclude the VSI activities.

ENCLOSURE 2

RFA INFORMATION NEEDS
HANFORD FEDERAL FACILITY

(1) Provide a map which identifies the location of facility property boundaries and all SWMUs (at a scale of 1" = 200').

(2) Provide the following information for all SWMUs:

(a) Unit description:
- Location
- Construction details
- Engineering drawings (as builts, if available)
- Capacity

(b) Dates of operation.
(c) Operational status (active, inactive, closed).
(d) Waste types, quantities, sources, and disposition.
(e) Release controls.
(f) History of leaks, spills, or other uncontrolled releases.
(g) Description of inspection and maintenance procedures to assure integrity of the unit.

(3) Provide a detailed topographic map of the facility.

(4) Provide any groundwater, air, soil sampling data collected at the facility.

(5) Provide current and historical aerial photographs of the facility.

(6) Provide copies of applications and permits for disposal of solid wastes within the facility boundary, to the extent such records exist.

GOLLADAY SURVEYING
RICHLAND WASHINGTON
AND PHOTOGRAMMETRY BY

TELEDYNE GEOTRONICS

725 East Third Street
Long Beach, California

PHOTOGRAPHY 6-24-1983
PHOTOGRAPHY TIME 8:24 A.M.

LATITUDE N46°32'17"
LONGITUDE W119°33'29"

WA 89167 7-9-85 ATTACHMENT IV

	Drawing Level 7-9-85	MCH	ACT	
No.	Description 15b	By	Approval	Date
REVISIONS and NOTATIONS				

N442,000

WN-2514 [redacted]

3rd 9U

9413286-1323

16 of 18

9413286.1324

GOLLADAY SURVEYING
RICHLAND WASHINGTON
AND PHOTOGRAMMETRY BY

TELEDYNE GEOTRONICS

725 East Third Street
Long Beach, California

PHOTOGRAPHY 6-24-1983
PHOTOGRAPHY TIME 8:24 A.M.

LATITUDE N46°32'17"
LONGITUDE W119°33'29"

WA 8967 7-9-85

No.	Description	By	Approval	Date
	Drawing Issued 1-9-85	HOH	ACT	7-9-85
	5b			

REVISIONS and NOTATIONS

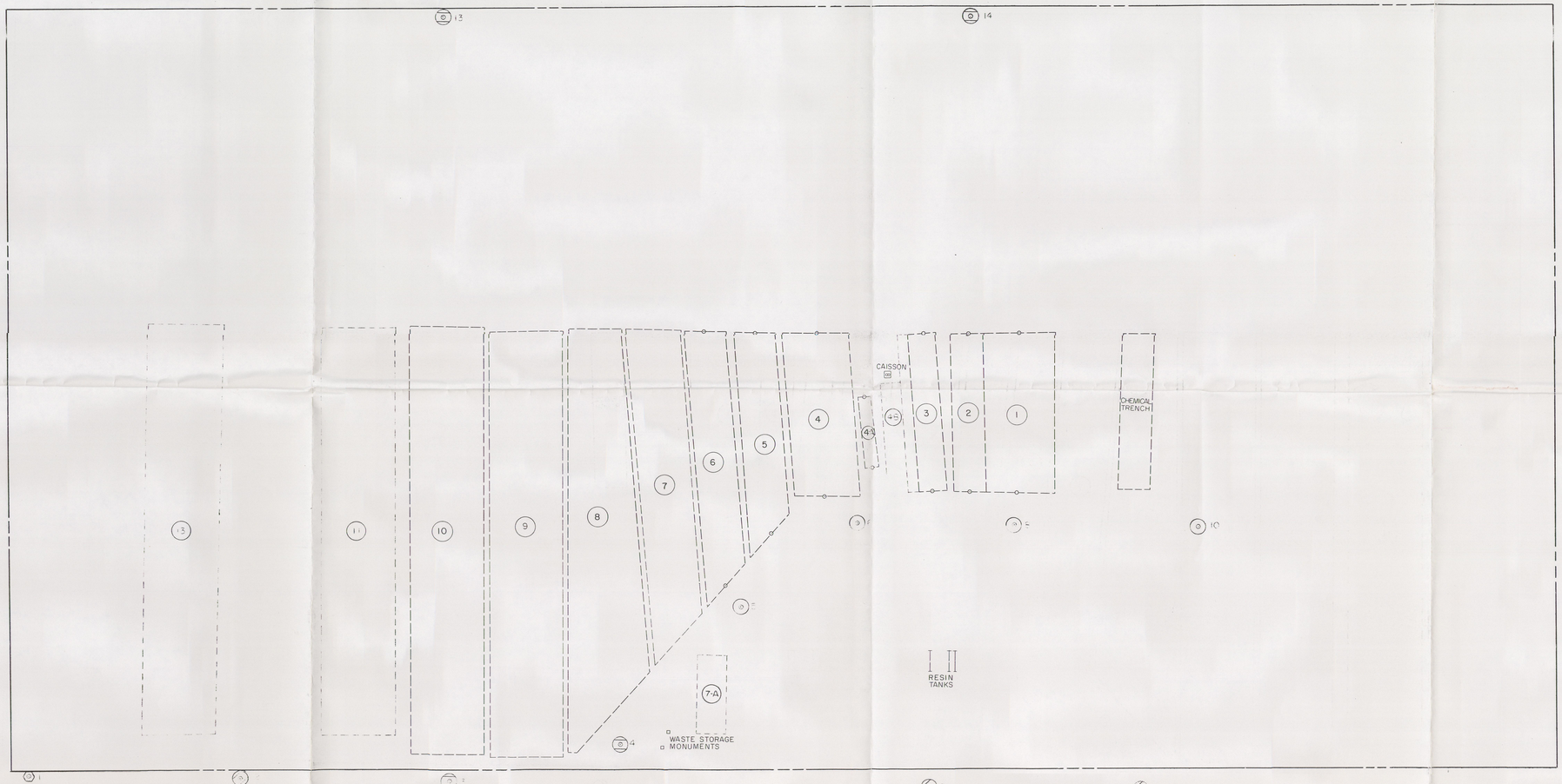
N442,000

WN-8514 [redacted]

3899

N439,000 N439,500 N440,000 N440,500 N441,000 N441,500 N442,000 N442,500

E2,236,000 E2,236,500 E2,237,000 E2,237,500 E2,238,000



GROUNDWATER MONITOR PLAN

- RADIOLOGICAL MONITOR WELL
- CHEMICAL MONITOR WELL
- RADIOLOGICAL AND CHEMICAL MONITOR WELL
- FUTURE RADIOLOGICAL MONITOR WELL

——W—— UNDERGROUND WATER LINE
——E—— UNDERGROUND ELECTRICAL LINE
——T—— UNDERGROUND TELEPHONE CABLE
——— PROPERTY LINE
- - - - TRENCH OUTLINE
O TRENCH MONUMENT

I, WESLEY GOLLADAY, A REGISTERED LAND SURVEYOR, HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL CONTROL DATA SHOWN HEREON IS BASED ON ACTUAL FIELD MEASURMENTS AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

Wesley Golladay
WASHINGTON REGISTRATION NO. 12624
Sept. 8, 1983
DATE

WESLEY GOLLADAY STATE OF WASHINGTON 12624 REGISTERED PROFESSIONAL LAND SURVEYOR

The horizontal control data is based on N.G.S. North American datum of 1927, adjusted 1947, Lambert Grid system, Washington South Zone. The reference points used were station "PUG" (Quad 46119A, Station No 1047) and "GABLE" (Quad 46119I, Station No. 1011)

The vertical control is based on U.S.C.&G.S. datum, 1947 adjustment of second-order leveling from B.M. No. J-317.

SCALE 1" = 100'
0 100 200 300 400

CONTOUR INTERVAL 1'

PREPARED FOR

U S ECOLOGY INC.

LOW-LEVEL RADIOACTIVE WASTE SITE
RICHLAND WASHINGTON
WITH GROUND CONTROL BY
GOLLADAY SURVEYING
RICHLAND WASHINGTON
AND PHOTOGRAMMETRY BY
TELEDYNE GEOTRONICS
725 East Third Street
Long Beach, California
PHOTOGRAPHY 6-24-1983
PHOTOGRAPHY TIME 8:24 A.M.
LATITUDE N46°32'17"
LONGITUDE W119°33'29"

- WA 89167 7985 ATTACHMENT IV

No.	Description	By	Approval	Date
	Drawn 12-21-84	NCH	RCT	

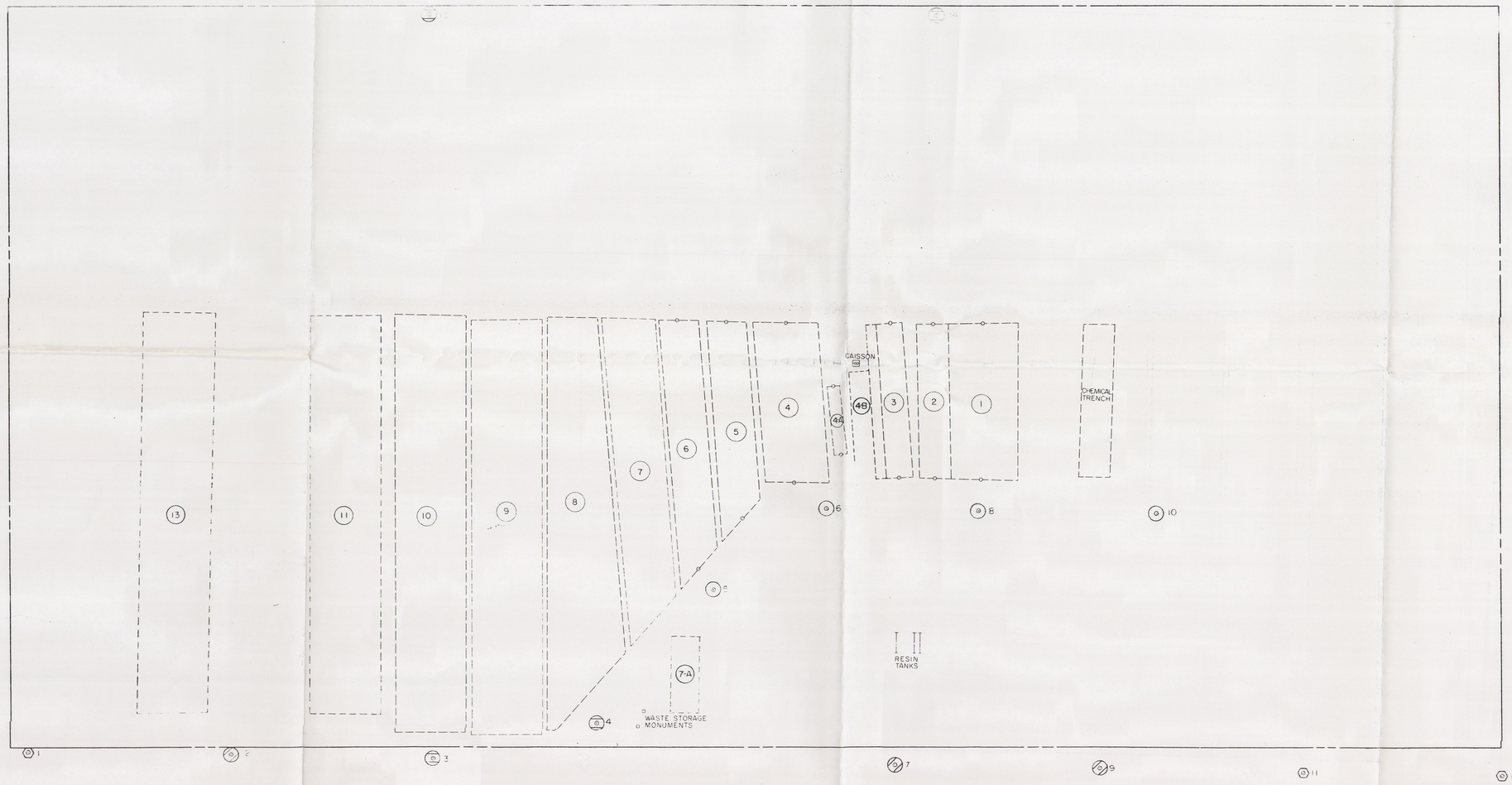
REVISIONS and NOTATIONS

WN-8514 [redacted]

3890

N439,000 N439,500 N440,000 N440,500 N441,000 N441,500 N442,000 N442,500

E2,236,000 E2,236,500 E2,237,000 E2,237,500



GROUNDWATER MONITOR PLAN

- RADIOLOGICAL MONITOR WELL
- CHEMICAL MONITOR WELL
- RADIOLOGICAL AND CHEMICAL MONITOR WELL
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—W— UNDERGROUND WATER LINE
—E— UNDERGROUND ELECTRICAL LINE
—T— UNDERGROUND TELEPHONE CABLE
PROPERTY LINE
TRENCH OUTLINE
TRENCH MONUMENT

SCALE 1" = 100'
0 100 200 300 400

CONTOUR INTERVAL 1'

PREPARED FOR

U S ECOLOGY INC.

LOW-LEVEL RADIOACTIVE WASTE SITE
RICHLAND WASHINGTON
WITH GROUND CONTROL BY
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RICHLAND WASHINGTON
AND PHOTOGRAMMETRY BY
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725 East Third Street
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PHOTOGRAPHY 6-24-1983
PHOTOGRAPHY TIME 8:24 A.M.
LATITUDE N46°32'17"
LONGITUDE W119°33'29"

I, WESLEY GOLLADAY, A REGISTERED LAND SURVEYOR, HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL CONTROL DATA SHOWN HEREON IS BASED ON ACTUAL FIELD MEASURMENTS AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

Wesley Golladay
WASHINGTON REGISTRATION NO. 12624
Sept. 8, 1983
DATE

WESLEY GOLLADAY STATE OF WASHINGTON 12624 REGISTERED PROFESSIONAL LAND SURVEYOR

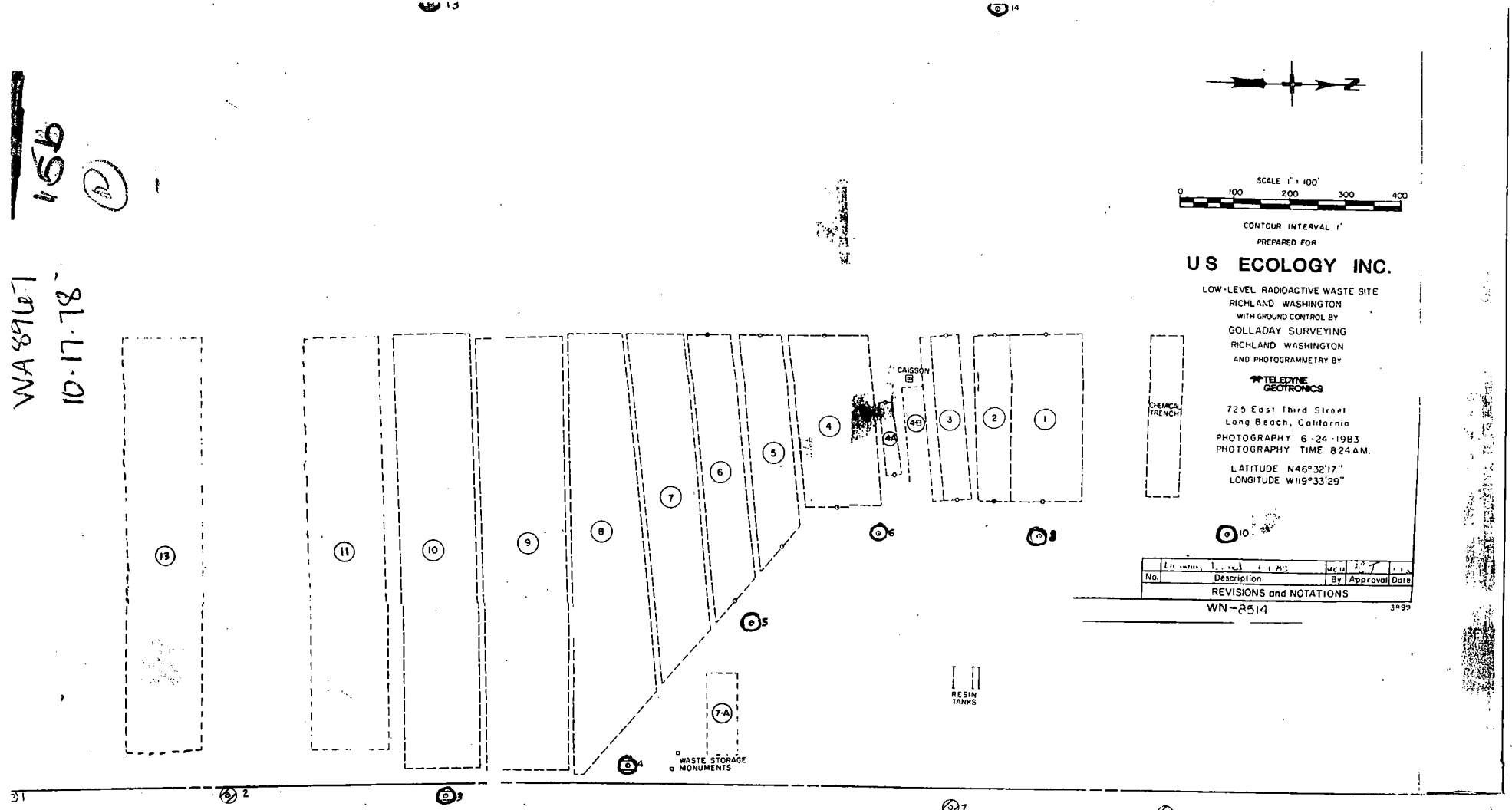
The horizontal control data is based on N.G.S. North American datum of 1927, adjusted 1947, Lambert Grid system, Washington South Zone. The reference points used were station "PUG" (Quad 46119 4, Station No. 1047) and "GABLE" (Quad 46119 1, Station No. 1011)

The vertical control is based on U.S.C.&G.S. datum, 1947 adjustment of second-order leveling from B.M. No. J-317.

No.	Description	By	Approval	Date
	WA 8961 7-9-85			
	Drawing Issued 1-9-85	WDH	ACT	7-9-85

REVISIONS and NOTATIONS

WN-8514 [redacted] 3899



GROUNDWATER MONITOR PLAN

- RADIOLOGICAL MONITOR WELL
- CHEMICAL MONITOR WELL
- RADIOLOGICAL AND CHEMICAL MONITOR WELL
- FUTURE RADIOLOGICAL MONITOR WELL

I, WESLEY GOLLADAY, A REGISTERED LAND SURVEYOR, HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL CONTROL DATA SHOWN HEREON IS BASED ON ACTUAL FIELD MEASURMENTS AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

Wesley Golladay
WASHINGTON REGISTRATION NO. 12624
C. I. e 1982

The horizontal control data is based on N.G.S North American datum of 1927, adjusted 1947, Lambert Grid system, Washington South Zone The reference points used were station "PUG" (Quad 461194, Station No 1047) and "GABLE" (Quad 461191, Station No. 1011)

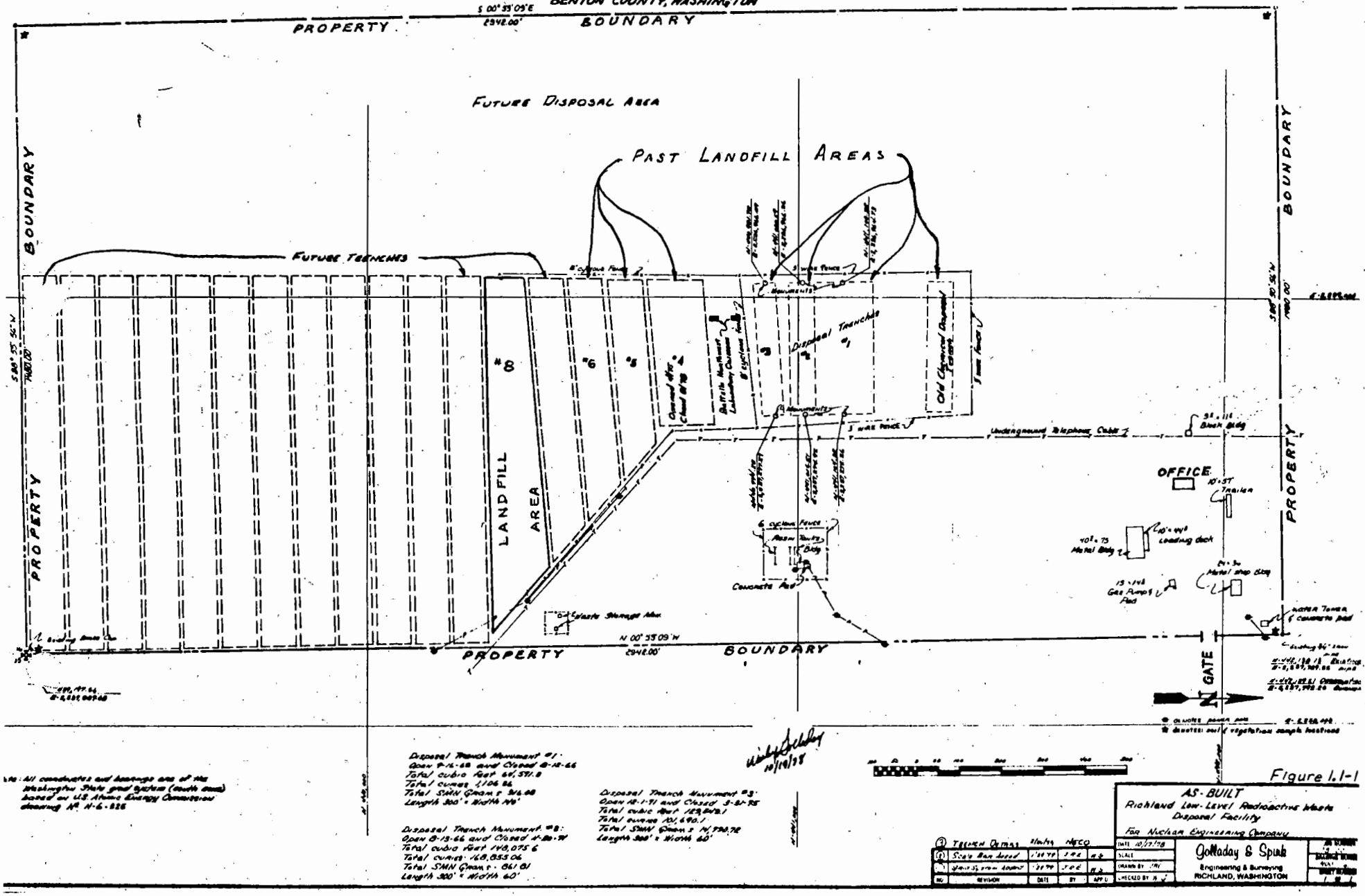
The vertical control is based on U.S.C.&G.S. datum, 1947 adjustment of second-order leveling from B.M. No. J-317.

---W--- UNDERGROUND WATER LINE
---E--- UNDERGROUND ELECTRICAL LINE
---T--- UNDERGROUND TELEPHONE CABLE
PROPERTY LINE

WA 8976 01 10-17-78

9413286.1325

SECTION 9, TOWNSHIP 12 NORTH, RANGE 26 EAST, W.M.
BENTON COUNTY, WASHINGTON



Disposal Trench Monument #1:
Open 9-15-65 and Closed 8-18-66
Total cubic feet 66,571.8
Total curves 1,106.86
Total SIAN Gram s 316.68
Length 300' x Width 40'

Disposal Trench Monument #2:
Open 8-19-66 and Closed 4-20-71
Total cubic feet 149,075.6
Total curves 168,853.06
Total SIAN Gram s 861.81
Length 300' x Width 60'

Disposal Trench Monument #3:
Open 12-1-71 and Closed 3-31-75
Total cubic feet 159,841
Total curves 101,690.1
Total SIAN Gram s 796.76
Length 300' x Width 60'

Note: All coordinates and bearings are of the Washington State grid system (south zone) based on U.S. Atomic Energy Commission drawing No. H-6-826

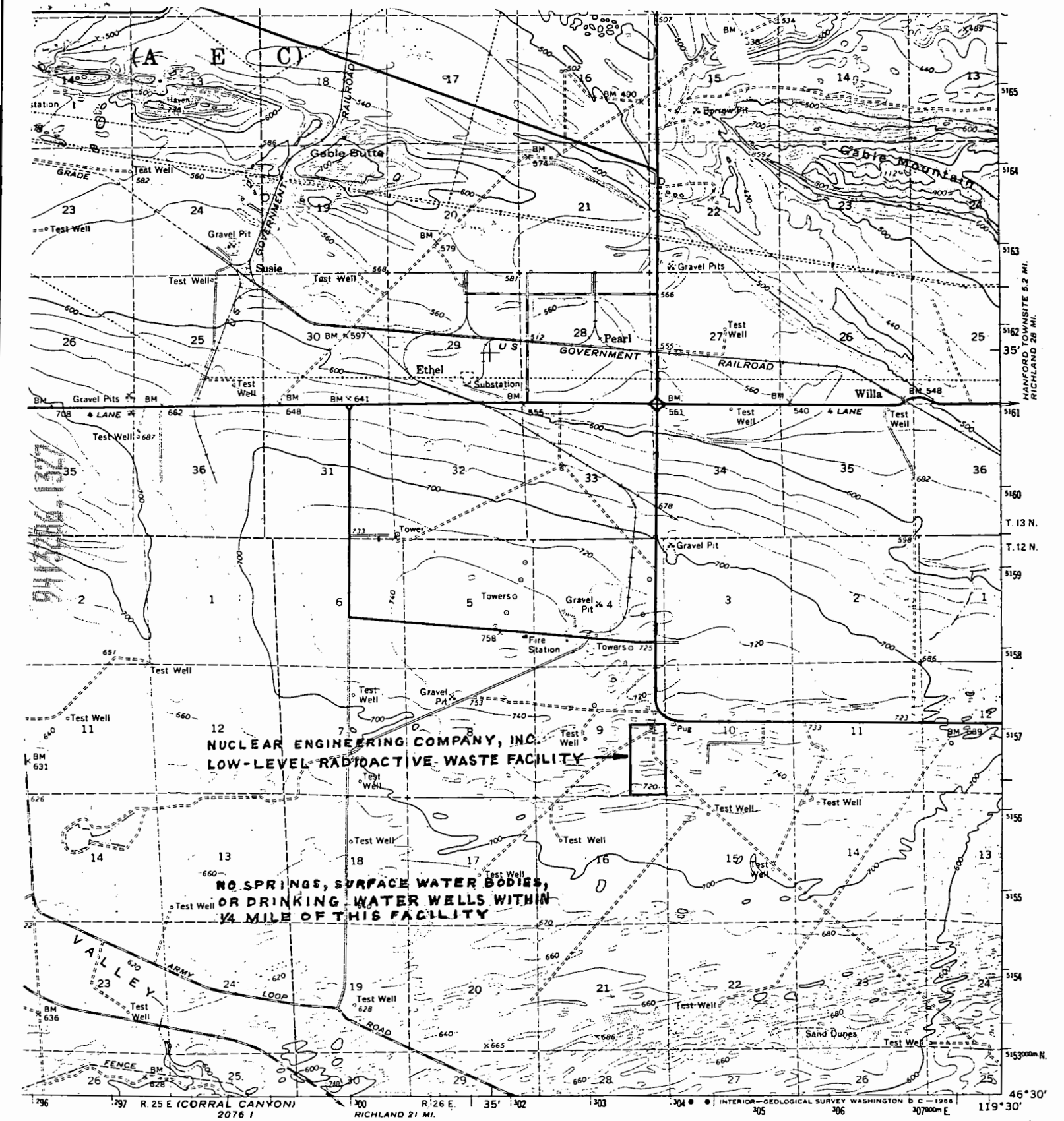
10/19/78

Figure 1.1-1

AS-BUILT
Richland Low-Level Radioactive Waste Disposal Facility
For Nuclear Engineering Company

NO	REVISION	DATE	BY	APP'D
3	Trench Details	10/19/78		
2	State Plan Added	1-18-78		
1	Update from Aerial	1-27-77		

Golladay & Spink
Engineering & Surveying
RICHLAND, WASHINGTON



SCALE 1:62500

½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

State Route

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242
\ FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

GN MN
1°54' 34 MILS
21° 373 MILS
UTM GRID AND 1965 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

COYOTE RAPIDS, WASH.

N4630—W11930/15

1965

AMS 2077 II—SERIES V791

17918
WA 8976
11-8-93

16 C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

Reply To
Attn Of: HW-106

NOV 1993

Stephen W. Travers
General Counsel and Secretary
American Ecology Corporation
5333 Westheimer, Suite 1000
Houston, Texas 77056-5407

Re: US Ecology, Richland, Washington

Dear Mr. Travers:

The U.S. Environmental Protection Agency, (EPA), has received and reviewed your letter of October 14, 1993, regarding EPA's proposed actions at the US Ecology Low-Level Radioactive Waste Disposal Facility (LLRWDF). Your October 14th letter indicated, among other things, that you did not understand why US Ecology was being included in the Hanford Facility Permit being issued to the U.S. Department of Energy (Energy) under the authorities contained in the Resource Conservation and Recovery Act, as amended (RCRA), 42 U.S.C. § 6901 et seq.

On August 13, 1992, EPA provided a draft response to US Ecology's comments which EPA received during the public comment period for the draft RCRA Hanford Facility Permit, which ran from January 15 to March 16, 1992. A copy of EPA's draft responses were provided to Mr. Barry Bede of US Ecology, Inc., and are enclosed with this letter for your convenience. These draft responses specifically address your concerns regarding inclusion of the LLRWDF in the Hanford Facility Permit. EPA has also continued to meet with Mr. Bede since August 1992 to discuss the inclusion of US Ecology in the Hanford Facility Permit.

Since August 1992, EPA has been in contact with both Mr. Bede and Mr. David Dabroski of Perkins Coie. There have been several meetings between EPA and US Ecology, which have also included representatives from Energy, the Washington State Department of Ecology (Ecology) and the Washington State Department of Health (Health). These meetings were held to discuss the inclusion of RCRA Corrective Action requirements in the Radioactive Materials License issued by Health to US Ecology.

EPA agrees with your assertion that the LLWRDF is not currently a RCRA-regulated treatment, storage or disposal (TSD) facility. However, as noted in EPA's draft responses to US Ecology, the solid waste management units (SWMUs) identified in the RCRA Facility Assessment (RFA) are on property owned by Energy and leased to Ecology and subleased to US Ecology. This property is located within the boundaries of the Hanford Federal

Facility and is considered contiguous to the facility which is seeking a RCRA permit. Section 3004(u) of RCRA, 42 U.S.C. § 6924(u), states that all permits issued under RCRA shall require corrective action for all releases of hazardous waste or constituents from any SWMU at a TSD facility seeking a RCRA permit, regardless of the time at which waste was placed in such unit. The RFA at US Ecology indicated a potential for release of hazardous constituents from some of the SWMUs at US Ecology. Under Section 3004(u) of RCRA, EPA must ensure that the SWMUs at US Ecology are investigated to determine if releases are in fact occurring and, if so, that the releases will be addressed.

One mechanism for investigation of the US Ecology SWMUs would be to amend US Ecology's Radioactive Materials License to incorporate the investigatory and, if necessary, corrective action requirements of RCRA. This mechanism would eliminate the confusion of having EPA and Health providing oversight of the investigatory process by allowing Health, with EPA and Ecology input, to be the lead agency for the investigation. It would also eliminate the scenario whereby Energy, as the recipient of the RCRA permit, would be forced to seek access to US Ecology's facility in order to conduct corrective action.

The Hanford Facility Permit is scheduled to go out to public comment in December 1993. Any modifications of US Ecology's license must be agreed to and in place by the effective date of the permit, which could be as early as May, 1994. I encourage you to contact either Dan Duncan, Hanford Permit Coordinator, at (206) 553-6693 or Dean Ingemansen, Assistant Regional Counsel, at (206) 553-1744, should you have any questions regarding this approach. EPA is hopeful that this approach will result in a more reasoned mechanism for addressing the SWMUs at the US Ecology facility.

Sincerely,

Carrie Sikorski, Chief
RCRA Permits Section

Enclosure

cc: Gary Robertson, Health
Martha French, AG's Office, Health
Bob Cordts, Ecology
Tanya Barnett, AG's Office, Ecology
Barry Bede, US Ecology
Dave Dabroski, Perkins Coie
Cliff Clark, Energy
Bob Carosino, Assist. Chief Counsel, Energy

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

Alaska
Idaho
Oregon
Washington

WA8960
8-7-92

16C

EPA

Reply To
Attn of: HW-106

AUG 07 1992

Barry Bede
U.S. Ecology, Inc.
509 E. 12th, #14
Olympia, Washington 98501

Gary Robertson
Department of Health
Division of Radiological Protection
Airdustrial Park, Bldg. #5
P.O. Box 47827
Olympia, Washington 98504-7827

Re: Draft Response to Comments

Dear Mr. Bede and Mr. Robertson:

The U.S. Environmental Protection Agency (EPA) Region 10 has prepared the enclosed draft response to comments submitted by U.S. Ecology, Inc., during the Hanford Dangerous Waste Permit public comment period. These draft responses are provided for your review and information as requested on July 29, 1992.

We are looking forward to meeting with you on August 13, 1992 to discuss these draft responses. The meeting will be held in the Sixth Floor Conference Room, from 9:00am to 12:00pm, Park Place Building, Seattle, Washington.

If any additional information is required please contact Dan Duncan, Hanford RCRA Permit Coordinator, at (206) 553-6693.

Sincerely,

David Carlson for

Carrie Sikorski, Chief
RCRA Permits Section

Enclosure

cc: Cliff Clark, DOE
David Jansen, Ecology

DRAFT

COMMENTS FROM PERKINS COIE (REPRESENTING US ECOLOGY)

Comment: Permit Page 3.,Lines 14-17; Fact Sheet p.1., Fourth Paragraph.

US Ecology is not a permittee under the permit and has not filed an application to become one. And yet the permit purports to impose obligations on US Ecology pursuant to its terms as if it had filed an application and would be a permittee.

Response:

The US EPA agrees that US Ecology is not a permittee. Property leased from the Department of Energy (the Permittee) by US Ecology is, however, part of the Hanford facility as defined under the jurisdiction of the Resource Conservation and Recovery Act (RCRA) and does contain solid waste management units subject to RCRA corrective action requirements.

Section 3004(u) of RCRA requires that each permit for a hazardous waste treatment, storage, or disposal facility, issued after November 8, 1984, contain provisions requiring corrective action for releases of hazardous waste or constituents from any solid waste management units (SWMUs) at the facility seeking a permit under 40 CFR Subtitle C, regardless of the time at which waste was placed in such units. The Hanford federal facility submitted Part A and Part B applications and is seeking a permit for facility operations under EPA/Ecology ID #WA7890008967. At this time EPA does not consider US Ecology to be operating a RCRA treatment, storage or disposal facility subject to RCRA permitting or interim status regulations at 40 CFR Parts 264 or 265. However, RCRA requires facility-wide corrective action for the Hanford facility which includes the SWMUs within US Ecology's sublease, since the sublease is within the Hanford facility.

EPA has implemented this statutory requirement through codification at 40 CFR § 264.101 (final rule July 15, 1985 50 Fed. Reg. 28702). In the preamble to that rulemaking, EPA raised the issue of whether it was appropriate to use the same definition of "facility" for federal facilities as private facilities (i.e., all contiguous property under the owner or operator's control, 50 FR 28712). On March 5, 1986, 51 FR 7722, EPA published a Notice of policy and interpretation which stated in part:

> ...EPA has concluded that Section 3004(u) subjects federal facilities to corrective action requirements to the same extent as any facility owned or operated by private

parties. Furthermore, EPA has determined that the statute requires federal agencies to operate under the same property-wide definition of "facility".

Permit Change:

EPA agrees that the wording of the January 1992 draft permit, which designated the entire US Ecology site as a SWMU, was inaccurate and confusing. The revised draft permit includes specific SWMUs at the US Ecology Site which have been identified as areas of potential release of hazardous substances warranting further investigation. The US Ecology solid waste management units are specified at draft permit condition III.A.1.(a).

Comment: Permit Page 4.,lines 21-23 and Page 5;Fact Sheet page 2.

The Permit is to ensure proper implementation of the Hanford Federal Facility Agreement and Consent Order ("FFACO") and "(e)enforcement of all conditions of this permit, including Part IV, will be primarily through the procedures identified in the FFACO."

Part IV of the Permit includes US Ecology, and yet it was not a party to the negotiations creating the FFACO and the FFACO is not binding upon US Ecology. This agreement is binding and enforceable only against the parties to the agreement. Although the agreement contemplates agents, contractors and/or consultants of the Department of Energy, and requires them to comply with the terms of the agreement, no mention is made of US Ecology, or parties similar to US Ecology. US Ecology is not an agent, contractor and/or consultant of the Department of Energy, and thus is not bound by the agreement.

To include US Ecology in this Permit and thereby attempt to enforce the FFACO against it is an injustice to US Ecology when it was not even a party to the FFACO negotiations. By this Permit alone the agencies attempt to impose an additional and inappropriate regulatory scheme upon US Ecology merely because it is geographically located within the boundaries of a facility that is the subject of the FFACO and this permit.

Response:

EPA agrees that US Ecology is not a party to the Federal Facility Agreement and Consent Order ("FFACO") which was entered into by the DOE, Ecology and EPA. US Ecology is not named as a permittee and neither the permit requirements nor the terms of the FFACO will be enforced against US Ecology. Although the FFACO specifically excludes lands which are

owned by DOE, but leased to other parties including US Ecology, EPA interprets the term "facility" to include all contiguous property under the control of the owner/operator seeking a permit under 40 CFR Subtitle C. Since the US Ecology site is located on property owned by DOE which is within the definition of the term "facility " as it applies to the Hanford site, SWMUs on the US Ecology site are included in the permit, and are subject to RCRA corrective action under Section 3004(u)

Permit Change:

EPA has explicitly delineated the integration of the FFACO in revised draft permit condition III.A.1.

Comment: Permit I.A.1.b; Fact Sheet re I.A.1.b; and Fact Sheet pp. 33-4.

In spite of the fact that DOE did not and does not control the activities of US Ecology, and in spite of the fact that the State of Washington is US Ecology's landlord, the permit suggests that only the landowner (DOE), as the permittee, is being required to perform remediation. The State of Washington cannot avoid liability for the US Ecology facility merely because it is the principal author of the permit.

Response:

RCRA regulations at 40 CFR 264.101, require owners and operators of facilities seeking permits to institute corrective action as necessary. EPA assigns responsibility for SWMUs to facility owners, unless the operator of the TSD seeking a RCRA permit is also responsible for the SWMUs. For the purposes of 40 CFR 264.101 and this permit, US Ecology and the Washington State Department of Ecology are neither owners nor operators. While the permit assigns responsibility for corrective action to the owner (DOE), the permit assigns no property rights (permit condition I.B.) and has no effect on other legal arrangements. EPA holds the permittees responsible for any necessary investigations or remedial measures pursuant to RCRA 3004(u); however, DOE, the State of Washington and US Ecology are free to assign responsibilities in accordance with pre-existing legal arrangements.

Permit Change:

No specific permit change required.

Comment: Draft Permit and Fact Sheet re I.A.1.b.,IV.A.2.,IV.P.4., and IV.P.4.a.

The documents are totally unclear regarding who is responsible for any activities under Permit at the US Ecology Site. The documents are internally inconsistent regarding whether the agencies have determined that the US Ecology site is to be included at this time for purposes of investigation or remediation.

Response:

EPA agrees that the draft permit and fact sheet do not make clear the intent of the agency in applying RCRA 3004(u) requirements at the US Ecology site. EPA has completed a RCRA Faciility Assessment (RFA) at the US Ecology Site which identifies specific solid waste managemnt units (SWMUs) which were found to have a significant potential for release. These SWMUs are specifically listed in revised draft permit condition III.A.1. It is the initial intent of EPA that these SWMUs should be investigated to determine whether releases of hazardous constituents are occurring and to what extent releases have affected subsurface conditions. However, EPA is proposing to defer federal RCRA corrective action requirements for these US Ecology SWMUs. The US Ecology SWMUs could be investigated and, if necessary, remediated under the Washington State Model Toxics Control Act (MTCA), Chapter 70.150D of the Revised Code of Washington, and MTCA Regulations, Chapter 173-340 of the Washington State Administrative Code. After one calendar year of the effective date of the RCRA permit, EPA proposes to revisit the investigation progress and determine whether to allow investigation and/or remediation to continue under state authorities or whether to activate the revised draft permit conditions III.C. through III.E.

Permit Change:

The revised draft permit introduction and corrective action conditions, as well as the fact sheet have been rewritten to reflect the regulatory scheme described in the response to this comment.

Comment: Permit Introduction; Permit and Fact Sheet re IV.A.2.,IV.A.1.b., and IV.P.4.a.

The US Ecology site is the only site in the draft permit singled out to have RCRA corrective action carried out under the State of Washington Model Toxics Control Act (MTCA) Inclusion of US Ecology to solely to achieve this unlikely eventuality is misuse by the agencies of the purpose and authority of the draft permit.

The Introduction and the draft permit throughout make clear that the draft permit is issued pursuant to the federal RCRA and State Dangerous Waste Regulations authority. For those units that were not part of the FFACO, Part IV of the draft

permit is the sole mechanism for addressing investigation and remediation of the units. IV.A.2. Condition IV.P.4.a., addressing solely US Ecology, is one of the conditions jointly enforced by the two agencies pursuant to only RCRA and Dangerous Waste authorities, respectively. Draft permit Introduction.p.6. But because "Washington is not authorized to implement the corrective action provisions of RCRA, therefore EPA is issuing the corrective action portion of this RCRA permit." Public Notice. Wholly unique to the US Ecology facility the agencies have made the following determination:

> It is the intent of the regulatory agencies to have the US Ecology site remediated. To accomplish this, however, Ecology intends to address remediation of the site under the authority of the Model Toxics Control Act (MTCA). Based upon the results of the remedial investigation, a decision will be made on the next phase of the work.

Fact Sheet re IV.P.4.a.

This is a tortured misapplication of the draft permit at best. If MTCA cleanup at the US Ecology site is possible and appropriate, WDOE can chose and attempt to apply such authority directly outside this Permit. This is especially appropriate where all other units that the draft permit defines as CERCLA Past Practice (CPP) units, the draft permit specifically exempts such actions from inclusion. Condition IV.A.1.b. The Fact Sheet for this condition explains that "CPP units are completely excluded from the terms of the CERCLA program as opposed to the RCRA program." If this is true for the application of CERCLA, why should it also not be the case for the ostensible application of MTCA to the US Ecology facility? US Ecology should be exempt from inclusion in the draft permit by the same reasoning.

Response:

EPA disagrees that allowing investigation of the US Ecology SWMUs to proceed under MTCA is a misapplication of the regulations. On July 27, 1990 (55 FR 30800), EPA proposed rules for implementing RCRA 3004(u) which would expand and clarify the July 15, 1985 codification rule. In the preamble to the proposed rule EPA discussed the relationship between EPA's corrective action authorities and existing corrective action authorities in states which are not yet authorized to implement RCRA corrective action in lieu of EPA. In this discussion (55 FR 30860) EPA stated:

> Of course, States with existing standards may continue to administer and enforce their standards as a matter of State law. In implementing the Federal program, EPA will work with States under cooperative agreements to minimize duplication of

efforts. In many cases, EPA will be able to defer to the States in their efforts to implement their programs, rather than take separate actions under Federal authority.

While the US Ecology site was the only site singled out in the draft permit for this arrangement, it is not the only site in the State of Washington where, by prearranged agreement, corrective action authorities are being overseen by EPA, but implemented by Ecology under MTCA authorities.

While EPA agrees with the comment that Ecology could attempt to apply MTCA authority directly, outside the draft permit, RCRA 3004(u) and 40 CFR 264.101 require EPA to establish schedules and requirements for corrective action at the time of permit issuance for all RCRA permits issued after November 8, 1984. EPA's responsibilities are properly exercised by including oversight of the US Ecology requirements in the draft permit and allowing such activities to progress under existing state authorities.

EPA does not agree with the comment that the US Ecology site should be excluded from the draft permit on the same basis as the CERCLA Past Practice (CPP) units. CPP units are excluded because they are specifically addressed under the FFACO with the understanding that remediation would progress under CERCLA rather than RCRA.

Permit Change:

EPA has specified in Draft Permit Condition III.A.1 that the corrective action for the facility will be satisfied by the FFACO except for those units not covered by the FFACO as set out in draft permit conditions III.A.1.(a) through III.A.1.(d). The US Ecology SWMUs listed in revised draft permit condition III.A.1.(a) are not subject to the FFACO. The US Ecology Site SWMUs, as well as the SWMUs listed under draft permit condition III.A.1 (a) through III.A.1.(d), may be remediated under MTCA as specified in Draft Permit Condition III.B Deferred Corrective Action Requirements, in lieu of direct EPA implementation of RCRA 3004(u) authority. EPA will retain oversight of the investiagtion and/or remediation of these SWMUs. After one calendar year, EPA will revisit the investigation and/or remediation progress, and may under draft permit condition III.B activate draft permit conditions III.C through III.E.

6.0 Environmental Monitoring, Radiological Surveillance and Facility Security Program

This section describes the environmental monitoring, radiological surveillance and facility security program which shall be implemented by the FRC&SO and be in effect for detecting any releases of radioactive material to the environment and minimizing any potential for release of radioactive material. This program shall verify or determine projected or anticipated radioactivity concentrations and related public exposures.

Collection and analysis of environmental samples for radiological contamination, as well as the radiological surveillance of the facility and facility security measures shall be performed according to this section.

6.1 General Requirements

6.1.1 Quality Assurance/Quality Control

A. The quality assurance/quality control program for environmental and surveillance monitoring consists of an integrated system providing for documentation of key sample parameters, chain-of-custody, procedures and audits per this manual.

B. Quality assurance programs shall meet the criteria of 10 CFR 50 Appendix B, ASME NQA-1, and U.S. Nuclear Regulatory Commission Regulatory Guide 4.15.

C. Monitoring systems and procedures shall be developed to meet requirements of this section and shall be designated to be sufficiently sensitive to provide statistically valid results below the action levels specified in Table 6.1.

D. Unless specifically stated, all measuring equipment used to perform environmental and radiological

surveillance shall be calibrated at six-month intervals or following repair, whichever occurs sooner. Maintenance of measuring equipment shall be performed following the manufacturer's recommendations.

6.1.2 Recordkeeping and Documentation

A. Records of radiological surveys, facility inspections, decontamination operations and environmental monitoring data (soil, vegetation, aqueous, air, direct and indirect radiation exposure) shall be maintained for inspection at the facility for an indefinite period.

B. Records of all monitoring locations and elements shall be maintained by the FRC&SO. These records shall include:

1. A scaled map showing all environmental monitoring locations;

2. All calculations, including factors and constants, used for obtaining the final result;

3. All routine and special calibrations of air flow or volume metering devices, including primary or secondary standards used, methods employed and estimates of accuracy of the calibrated metering devices;

4. Calibration certifications for all instruments showing the date and results of the most recent calibration, recalibration due date and appropriate correction factors to be used;

5. Copies of laboratory results and QC data; and

6. Field log books denoting starting and stopping times, where appropriate, and dates, locations, person(s) collecting sample(s), instruments used, general weather conditions and conditions under which samples were collected, i.e., flow rates for air samples; vegetation sample species; depth to water table, well number, pH, specific conductance and temperature for groundwater samples.

6.1.3 Data Review and Evaluation

The data obtained shall be reviewed and evaluated by the CRC&SO to assess:

A. Whether results are reasonable considering operational and environmental conditions;

B. Actual or potential exposure of critical groups averaged over extended periods (e.g. one year);

C. Potential for exceeding action levels;

D. Estimating exposures via critical pathways;

E. Validity of results compared with sample size and minimum detectable activity; and

F. Trends.

6.1.4 Notification and Reports

A. Monthly burial reports shall be furnished as specified in Licenses WN-I019-2 and 16-19204-01.

B. The FRC&SO and CRC&SO shall be notified when an investigation level is met or exceeded as specified in Table 6.1.

C. The Department and NRC, in addition to the FRC&SO and CRC&SO, shall be notified when a reporting level is met or exceeded as specified in Table 6.1.

D. Whenever the Department or NRC, Region V is to be notified of an event, as specified in Table 6.4, a written report shall be furnished to the Department within 30 days describing the actions taken and proposed to be taken. These reports shall be made a part of the permanent record of environmental and surveillance monitoring at the facility.

E. In the event any security related discrepancies are identified, they shall be brought to the immediate attention of the facility manager who shall ensure that the manager of operations and CRC&SO are apprised immediately. The CRC&SO or manager of operations shall notify the Department and NRC, in accordance with applicable NRC/WDOH Regulations, after receipt of the information when a condition exists or existed wherein the security of radioactive materials received at the facility was compromised.

6.1.5 Action Levels and Corrective Actions

A. Action Levels

Action levels (investigating and reporting levels) have been set for each radiological survey and environmental sample. These action levels are specified in Table 6.1. Action levels have been set according to historical data when available (3 sigma above background), laboratory detection capability

or a percentage of a regulatory limit. Action categories have been assigned for each action level and notification shall be in accordance with 6.1.4.

B. Corrective Actions

In the event an environmental monitoring action level is met or exceeded, a corrective action program shall be initiated in accordance with "Corrective Actions for Environmental Monitoring Results Greater Than Action Levels" ROP 15.

6.2 Air Monitoring

6.2.1 Locations Per Table 6.1

A. Environmental

Continuous air monitoring stations shall be located along the fenceline in the predominant wind directions which are from northwest to southeast (approximately 23 percent of time); and from west northwest to east southeast (approximately 18 percent of time).

The monitoring stations shall be established by reference to U.S. Coast and Geodetic Survey coordinates per 6.1.2.B.

B. Other

Grab air samples and other samples shall be taken at the direction of the FRC&SO.

6.2.2 Frequency (see Table 6.1)

A. Environmental

Each environmental air monitoring station shall operate continuously, unless circumstances beyond the facility's control occur (e.g. power failure, equipment failure, etc.). In the case of a site power failure, the generator driven air monitoring

station downwind from operations may suffice for environmental monitoring purposes for up to eight hours per occurrence.

B. Occupational

Air samplers shall operate whenever people may be exposed to airborne radioactivity. Th particulate and iodine cartridges shall be removed at the end of each working day during disposal operations and counted on the next working day.

C. Grab Air Samples

Grab samples shall be collected for assessment of air concentrations during nonroutine operations. The FRC&SO shall determine the time interval, flow rate and number of samples to be collected during the nonroutine operations in order to provide meaningful results taking into account collection efficiency and minimum detectable activity for each nuclide of concern. Grab samples are in addition to, not in substitution for, the occupational and continuous air samples.

6.2.3 Equipment, Calibration and Maintenance

A. Environmental

Radioactivity in the air shall be sampled by pumping air through filters and media designed for the collection of particulate radioactivity, tritium and iodine vapors. The air monitoring station located at the administrative offices (Station 1) shall be capable of sampling for particulate radioactivity, iodine and tritium for the purpose of establishing background values for those isotopes.

Air samplers shall be capable of drawing air through calibrated flow metering device with a minimum

sampling flow rate of at least one CFM. Tritium samplers shall be capable of drawing air at the rate of 100-150 cc per minute.

In addition to the semiannual calibrations required in Section 6.1.1.D, field checks shall be performed monthly to ensure that the operating characteristics of the metering device have not changed.

B. Occupational

Air samplers shall be capable of sampling for particulates and iodine vapors. The sampler shall have a minimum flow rate of at least one CFM as determined by a calibrated flow meter.

C. Error Limits for Measurement of Air Sample Volume

Air sampling equipment shall have flow rate meters or total volume metering devices which are calibrated so that the most probable value of the cumulative error in the determinations of the total volume is less than 20 percent.

6.3 Soil and Vegetation Monitoring

6.3.1 Soil and vegetation monitoring shall be conducted in accordance with the requirements of Table 6.1.

6.3.2 Soils

A. Soil samples shall be collected from undisturbed soil from an area of 12" x 12" x 1". Sampling equipment, shall be designated for each sampling location and shall be cleaned after each sampling to prevent cross-contamination. The sampling equipment shall be protected from contamination between samplings.

B. Vegetation

Whenever possible, green foliage shall be collected. Sampling equipment shall be treated as discussed for soils above. The amount of sample taken shall be of sufficient volume to permit the laboratory to meet the required minimum detectable concentrations.

6.4 Groundwater Monitoring

Groundwater monitoring shall be conducted in accordance with the requirements of Table 6.1.

6.5 Direct Gamma Monitoring Of Environment

Direct gamma radiation monitoring shall be conducted in accordance with the requirements of Table 6.1. Results shall be reported in mrem/day.

Environmental air monitoring Station 1 shall be designated the 'background' station for direct gamma monitoring of the environment.

6.6 Radiation Surveys

6.6.1 Radiological

Surveys shall be conducted in the locations and as specified in Table 6.2.

6.6.2 Special Considerations for Radiological Surveys

A. A thin window (1.4-2.0 mg/cm^2) 2 inch pancake G-M detector shall be used for low-level fixed radioactivity surveys. Radiation levels less than 0.1 mRem per hour may be assumed for instrument readings of less than 300 counts per minute above background, providing maximum background is less than 300 counts per minute. This is derived from using a pure gamma emitter with a one percent detector efficiency.

B. Surveys shall be documented at the end of the work day or after detecting contamination whichever is more frequent.

6.6.3 Equipment Calibration and Maintenance

A. Portable Survey Instruments

The following inventory of radiological survey instruments shall be available to conduct facility operations. At least one of each type of instrument shall be available for use in the area in which receipt handling and disposal operations are conducted.

Two portable instruments for measuring high levels (0-500 R/hr of beta gamma radiation).

Two portable instruments for measuring low levels (0-2000 mR/hr of beta gamma radiation).

The instruments listed above must meet the criteria of:

- ±10% full scale linearity and
- ±10% calibration stability

Two portable instruments for measuring alpha radiation meeting the following criteria:

- Detector must be able to detect a 3 MeV alpha
- ±10% full scale linearity
- ±10% calibration stability

Two portable instruments for measuring beta gamma radioactive contamination meeting the following criteria:

- ±10% full scale linearity

- ±10% calibration stability and window of 1.4 - 2.0 mg/cm^2 (2 inch pancake GM probe)

When handling neutron sources, a portable survey instrument capable of measuring neutron dose rates between 10 and 200 mr/hr shall be available. This instrument must meet the following:

- ±10% full scale linearity
- ±10% calibration stability

Calibrated neutron instruments will not require source checking at the facility.

Calibration of portable survey instruments shall be at one-third and two-thirds of each scale and shall be in accordance with Section 6.1.

In addition, all portable survey instruments, except neutron instruments, shall be checked for response daily prior to use. Documentation of these response checks shall not be required.

Contamination survey instruments shall be source checked every other day. Radiation survey instruments, except neutron instruments, shall be source checked once each week. Documentation of these checks shall be maintained.

Battery checks shall be performed each time an instrument is turned on. If battery checks accordingly, no record is required.

Any instrument found to respond improperly shall be taken out of use until repaired and/or recalibrated.

In addition, should an instrument exhibit erratic behavior, unusually high battery consumption or other anomalous symptoms, it shall be subjected to a thorough inspection and recalibration if necessary by a calibration and repair facility.

B. Other Instruments

Waste shall not be received unless operable, calibrated and checked instrumentation is available to perform appropriate surveys for each radiation type as prescribed in Tables 6.1 and 6.2. Calibration shall be performed as required in Section 6.1.

Additionally, the calibration facility shall: establish a voltage plateau and indicate the optimum operating voltage; determine an operating efficiency using a calibrated source and record the established values for the scaler and each detector.

Reliability tests for scalers shall be performed.

An instrument status and history file shall be maintained for each instrument.

6.7 Quarterly Inspection and Maintenance

The FRC&SO shall conduct visual inspections and radiation surveys of completed disposal units each calendar quarter to determine the condition of trench caps, changes in radiation levels, general condition of the disposal facility and status of security measures. Records shall be maintained of this inspection.

6.8 Facility Security

The physical security of the facility and materials it contains are the responsibility of the facility manager. The facility shall employ both passive systems, i.e. fences, and direct surveillance to achieve security.

6.8.1 Hanford Patrol

Hanford Patrol actively limits access to the 200 Areas, in which US Ecology is located, to only security cleared personnel. The patrol actively monitors the Hanford area and acts as a deterrent to unauthorized entry of any area.

6.8.2 US Ecology

A. Fenced Areas

A positive physical control against unauthorized access to the disposal facility shall be maintained at all times. Security of material (i.e., SNM, source material, by-product) shall be provided by surrounding the perimeter of the operational area of the facility with a continuous eight-foot high chainlink fence topped with barbed wire with an entrance gate which shall be under surveillance during working hours and locked during nonworking hours.

B. Key Control

Distribution of keys to personnel is the responsibility of the facility manager. Supervisors may have keys with the permission of the facility manager consistent with the need for access. Prior to termination of employment, all keys shall be returned to the facility manager.

TABLE 6.1 PAGE 1 OF 4

Environmental/Occupational Monitoring Requirements

MEDIUM	LOCATION	TYPE, FREQUENCY	ANALYSIS	ACTION LEVELS: INVESTIGATION LEVEL	ACTION LEVELS: REPORTING LEVEL	ACTION CATEGORY[1]
ENVIRONMENTAL AIR	Envir. Monitoring Stations 1-9	Continuous, changed weekly	Gross Alpha	1×10^{-14} uCi/cc	1.7×10^{-14} uCi/cc	3, 4
			Gross Beta	1×10^{-13} uCi/cc	2.6×10^{-11} uCi/cc	3, 4
			I-125	3.5×10^{-14} uCi/cc	2.3×10^{-10} uCi/cc	3, 4
	Envir. Monitoring Stations 1-9	Continuous, Monthly Composite of weekly samples	Co-60	5×10^{-14} uCi/cc	2.6×10^{-11} uCi/cc	3, 4
			Cs-137	5×10^{-14} uCi/cc	1.9×10^{-10} uCi/cc	3, 4
			Gamma Spec	5 x MDC[3]	5 x MDC[3]	3, 4
	Envir. Monitoring Stations 1,2,5	Continuous, changed monthly	H-3	2×10^{-11} uCi/cc	6.1×10^{-8} uCi/cc	3, 4
OCCUPATIONAL AIR	One downwind plus one at each location of potential exposure	Continuous during operations or 1 hour/day; whichever is greater	Gross Alpha	NA[4]	3×10^{-13} uCi/cc	1
			Gross Beta	NA[4]	1×10^{-12} uCi/cc[2]	1
			I-125	NA[4]	5×10^{-10} uCi/cc	1

Environmental/Occupational Monitoring Requirements

MEDIUM	LOCATION	TYPE, FREQUENCY	ANALYSIS	ACTION LEVELS: INVESTIGATION LEVEL	ACTION LEVELS: REPORTING LEVEL	ACTION CATEGORY[1]
Soil[5]	Env. Monitoring Stations 1-9 and NE, NW Corners	Grab, Quarterly	Gross Beta	35 pCi/g (dry)	35 pCi/g (dry)[7]	3, 4
			Total Uranium[6]	1 pCi/g (dry)	1 pCi/g (dry)[7]	3, 4
			Pu-238	0.03 pCi/g (dry)	0.03 pCi/g (dry)[7]	3, 4
			Pu-239/240	0.03 pCi/g (dry)	0.03 pCi/g (dry)[7]	3, 4
			Co-60	0.3 pCi/g (dry)	0.3 pCi/g (dry)[7]	3, 4
			Cs-137	0.25 pCi/g (dry)	0.25 pCi/g (dry)[7]	3, 4
			Gamma Spec	5 x MDC[3]	5 x MDC[3,7]	3, 4
Vegetation[5]	Env. Monitoring Stations 1-9 and NE, NW Corners	Grab, Quarterly for deep rooted	Gross Beta	100 pCi/g (dry)	100 pCi/g (dry)[7]	3, 4
			Total Uranium[6]	0.25 pCi/g (dry)	0.25 pCi/g (dry)[7]	3, 4
			Pu-238	0.02 pCi/g (dry)	0.02 pCi/g (dry)[7]	3, 4
			Pu-239/240	0.02 pCi/g (dry)	0.02 pCi/g (dry)[7]	3, 4
			Co-60	0.1 pCi/g (dry)	0.1 pCi/g (dry)[7]	3, 4
			Cs-137	0.2 pCi/g (dry)	0.2 pCi/g (dry)[7]	3, 4
			Gamma Spec	5 x MDC[3]	5 x MDC[3,7]	3, 4
	Filled and capped trenches	Grab, Annually	Gross Beta	100 pCi/g (dry)	100 pCi/g (dry)[7]	3, 4
			Total Uranium[6]	0.25 pCi/g (dry)	0.25 pCi/g (dry)[7]	3, 4
			Pu-238	0.02 pCi/g (dry)	0.02 pCi/g (dry)[7]	3, 4
			Pu-239/240	0.02 pCi/g (dry)	0.02 pCi/g (dry)[7]	3, 4
			Co-60	0.1 pCi/g (dry)	0.1 pCi/g (dry)[7]	3, 4
			Cs-137	0.2 pCi/g (dry)	0.2 pCi/g (dry)[7]	3, 4
			Gamma Spec	5 x MDC[3]	5 x MDC[3,7]	3, 4
			H-3	NA[4,8]	NA[4, 8]	

Environmental/Occupational Monitoring Requirements

MEDIUM	LOCATION	TYPE, FREQUENCY	ANALYSIS	ACTION LEVELS: INVESTIGATION LEVEL	ACTION LEVELS: REPORTING LEVEL	ACTION CATEGORY[1]
Groundwater	Wells #013 (upgradient) #010 #008 #005 #003	Grab, Quarterly	Gross Alpha	12 pCi/L	15 pCi/L	3, 4
			Gross Beta	12 pCi/L	50 pCi/L	3, 4
			H-3	3,600 pCi/L	20,000 pCi/L	3, 4
			C-14	250 pCi/L	2,000 pCi/L	3, 4
			Total Uranium[6]	4.5 pCi/L	30 pCi/L	3, 4
			Pu-238	0.03 pCi/L	See Pu-239/240	3, 4
			Pu-239/240	0.03 pCi/L	40 pCi/L (total Pu)	3, 4
			Co-60	6 pCi/L	100 pCi/L	3, 4
			Cs-137	7 pCi/L	200 pCi/L	3, 4
			Gamma Spec	5 x MDC[3]	5 x MDC[3, 7]	3, 4
			Specific Conductance	NA[4, 8]	NA[4, 8]	NA[4]
			TDS	NA[4, 8]	NA[4, 8]	NA[4]
			TOC	NA[4, 8]	NA[4, 8]	NA[4]
			Nitrates	NA[4, 8]	NA[4, 8]	NA[4]
			Temperature	NA[4, 8]	NA[4, 8]	NA[4]
Field Blank Deionized Water		1 blank per 10 samples collected	Note 9	NA[4, 10]	NA[4, 10]	NA[4]

Environmental/Occupational Monitoring Requirements

MEDIUM	LOCATION	TYPE, FREQUENCY	ANALYSIS	ACTION LEVELS: INVESTIGATION LEVEL	ACTION LEVELS: REPORTING LEVEL	ACTION CATEGORY[1]
Direct Gamma Dose (TLD)	NW, NE, SW, SE Corners and N, S, E, W Fencelines	Continuous, Quarterly	Tissue dose using thermo-luminescent dosimeters	120 mrem/qtr	500 mrem/year	3, 4
	N, S, E, W Fencelines and Fenceline position(s) nearest each active disposal trench	Continuous, Monthly	Tissue dose using thermo-luminescent dosimeters	40 mrem/month	500 mrem/year	3, 4

NOTES 1) Table 6.4 presents the action required based upon action categories.

2) If Ac-227 is listed on manifest or known to be present, the reporting level is 3.0×10^{-13} uCi/cc.

3) The required minimum detection concentrations (MDC's) are listed in Table 6.3.

4) NA = Not applicable or none established.

5) Dry to wet ratio will be obtained

6) Total uranium analysis is defined as the sum of the concentrations of uranium isotopes reported.

7) These are interim reporting levels

8) Concentrations will be evaluated and reported annually in the environmental report.

9) Field blank analysis is the same as well sample analysis.

10) Used for sample QA.

Survey Requirements

SURVEY TYPE	LOCATION	FREQUENCY	ANALYSIS	ACTION LEVELS	ACTION CATEGORY*5
Removable Contamination	Personnel, maintenance vehicles, and equipment not coming in contact with known or suspected contamination, upon exiting controlled area	Each occurrence with appropriate detector *1	Count rate meter if bkgd $\leq$ 300 cpm	100 cpm above bkgd	5
		If exceeds action level use scaler with appropriate detector*1		10,000 dpm/100 cm^2 (beta-gamma) 1,000 dpm/100 cm^2 (alpha)	1
	Radiologically controlled bldgs. or facilities inside restricted area	Daily	Scaler with appropriate detector*1	1,000 dpm/100 cm^2 (beta-gamma) 220 dpm/100 cm^2 (alpha)	2
	Site equipment inside restricted area	Weekly	Scaler with appropriate detector*1	1,000 dpm/100 cm^2*2 (beta-gamma) 220 dpm/100 cm^2*2 (alpha)	2
	Outside restricted area (Unconditional release)	Each occurrence	Scaler with appropriate detector*3	220 dpm/100 cm^2 (beta-gamma) 22 dpm/100 cm^2 (alpha)	2

Survey Requirements

SURVEY TYPE	LOCATION	FREQUENCY	ANALYSIS	ACTION LEVELS	ACTION CATEGORY*5
Removable Contamination	Non radiologically controlled facilities/buildings	Monthly	Scaler with appropriate detector*3	220 dpm/100 cm^2 (beta-gamma) 22 dpm/100 cm^2 (alpha)	2
	Each waste transport vehicle upon arrival	2 smears on right 2 smears on left 2 smears on rear 2 smears inside (floor) 3 smears of cargo	Scaler with appropriate detector*3	Per D.O.T. Requirements (49 CFR 173.443)	2
	Each waste transport vehicle during unloading	3 smears or 20% of cargo whichever is greater	Scaler with appropriate detector*1	Per D.O.T. Requirements (49 CFR 173.443)	2
	Each waste transport vehicle prior to departure	Direct frisk	Count rate meter with appropriate detector*3	100 cpm above bkgd if bkgd $\leq$ 300 cpm	5
		If direct frisk exceeds action levels	Scaler with appropriate detector*3	220 dpm/100 cm^2 (beta-gamma) 22 dpm/100 cm^2 (alpha)	2 2
		3 smears of vehicle	Scaler with appropriate detector*3	220 dpm/100 cm^2 (beta-gamma) 22 dpm/100 cm^2 (alpha)	
	Weekly randomly selected shipment	One smear per package or pallet	Rate meter with appropriate detector*1	Per D.O.T. Requirements (49 CFR 173.443)	2

Survey Requirements

SURVEY TYPE	LOCATION	FREQUENCY	ANALYSIS	ACTION LEVELS	ACTION CATEGORY*5
Radiation/fixed contamination	Radiologically controlled facilities and buildings (exclusive of designated contaminated areas)	Weekly	Count rate meter with appropriate detector*1	100 cpm above bkgd (If bkgd is $\leq$ 300 cpm)*2	5
	Normal traffic areas outside controlled area	Weekly	Rate meter with appropriate detector*4	0.5 mR/hr	2
	Site equipment inside restricted area	Weekly	Rate meter with appropriate detector*4	0.5 mR/hr	2
	Site equipment outside restricted area	Weekly	Rate meter with appropriate detector*4	0.1 mR/hr	
	Non rad controlled building/facilities	Monthly	Rate meter with appropriate detector*4	0.1 mR/hr	2
	Waste transport vehicles	Each arrival	Rate meter with appropriate detector*4	200 mR/hr on contact with sides, 10 mR/hr @ 2 m. from sides and 2 mR/hr in Cab	2

Survey Requirements

SURVEY TYPE	LOCATION	FREQUENCY	ANALYSIS	ACTION LEVELS	ACTION CATEGORY*5
Radiation/fixed contamination	Waste transport vehicles	Each departure	Count rate meter with appropriate detector*1	100 cpm above bkgd (If bkgd ≤ 300 cpm)	5
	Weekly randomly selected shipment	Each package or pallet of packages	Rate meter with appropriate detector*4	Per D.O.T. requirements and manifest	2
	Edge of operational trench	Daily	Rate meter with appropriate detector*4	10 mR/hr	2
Aerial Photo	Entire facility	Annually	NA*6	NA*6	NA*6

*1. Appropriate Detector
1. Initial screen with 1.4 - 2.0 mg/cm^2 G-M Tube (2 inch pancake probe).
2. Additional analysis if action level could be exceeded depending upon probable radionuclides (e.g. low background proportional counter).

*2. Certain tools and equipment may be above these limits if appropriate contamination controls, specified by the FRC&SO, are applied.

*3. Appropriate detector is low background proportional counter.

*4. Dose rate instrument. (If a neutron emitting source is received, with proper notification, a survey meter/instrument capable of monitoring thermal neutrons at dose rates of a least 1.0 mRem to 200 mRem/hr shall be used).

*5. Table 6.4 presents the action required based upon action categories.

*6. NA = Not Applicable.

TABLE 6.3

Required Minimum Detectable Concentrations (MDC's) for
Gamma Spectroscopy Analyses of Environmental Samples

Radionuclide	Water (pCi/l)	Airborne Activity (pCi/m^3)	Soil (pCi/g-dry)	Vegetation (pCi/g-dry)
76As	16	0.02	0.03	0.05
140BaLa	24	0.02	0.05	0.07
141Ce	10	0.01	0.02	0.03
144CePr	92	0.09	0.18	0.10
58Co	10	0.01	0.02	0.03
60Co	11	0.01	0.02	0.03
134Cs	11	0.01	0.02	0.03
137Cs	10	0.01	0.02	0.03
152Eu	56	0.06	0.11	0.17
154Eu	27	0.03	0.05	0.08
155Eu	24	0.02	0.05	0.07
59Fe	17	0.02	0.03	0.05
131I	10	0.02	0.02	0.03
133I	11	0.01	0.02	0.03
54Mn	10	0.01	0.02	0.03
99Mo	69	0.07	0.14	0.21
22Na	10	0.01	0.02	0.03
103Ru	10	0.01	0.02	0.03
106Ru	85	0.09	0.17	0.26
124Sb	10	0.01	0.02	0.03
125Sb	24	0.02	0.05	0.07
65Zn	21	0.02	0.04	0.06
95ZrNb	17	0.02	0.03	0.05

Note: The gamma nuclide library used by the analytical laboratory will contain additional radionuclides as specified by US Ecology. Naturally occurring gamma ray emitters which will be monitored and reported in the annual environmental report are not included in this listing.

TABLE 6.4

ACTION CATEGORIES

ACTIONS REQUIRED WHEN ACTION LEVEL MET OR EXCEEDED

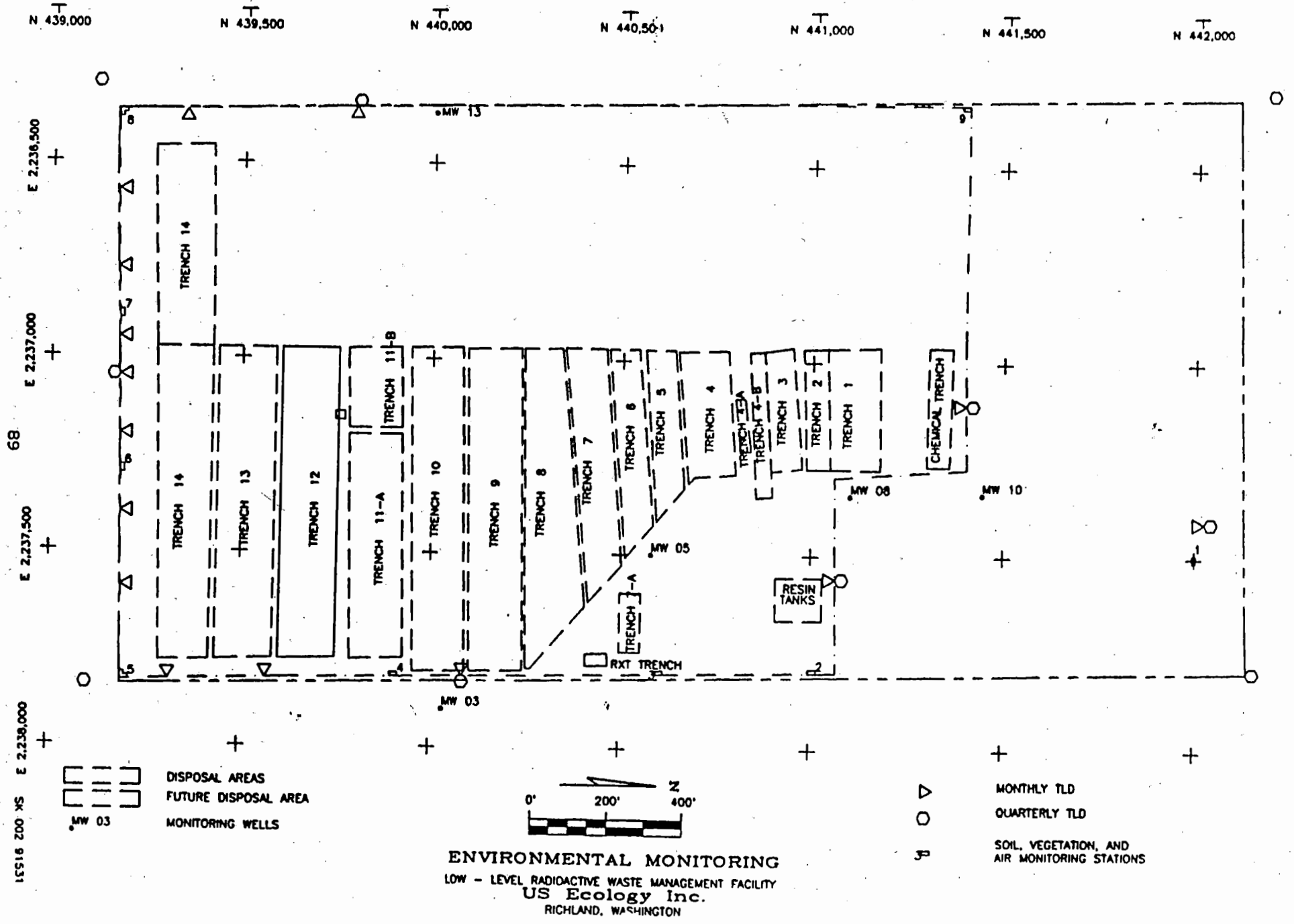
1) Type 1 Event
Follow Reporting Level requirements
Potential for bioassay examined by FRC&SO

2) Type 2 Event
Immediate notification of on-site inspector
Take corrective action

3) Investigation Level
Notify the FRC&SO and the CRC&SO
Take corrective actions described in FSM 6.1.5

4) Reporting Level
Notify the FRC&SO, CRC&SO, the Department, the US NRC within 24 hours upon confirmation
Take corrective actions described in FSM 6.1.5
Make reports in accordance with FSM 6.1.4.C

5) Resurvey with dose rate instrument for fixed contamination/radiation level and smears for loose contamination. If dose rate < 0.1 mR/hr and loose contamination < 220 dpm/100 cm^2, no further action is required. If dose rate is $\geq$ 0.1 mr/hr or loose contamination is $\geq$ 220 dpm/100 cm^2, then take actions per #2 above.



ENVIRONMENTAL MONITORING

LOW - LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY

US Ecology Inc.

RICHLAND, WASHINGTON

FIGURE 6.1

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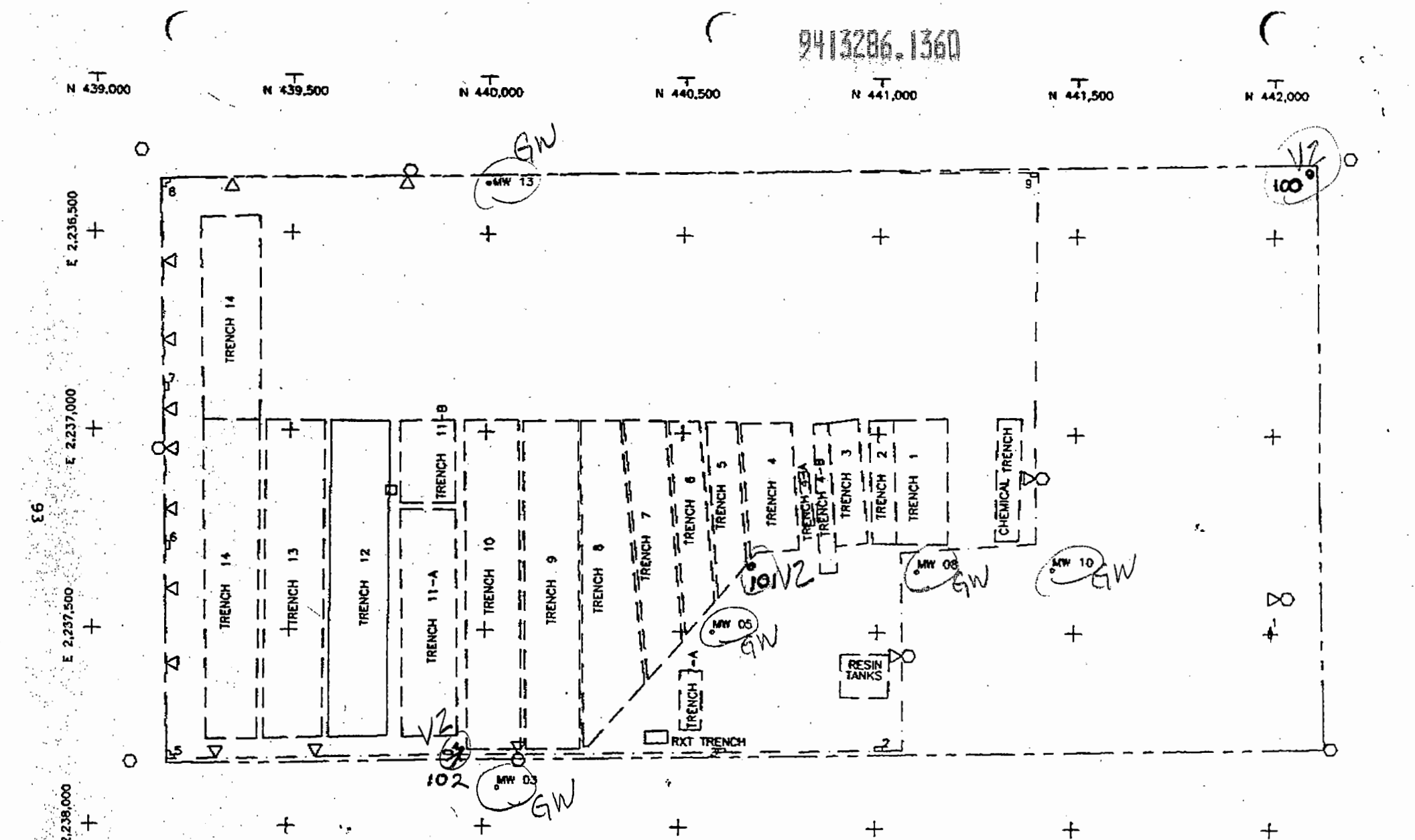


ENVIRONMENTAL MONITORING

LOW – LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY

US Ecology Inc.

RICHLAND, WASHINGTON

FIGURE 6.1

RICHLAND OPERATIONAL PROCEDURE

TITLE Soil Vapor Sampling
U.S. EPA Method TO-14 ROP NO. 19

TECHNICAL CONCURRENCE [signature] 7-28-92 PAGE 1 OF 4

APPROVAL [signature] 7/28/92 REV. 0 DATE 07/23/92

1.0 INTRODUCTION

Air samples shall be collected using an evacuated canister for the analysis of volatile organic compounds. This procedure documents the collection of vapor phase volatile organic compounds within the interstitial soil spaces at vadose monitoring wells 100, 101 and 102.

2.0 EQUIPMENT

1. Sample collection apparatus (Figure 1, ROP 19).
2. Vendor supplied SUMMA(R) passivated six liter stainless steel sample canister. The canister shall be cleaned and certified per U.S. EPA Method TO-14, Section 11.1 and evacuated.
3. Air flow meter.
4. Vacuum pump
5. Vacuum gauge
6. DC power source 12V.
7. Canister sampling field data sheet.

3.0 PRECAUTIONS

Prior to sampling, the sampling apparatus shall be cleaned with alconox or similar detergent, rinsed with deionized water and dried in a oven at 100°C. for a minimum of 12 hours. The sample apparatus shall be free of moisture. Teflon tape may be used to seal the thread connections. The sample equipment must not contact solvents, glue, grease or joint compounds. The polyethelene line, flow meter and vacuum pump do not require decontamination. The vacuum pump shall exhaust to the atmosphere away from personnel and ignition sources. This procedure shall not be conducted while vadose zone radionuclide samples are being taken (see ROP 18).

4.0 PROCEDURE

4.1 Installation of Sample Collection Apparatus

A sample collection assembly diagram is provided in Figure 1, ROP 19. This assembly shall be installed at the top of each two inch PVC well casing as to minimize interaction with the atmosphere. The valves shall remain closed until a vacuum is applied to the sampling system. All connections must be air tight.

4.1.1 Assemble the stainless steel tubing, valves, pressure gauge, bell reducers and 2 inch casing adapter.

4.1.2 Close the needle valve numbers 1 and 2 on the sampling assembly.

4.1.3 Remove the two inch well cap and quickly install the sampling assembly.

4.1.4 Install the polyethelene line to the flow meter and vacuum pump.

4.1.5 Install the sampling canister to the collection assembly and tighten with a wrench.

4.1.6 Record the canister identification number in the field notes and complete the sample tag provided with the canister.

4.2 Purging

To obtain a representative sample, the air within the well bore must be purged prior to sample collection.

4.2.1 Start the vacuum pump and open the needles valve numbers 1 and 2 of the sampling apparatus. DO NOT OPEN NUMBER 3 VALVE ON THE SAMPLE CANISTER.

4.2.2 Adjust the valve number 4 on the air flow meter to 5 liters per minute.

4.2.3 One volume of air will be purged from each well bore. Record the start time on the field data sheet.

The bore hole volume of air within vadose monitoring wells 001, 002 and 003 is approximately 700 liters. The purge time is provided below:

Well #	Air Volume	Purge Time @ 5 Liters/Minute
100	700 liters	2 hours - 20 minutes
101	700 liters	2 hours - 20 minutes
102	700 liters	2 hours - 20 minutes

4.2.4 Close needle valve numbers 1 and 2 on the sampling apparatus.

4.2.5 Stop the vacuum pump.

4.2.6 Record the stop time on the field data sheet.

4.2.7 Slowly open valve number 3 on the sample canister while observing the vacuum gauge. The canister should reach equilibrium very quickly. Open valve number 3 on the sample canister completely. Record the vacuum gauge reading on the field data sheet.

4.2.8 Very slowly, open needle valve number 1 (see Figure 1, ROP 19) adjacent to the well casing to begin sample collection. Observe the vacuum gauge and or listen for air flow through the valve. Sample collection should continue for approximately one to two minutes. Adjust the valve to ensure sample collection takes between one and two minutes.

4.2.9 After vacuum reaches 0 inches Hg and air flow is not audible, open needle valve number 1 adjacent to the well casing completely.

4.2.10 Close the sample canister valve number 3 tightly and close needle valve 1.

4.2.11 Remove the sample canister from the collection apparatus and place the brass cap on the canister.

4.2.12 Complete the chain-of-custody information for the sample.

Sample containers should remain at ambient temperatures for shipment to the laboratory.

5.0 ACTION LEVEL

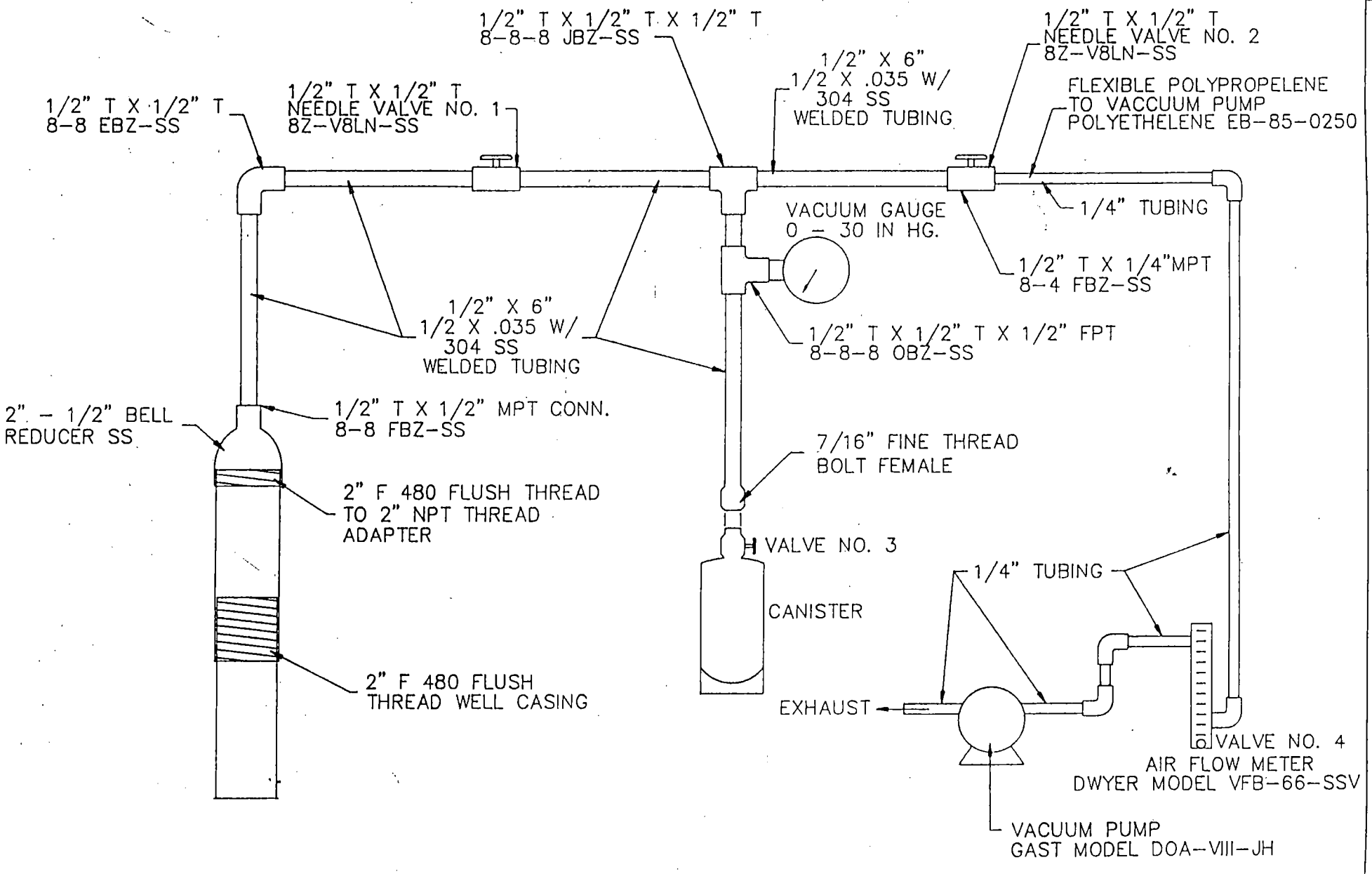
No action levels are required for organic vapor sampling from vadose monitoring wells.

6.0 RECORDS

Attachment 1, ROP 19 (Canister Sampling Field Data Sheet)

7.0 BIBLIOGRAPHY

U.S. EPA Method TO-14 - Determination of Volatile Organic Compounds (VOCs) in ambient air using SUMMA(R) Passivated Canister Sampling and Gas Chromatographic Analysis.



RICHLAND WASHINGTON
VADOSE SAMPLE COLLECTION ASSEMBLY DIAGRAM

FIGURE 1: ROP 19
NO SCALE

ATTACHMENT 1, ROP 19

CANISTER SAMPLING FIELD DATA ANALYSIS SHEET

U.S. EPA Method TO-14

A. GENERAL INFORMATION

Site Location: _____ Well No: _____

Site Address: _____ Sampling Date: _____

_____ Sampling Time: _____

_____ Sampler ID: _____

Weather Conditions: _____ Sampler's Initials: _____

Barometric Pressure: _____ Canister Serial No.: _____

Temperature: _____

B. SAMPLING INFORMATION

Canister Vacuum

Initial Reading in Hg _____

Final Reading in Hg _____

Purge Time	Elapsed Time Minutes (Tm)
Start _____	
Stop _____	_____

Flow Rate: Liters/Minute (L/M) X _____

Purge Volume: Liters (Tm * L/M) = _____

C. MISCELLANEOUS

Sample Tag Completed? _____

Chain-of-custody Completed? _____

Shipping Date _____

NOTES: _____

_____

_____

_____

RICHLAND OPERATIONAL PROCEDURE

TITLE Vadose Well Sampling for Tritium and Radon-222 ROP NO. 18

TECHNICAL CONCURRENCE Harry J Newman 7/23/92 PAGE 1 OF 3

APPROVAL Andy J Palmer 7/28/92 REV. 0 DATE 7/23/92

1.0 INTRODUCTION

Determination of tritium and radon-222 in vadose monitoring wells is desired for purposes of identifying any migration of these radionuclides from the burial trenches. This procedure documents the steps to follow in obtaining vadose well samples.

2.0 EQUIPMENT

1. Silica gel, 6-16 mesh (400-500 g).
2. Tritium sample chamber.
3. Landauer Radtrak detectors, or equivalent, with thoron diffusion barriers.
4. Tritium sample chamber and radon detector suspension device.
5. Airtight sample chamber shipment containers.
6. Sampling field log.

3.0 PRECAUTIONS

1. Tritium sample chambers and radon detectors in sealed shipment containers prior to exposure in the well.
2. Exposure of silica gel and radon detectors to ambient air shall be minimized to the extent practicable.
3. Sampling equipment shall be dedicated to individual wells.

4.0 PROCEDURE

4.1 At the well site perform the following:

Note: Ensure shipment containers for sample chambers in service are available to minimize exposure to ambient air.

4.1.1 Unlock and open well head cover.

4.1.1.1 Remove well cap;

4.1.1.2 Check for unusual odor. If present, perform vapor sampling to determine potential for fire, explosion or toxic vapors.

4.1.2 Remove tritium sample chambers and radon detectors from the well, place each within its respective shipment container and seal.

4.1.3 Remove sample chambers and detectors to be placed in service from their respective shipment containers and attach to the suspension device.

4.1.4 Lower the sample chamber and detectors into the well using the suspension device (this will position the monitors in the screened portion of the well).

4.1.5 Resecure the well head by replacing the well cap and closing and locking the cover.

4.1.6 The sample chambers and detectors shall be sent to vendor laboratories for analysis. A chain of custody shall accompany the samples.

4.2 Log the following in the vadose well field log book:

4.2.1 Date, time, well and samplers name;

4.2.2 General weather conditions;

4.2.3 Serial numbers of sample chambers and detectors placed in and removed from service;

4.2.4 Any other unusual or pertinent information.

5.0 ACTION LEVELS

No action levels are associated with the vadose zone well sampling program.

6.0 RECORDS

A field log book shall be maintained for all vadose zone well samples and shall contain the following information:

- Sample date and time,
- General weather conditions,
- Name of sampler,
- Sample location, and
- Serial numbers of samplers (as appropriate).

7.0 BIBLIOGRAPHY

National Council on Radiation Protection and Measurements Report No. 47, Tritium Measurement Techniques, May 28, 1976.

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March 27, 1992

3 [redacted]

Dave Jansen
Hanford Project Manager
Nuclear & Mixed Waste Management Program
Washington State Department of Ecology
M.S. PV-11
Olympia, Washington 98504-8711

Re: Errata Sheet: Comments of US Ecology, Inc. on the Proposed RCRA "Part B" Permit for the Hanford Facility (Permit No. WA 789008967)

9103260370

Dear Mr. Jansen:

Please find attached an Errata sheet for the Comments of US Ecology Regarding The Proposed RCRA "Part B" Permit For The Hanford Facility (Permit No. WA 787008967) filed on March 16, 1992. A replacement version of the Comments reflecting the changes detailed in the Errata sheet is attached for your convenience. As you can see, the changes do not materially affect the substance of US Ecology's comments and are provided only to clarify some minor factual inaccuracies.

Please accept my apologies for any inconvenience this may have caused either you or your staff.

Sincerely yours,

Michael L. Goo
Perkins Coie
Counsel for US Ecology

MLG:slh

[13813-0008/DA920870.048]

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ERRATA SHEET
March 27, 1991

A. Corrections to Comments of US Ecology, Inc. on the Proposed RCRA "Part B" Permit for the Hanford Facility (Permit No. WA 789008967)

1. Page 5, 1st full paragraph, second sentence, replace the word "negotiated" with the word "re-negotiated".

2. Page 6, final paragraph, first sentence, replace the word "DOE" with the word "WDOE".

3. Page 8, first paragraph, last sentence, insert the phrase "Proposed October, 1990" before the words "Closure Plan".

4. On page 14, first paragraph, final sentence, replace the word "DOE" with "WDOE".

5. On page 21, final paragraph, last sentence, delete the phrase "Because of the presence of caps" and replace with the phrase "With the installation of the caps proposed in the Closure Plan that are".

6. Page 22, first sentence (continued from page 21) delete the word "is" and replace with the phrase "will be".

[13813-0008/DA920870.048]

7. Page 22, last paragraph, fourth sentence, delete entire sentence and replace with the following sentence: "If, as is planned, a multi-layer cap is placed over the interim cap to prevent the infiltration of water, recharge rates will be reduced below 0.08 inches per year as estimated in the facility's pathway analysis which results in a calculated travel time through the vadose zone of more than 1400 years."

8. Page 23, first paragraph, final sentence, add the word "experimental" before the word "vadose" and delete the phrase "and remedied" at the end of the sentence.

9. Page 27, first paragraph, delete second sentence and replace with the following sentence "The interim cover includes backfilling the trench with from 3 to 8 feet of site soils to bring the trench level up to grade, followed by 6 inches of cobble above grade".

10. Page 27, first paragraph, final sentence, delete the phrase "Trenches are then supercharged" and replace with "As proposed, trenches will be surcharged prior to final closure".

11. Page 27, second paragraph, first sentence, insert the phrase "as proposed in the Closure Plan" after the word "cover".

12. Page 29, first sentence (continued from page 28), insert a period after the word "halogens" and delete remainder of sentence.

13. Page 29, first full paragraph, third sentence, delete the words "significant release has" and replace with the phrase "releases have".

14. Page 29, final paragraph, first sentence, replace the word "two" with the word "three".

15. Page 30, first full paragraph, first sentence, replace the phrase "operates in accordance with" with the phrase "submitted for approval" and insert a "period" after the word "plan" and delete remainder of sentence.

16. Page 30, first full paragraph, final sentence, replace the word "is" with the phrase "will be".

17. Page 31, final paragraph, final sentence, replace the phrase "WDOH and NRC approved closure plan" with the phrase "Proposed Closure Plan".

18. Page 32, first full paragraph, first sentence, replace the phrase "closure plan" with the phrase "Proposed Closure Plan".

19. Page 32, first full paragraph, second sentence, insert a period after the word "acceptably" and delete remainder of sentence.

20. Page 32, final paragraph, delete first two sentences and replace with the following sentence "As stated above, the Proposed Closure Plan has been submitted to both the NRC and the State of Washington."

21. Page 33, second paragraph, third sentence, replace the phrase "closure plan" with the phrase "Proposed Closure Plan".

22. Page 41, footnote 14, first sentence, insert the word "Proposed" before the words "Closure Plan".

23. Page 42, first full paragraph, final sentence, insert the word "Proposed" before the word "Closure Plan".

24. Page 43, first full paragraph, final sentence, replace the phrase "closure plan" with the phrase "Proposed Closure Plan".

B. Corrections to Appendix C.

1. Page 16, second full paragraph, replace the word "DOE" with the phrase "WDOE" wherever it occurs in the paragraph.

2. Page 16, second full paragraph, final sentence, replace the word "slandering" with the word "slanderous".

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16C
3-16-92

March 16, 1992

Dave Jansen
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Olympia, Washington 98504-8711

Re: Comments of US Ecology, Inc. on the Proposed RCRA "Part B" Permit for the Hanford Facility (Permit No. WA 7890089967)

Dear Mr. Jansen:

We are filing the enclosed comments on behalf of US Ecology regarding the above-referenced proposed permit. In light of the fact that these comments have been prepared during US Ecology's first opportunity to review the Proposed Permit, we are available to meet with you to discuss them. Please direct any responses to or questions about these comments to Barry Bede of US Ecology, (206) 754-3733, or to David Dabroski, (206) 583-8885.

Sincerely yours,

David Dabroski

Anthony J. Thompson
David Dabroski WSBA #18408

TT:DD:sab

Enclosure

cc: Brad Dillon
Barry Bede

[13813-0008/SL920730.173]

COMMENTS OF US ECOLOGY, INC.
ON THE PROPOSED RCRA "PART B" PERMIT
FOR THE HANFORD FACILITY
(PERMIT NO. WA7890008967)

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Appendices:

A Letter of Nuclear Engineering Company, Inc. dated November 18, 1980 to EPA, Region 10, with attached letter dated October 24, 1980

B Letter of US Ecology dated October 29, 1985 to EPA, Region 10 and WDOE with Attachment A, "Scintillation Vials"

C Detailed Comments on the Draft Permit, Fact Sheet, and Draft RCRA Facility Assessment Report

D Site Diagram

E Perpetual Maintenance Fund and Site Closure Account

COMMENTS OF US ECOLOGY, INC. ON THE PROPOSED RCRA "PART B" PERMIT FOR THE HANFORD FACILITY (PERMIT NO. WA7890008967)

I. INTRODUCTION

A. Summary

Since 1965, US Ecology Inc. ("US Ecology") or its predecessors have operated a low-level radioactive waste disposal site on the Hanford Federal Reservation. The site is one of the nation's four licensed commercial low-level radioactive waste sites and is the express subject of Congressional action under the Low-level Radioactive Waste Policy Amendments Act of 1985. Because of the need for long-term institutional control at radioactive waste sites, Atomic Energy Act ("AEA") regulations require federal or state land ownership prior to disposal. Therefore the US Ecology site is located on the Hanford Federal Reservation and subleased from the state of Washington, which holds a long-term lease with the United States. The site is and always has been physically separate and legally distinct from the other activities at Hanford.

As is well known, the Hanford Reservation has long been the site of a variety of federal activities involving nuclear power and weapons research and production. As part of a major

program under the Hanford Federal Facility Agreement and Consent Order ("FFACO") with EPA to clean up the wastes from these activities, the United States Department of Energy ("DOE") (together with its contractors, Batelle and Westinghouse) has applied for a permit (the "Proposed Permit") to build and operate a waste treatment facility regulated under the federal and state hazardous waste programs. As part of this Proposed Permit, corrective action will be required at all solid waste management units ("SWMUs") within the permitted "facility". Although several hundred SWMUs directly related to DOE activities have been identified on the Hanford Reservation, many of these SWMUs were determined to be of little or no consequence and so are not included in the Proposed Permit. Neither US Ecology nor any of its operations has any tie to the weapons work that has led to the massive clean-up efforts now under way at Hanford. Yet, in defiance of this basic fact, United States Environmental Protection Agency ("EPA") and the Washington Department of Ecology ("WDOE") have included "corrective action" requirements covering the US Ecology site in a proposed hazardous waste treatment permit for DOE, Batelle and Westinghouse wastes.

US Ecology was not consulted in the drafting of the Proposed Permit and only at this late date, has it been provided with any opportunity to demonstrate that the portions of the Proposed Permit that would apply to the US Ecology site

cannot be justified under either the law, the facts or sound public policy. For these reasons, as discussed more fully below, US Ecology hereby requests that all references to its facility be deleted from the Proposed Permit.

In these comments, US Ecology demonstrates that this proposed extension of corrective action to the US Ecology site is entirely without statutory or regulatory underpinnings:

- The US Ecology site cannot lawfully be included in the "facility" covered by the Proposed Permit. US Ecology is not a party to the Proposed Permit. Its operations at the site are physically separate from the rest of the Hanford Reservation and they have no relation to any of the activities covered by the Proposed Permit or to any of the Proposed Permittees. US Ecology's landlord is the State of Washington, which is not a permittee under the Proposed Permit. None of the permittees enjoy any real measure of control over the US Ecology site.

- All environmental concerns at the US Ecology site are **already** pervasively and adequately regulated under the AEA. Imposing RCRA regulation as well could add nothing but a conflicting and separate set of timetables, a separate set of administering

agencies, and a real chance of creating completely incompatible and contradictory requirements.

- The US Ecology site has never been subject to regulation under the Federal RCRA or the Washington Hazardous Waste Management Law.

These defects in themselves bar any application of hazardous waste laws to the US Ecology site. They also add up to a conclusive demonstration that applying these requirements would be "inconsistent" with the AEA under RCRA § 1006(a).

After a brief background discussion, we will address each of these points in more detail.

II. BACKGROUND

The Hanford Nuclear Reservation is a 570 square mile tract of Federally owned land, much of which has been used since the 1940s for nuclear weapons activities, first by the Manhattan Project, then by the Atomic Energy Commission ("AEC") and finally by its successor, the Department of Energy.

In 1964, the State of Washington leased from the AEC a 1000 acre portion of the Hanford Reservation that had never been used for any Federal activities. The lease had a 99-year

term and placed full responsibility for environmental compliance and clean-up on the State of Washington.

In 1965, the State of Washington subleased 100 acres to California Nuclear, Inc, predecessor of US Ecology for use as a low-level waste disposal facility. The sublease was negotiated in 1976. If all renewal options are exercised, it will expire in the year 2015--48 years before the State lease expires. In both the 1965 and 1976 subleases, the site operator agreed to assume the same environmental obligations imposed on the State of Washington in the prime lease with the federal government. US Ecology is now bound by those same obligations.

As described in detail below, US Ecology has always operated under a comprehensive framework of AEA regulatory requirements and detailed licenses, issued either by the Federal government or by the State of Washington as an Agreement State, that address all environmental concerns the site might present. All low-level waste ever received at the site has been accepted and disposed of in accordance with that framework. In addition to low-level waste, the site contains a trench used between 1968 and 1972 to bury chemical waste. The existing license requires US Ecology to study the environmental impact of this trench and address any concerns it may present during site closure.

The US Ecology site has never been regulated under RCRA. In 1980, the company submitted a RCRA "Part A" application as a protective measure. In 1985, as ordered by EPA, Region 10, US Ecology submitted a "Part B" application as a protective measure. In both of its 1980 and 1985 cover letters to the applications, US Ecology pointed out the entire lack of any basis for RCRA jurisdiction. (Appendices A and B).[1] In the 1985 letter, US Ecology explained that RCRA regulation would be inconsistent with the AEA regulations that already applied. Although EPA claimed that "scintillation vials" received at the site were "hazardous waste", the letter demonstrated that the toluene and xylene in those vials was part of a "commercial product" and was not covered by EPA waste listings. In addition, these vials were received from "small quantity generators" and were exempt from RCRA regulation. (See Attachment A to Appendix B, "Scintillation Vials").

Despite repeated inquiries from US Ecology, neither EPA nor DOE ever processed that application nor reacted to US Ecology's arguments in any way.

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[1]With the exception of Appendices C and E, all documents referenced in these comments are already in the possession of EPA or WDOE. If not already, we expect that any referenced documents will be made a part of the administrative record for the Proposed Permit.

Meanwhile, the efforts to clean up the weapons facilities at Hanford moved forward without any involvement by US Ecology. In 1989 the DOE entered into the comprehensive FFACO providing for the clean-up of the weapons sites at Hanford. US Ecology had no involvement in negotiating the FFACO and is not bound by it.

Nor was US Ecology included in the initial or any subsequent amended permit applications to implement the FFACO submitted by the DOE to EPA and the WDOE. Nevertheless, the permit as it emerged from review by these agencies includes the US Ecology site in "corrective action" requirements.

As we discuss in more detail in Appendix C, the discussion of US Ecology in the Proposed Permit is misleading and incomplete in its portrayal of the past history of the site and its environmental condition, and completely ambiguous in its portrayal of the regulatory agencies' intentions. It seems to have been written to maximize both the case for RCRA jurisdiction, and the discretion of the agencies to do what they like once RCRA jurisdiction has been successfully asserted.

III. DISCUSSION

A. The Ecology Site Cannot Legally Be Part of the "Facility" Covered by the Proposed Permit

As noted earlier, US Ecology is not a party to the Proposed Permit. The function of the Proposed Permit is to grant the regulatory approvals that are needed so that clean-up of areas contaminated during **federal** nuclear operations can proceed. The Proposed Permit expressly states (pp. 4 and 5) that "[e]nforcement of all the conditions of this permit, including Part IV [which governs the US Ecology site], will be primarily through the procedures identified in [the FFACO]." US Ecology is not a party to the FFACO and played no part in negotiating it. Instead, as discussed below, US Ecology's closure obligations are fully set forth in the Closure Plan prepared under the AEA.

Despite this complete lack of relationship between the subjects of the Proposed Permit and either US Ecology or its operations, the Proposed Permit purports to impose RCRA obligations concerning the US Ecology site on the DOE as the "owner" of this land, which is counted as part of the larger Hanford facility for "corrective action" purposes.[2] Both the

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[2]In this regard, US Ecology formally notes that any statements in the Proposed Permit that could be taken as binding US Ecology directly are legally indefensible and must be withdrawn.

description of DOE as the "owner" and the assertion that this site is part of the larger "facility" are attenuated to the breaking point.

Although this land is formally owned by the DOE, since 1964 it has been leased by the State of Washington under a 99-year lease expiring in the year 2063. The State of Washington agreed in that lease to take full responsibility for any environmental clean-up at the site. In other words, the Federal contacts with this land have been reduced to the absolute minimum consistent with retention of formal title.

US Ecology now operates at the site as the State of Washington's sublessee, under a sublease with the State of Washington effective through the year 2015--48 years before the expiration of the state lease. Both US Ecology and the State are obliged by their leases to fully remedy any environmental contamination at the site. To assure that these clean-up obligations will be met, the State of Washington by statute has created both a "perpetual maintenance account" and a "closure account" designed specifically to address this site. The language and history of RCRA § 3004(u) demonstrate that any assertion of corrective action jurisdiction in such circumstances is improper.

In attempting to impose RCRA corrective action at the US Ecology facility, EPA and WDOE have fundamentally misapprehended the RCRA corrective action scheme.

Under RCRA § 3004(u), corrective action is required:

> "for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage or disposal facility seeking a permit under this subchapter. . ."

42 U.S.C. § 6924(u). (Emphasis added).

Similarly, EPA's 1985 "codification rule" interpreting this provision notes that:

> Section 3004(u) requires corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a facility seeking a RCRA permit regardless of the time at which such waste was placed in the unit.

50 Fed. Reg. 28702, 28714 (July 15, 1985) (Emphasis added).

EPA's "codification rule" also notes that:

> Section 3004(u) does not appear to contemplate that its terms apply to solid waste management units located at facilities that are not required by regulation to obtain a subtitle C permit. Id.

Both the regulations and the statute are clear: corrective action only applies to those who seek a RCRA permit. Moreover, the price for failure or refusal to conduct corrective action is denial of a RCRA permit.

US Ecology is not now seeking nor has it ever sought, except under compulsion, any such RCRA permit. As discussed later, these permit requirements do not apply and never have applied to US Ecology. Therefore, it is apparent that RCRA § 3004(u) is not legally applicable to US Ecology or to the US Ecology facility.

Indeed, even a superficial examination of the Proposed Permit reveals inconsistencies in asserting RCRA corrective action over US Ecology. For instance, do EPA and WDOE expect Westinghouse, Batelle and DOE to enter onto the US Ecology site and perform or pay for any corrective action? Who would bear any liability for failure to properly perform such corrective action? Who will pay for its costs? Can corrective action be reconciled with the site closure plan already submitted to the Washington Department of Health ("WDOH")? If not, who will bear the costs of its revision?

Moreover, if the final permit does require DOE, Batelle and Westinghouse to undertake corrective action at the US Ecology facility, those entities would be forced to seek legal access to the site to conduct corrective action. Neither Batelle nor Westinghouse have any legal means or authority for doing so and any attempt to do so might well be beyond their contractual authority. Although DOE has leased the site to the state of Washington, who, in turn, subleased it to US

Ecology, US Ecology has no direct contractual obligation to DOE. Therefore, even DOE has, at best, an extremely limited legal ability to enter upon and control conditions at the US Ecology site.[3] Moreover, it may only do so by virtue of its arrangements with the state, which is not a permittee. It is both common sense and clear from the Proposed Permit that the obligations imposed in the permit are the sole responsibility of the permittees. Therefore, as a legal matter, US Ecology has no responsibility under the Proposed Permit at all. Yet the permit purports to require corrective action at the US Ecology site.[4]

In its July, 1985 codification rule, EPA defined the term "facility" quite broadly. According to the rule,

> the term "facility" is not limited to those portions of an owner's property at which units for the management of solid or hazardous waste are located but rather extends to all contiguous property under the owner or operator's control.

50 Fed. Reg. 28702, 28712 (July 15, 1986).

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[3]Indeed, US Ecology is bound by its own license and the accompanying framework to restrict site access. Commercial low-level radioactive waste disposal sites operate pursuant to a different AEA scheme than do DOE and its contractors. Because of this fact, personnel familiar with the DOE regulatory regime may simply be unqualified to enter upon and conduct operations at a commercial site such as the US Ecology facility. Forced entry by DOE may well violate the sublessee's right to quiet enjoyment of its property.

[4]A separate document discussing and detailing additional conflicts and inconsistencies is included as Attachment C.

However, EPA also noted that:

> [t]he extent to which the above interpretation applies to federal facilities raises legal and policy issues that the agency has not yet resolved.

Id.

In 1986, EPA issued a Notice of Policy and Interpretation regarding those "unresolved issues". 51 Fed. Reg. 7,722 (March 5, 1986). EPA simultaneously issued a Notice Of Intent to propose rules regarding the same issue. 51 Fed. Reg. 7,723, (March 5, 1986).

In its Notice of Policy and Interpretation, EPA took note of the problem posed by allowing corrective action to be triggered on contiguous federal lands administered by different agencies with different responsibilities. According to EPA: "In the Western half of the United States, contiguous federal lands cover large portions of several states". 51 Fed. Reg. 7727 (March 5, 1986). Because of this fact:

> a permit for a hazardous waste management located anywhere on [such a] . . . collective federal facility could trigger corrective action requirements for every solid waste management unit found within its boundaries . . . [and] the agency that operates such a unit might not have authority to require or manage clean-up of solid waste management units on lands administered by other federal agencies. Id.

To address this problem, EPA proposed to limit the "facility" subject to corrective action to land within the jurisdiction of "major departmental subdivisions that exercise independent management authorities." Id. That principle dictates excluding the US Ecology site from corrective action here, since it properly falls under the jurisdiction of the Nuclear Regulatory Commission rather than the DOE.

In addition, EPA addressed the relationship for corrective action purposes between publicly owned lands and private entities operating under long-term leases. To address this problem, EPA noted in its Notice of Intent of proposed rulemaking, that:

> EPA intends to propose a rule that limits Federal agency responsibility for facilities operated by private parties with legal ownership interests by identifying a "principal owner" for the purpose of defining the "facility" boundary under section 3004(u). The "principal owner" probably would be the person most directly associated with operation of the hazardous waste facility. Only property within the scope of the "principal owner's" legal interest would be considered the "facility" for corrective action purposes. Id.

EPA explained this proposal by noting:

> To determine whether a private party on federal lands should be treated as a "principal owner", EPA might consider factors such as the degree of control the federal agency exercises over the private party's actions, or the amount of benefit the agency derives from the private party's waste management operation. EPA will also need to consider the impact of this concept on private lands where one private party has granted legal ownership interests to

a second private party that operates a hazardous waste "facility." Id.

Although EPA has not yet promulgated this rule, it is clear from this notice and from the plain language of the existing EPA definition of facility that contiguous property not under the owner's control is not included within definition of a facility subject to corrective action. Here, DOE has no control over US Ecology's operations. Nor does DOE derive any benefit from the State of Washington's sublease with US Ecology, since that sublease does not affect the payments the state must make to DOE under the principal lease. Indeed, our situation presents a stronger case against "corrective action" than the example given in the notice, in which private companies had leased federal land directly. In this case, it is the State of Washington, not US Ecology that has leased land from the federal government.[5] Since DOE has essentially no control over the US Ecology site, and Batelle and Westinghouse have none, US Ecology cannot be considered to be within the "facility" to be permitted. Corrective action is therefore without legal basis.

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[5]It is also well worth noting that federal/state land ownership at the US Ecology facility did not happen by accident, nor was it due to any concerns regarding hazardous waste or any other material subject to EPA jurisdiction. In fact, federal or state land ownership is required under the AEA in order to ensure long-term institutional site control. See 10 C.F.R. 61.54. Use of this fact as a means of proving corrective action jurisdiction at the facility cannot have been intended and is inconsistent with the AEA.

B. The Washington Model Toxics Control Act ("MTCA") Is Inapplicable

In spite of the fact that corrective action may not be legally be imposed upon the US Ecology facility, the Proposed Permit nevertheless announces its intention to attempt regulation of the US Ecology site using whatever legal authority it can find. The permit categorically states that:

> It is the intent of the regulatory agencies to have the US Ecology site remediated.

Given this announced intent, in order to extricate it from obvious difficulties inherent in applying RCRA corrective action to US Ecology, the proposed permit states that:

> To accomplish this [remediation of the US Ecology site] however, Ecology intends to address remediation of the site under the authority of the Model Toxics Control Act (MTCA). Based on the results of the remedial investigation, a decision will be made in the next phase of the work.

Apart from the fact that this provision applies uniquely to US Ecology and that MTCA is mentioned no where else in the permit, use of a proposed RCRA permit to impose MTCA-type cleanup requirements on US Ecology is patently illogical and without a legal foundation. Congress enacted two statutes, RCRA and CERCLA, not one, and the purposes are quite different. Washington State counterparts to these laws (Hazardous Waste Management Act and MTCA) are similarly distinct.

This distinction is apparent when the Proposed Permit itself is examined, even without any basic understanding of the difference between RCRA and CERCLA and their state counterparts. The Proposed Permit itself states repeatedly that CERCLA past practice ("CPP") units are not included within the Proposed Permit. As noted in the Fact Sheet for Proposed Permit Conditions IV.A.1.b of CERCLA, CPP units are completely excluded from the terms of this Permit as they fall within the regulatory authority of the CERCLA program as opposed to the RCRA program. The same distinction undeniably holds true for the state RCRA and CERCLA counterparts.

As discussed in detail below, the US Ecology site is pervasively regulated by United States Nuclear Regulatory Commission and the WDOH under authority of the AEA. The AEA completely and utterly occupies the field in its area. Under its coverage, states may only regulate source, special nuclear and by-product material through the AEA Agreement State Program. State statutes, including statutes such as MTCA are preempted by the federal program and may not be used to compel cleanups of "Federally Permitted Releases" at AEA sites.

Congress, in enacting CERCLA, recognized that CERCLA could not sensibly (and quite possibly constitutionally) be applied to releases that were permitted, authorized or even required under federal law. Based on this recognition,

Congress exempted "Federally Permitted Releases" from CERCLA liability. 42 U.S.C. § 9607(j). Moreover, the broadest exemption found in the definition of a "Federally Permitted Release" is for:

> Any release of source, special nuclear or by-product material, as those terms are defined in Atomic Energy Act of 1954, in compliance with the legally enforceable license permit, regulation or order pursuant to the Atomic Energy Act.

42 U.S.C. § 9601(10)(K). The US Ecology low-level radioactive waste and special nuclear material site unquestionably qualifies for this exemption.

If WDOE and EPA are interested in asserting CERCLA/MTCA jurisdiction over the US Ecology site, it cannot do so by virtue of a RCRA permit issued to a third party; they must use the legal authorities given to them in those statutes. Federal law does not permit use of CERCLA to require cleanup of "Federally Permitted Releases." There are significant factual, legal, and policy issues regarding whether MTCA could apply to the U.S. Ecology site. Use of a RCRA permit (issued to a third party) to impose MTCA requirements on an AEA-regulated site, licensed by their sister agency, WDOH, simply does not provide such authority.

C. The US Ecology Facility Is Pervasively Regulated By The WDOH Pursuant To The AEA Agreement State Program

1. Introduction

As one of the nation's four licensed commercial low-level radioactive waste disposal sites, the US Ecology site is subject to controls under the AEA and the State of Washington agreement state program designed to protect human health and the environment over the next few hundred years from all environmental dangers that any waste at the site might present. The AEA ("AEA") requirements applicable to the site either meet or exceed the standards applicable to hazardous waste under subtitle C of RCRA or differ from them due to the unique nature of radioactive waste. Indeed, it is the AEA, not RCRA that represents the nation's first "cradle to grave" regulatory scheme. This point is not merely academic since retroactive application of RCRA to an Atomic Energy scheme that predated RCRA clearly imposes duplicative and even flatly inconsistent requirements.

Low-level waste disposal at the US Ecology site has always been conducted pursuant to AEA requirements. To date there has been no showing that these requirements were insufficient in any way, much less that they need to be supplemented by RCRA "corrective action." Indeed, § 3004(u) corrective action was designed for unregulated disposal units.

Under US Ecology's license, only specified classes and types of properly packaged and manifested low-level radioactive waste may be received. Burial of waste at the site is strictly regulated. Applicable requirements include waste segregation methods, proper disposal trench design and maintenance, and use of interim covers and site buffer zones. NRC and OSHA standards for worker protection from radiation and other hazards also apply.

Site operations are also subject to a detailed site environmental monitoring program that covers potential releases to or through groundwater, air, soil, vegetation, wildlife and direct radiation exposure pathways. These monitoring requirements have never indicated any releases of hazardous substances in excess of allowable limits. Any "corrective action" studies would simply duplicate the controls already required or authorized by this monitoring program.

The AEA license requires closure of the US Ecology site under a detailed plan designed to maintain full environmental protection at the site well into the final half of the 21st Century. Here, too, any RCRA "corrective action" requirements would at best be meaningless duplication. In further illustration of these points, a brief summary of the site

characteristics, trench operation, monitoring, and closure requirements of the US Ecology site is set forth below.

2. Site Characteristics

The US Ecology site is located between the 200E and 200W areas of the Hanford federal reservation and is more than six miles from its boundary. It is miles from any activities subject to the Proposed Permit. There are no permanent residents on the Hanford Reservation. Access to both the Hanford reservation and the US Ecology facility is controlled. The nearest population center is Richland, Washington, which is 27 miles from the US Ecology site. See Appendix D.

The site climate is characterized as a mid-latitude semi-arid desert. Average annual rainfall for the area is approximately 6.3 inches, most of which occurs during the winter. Because of hot, dry conditions in the non-winter months, the annual evaporation potential exceeds annual precipitation--resulting in a net moisture deficit potential of more than 23 inches per year. Thus, infiltration of water into the disposal site is only possible between November and January, when precipitation exceeds evapotranspiration potential. Because of the presence of caps specifically designed to prevent infiltration and provide for run-off of precipitation, combined with the small annual rainfall, there

is only a very small risk that any precipitation will penetrate into or build-up in any disposal units.

There are no surface streams located directly on the US Ecology site.[6] Flooding at the site is extremely unlikely. In 1987, the United States DOE issued an Environmental Impact Statement for the Hanford site that concluded that neither a 100 year flood of the Yakima or Columbia rivers nor a 50% breach of the Grand Coulee dam would result in site flooding. See, Final Environmental Impact Statement: Disposal of Hanford Defense High Level, Transuranic and Tank Wastes. (DOE/EIS-0113).

The water table lies at least 323 feet below the site. The annual recharge at the site is estimated at about 0.2 inches per year. Based on these calculations, travel time through the vadose zone above the unconfined aquifer has been estimated at approximately 1060 years. If, as is planned, a cap is placed over waste to prevent the infiltration of water, recharge rates are estimated to be 0.08 inches per year resulting in a travel time through the vadose zone of more than 1400 years. Moreover, because operations at the Hanford site have artificially raised groundwater elevations,

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[6]Surface waters in the area include the Columbia River, the Yakima River and Cold Creek, a small, seasonal stream.

cessation of these operations will ultimately result in a significant groundwater depression, thereby adding an additional 350 years of travel time through the vadose zone. These travel times and recharge rates indicate that US Ecology will be able to fully comply with environmental release conditions applicable to the site through its license. They also indicate that releases of hazardous or dangerous substances to groundwater within the 30-year time frames contemplated by RCRA are most unlikely. Moreover, as discussed more fully below, US Ecology has installed groundwater and vadose monitoring wells at its facility and also conducts regular groundwater monitoring at the site to ensure that any releases of hazardous substances are immediately detected and remedied.

3. License Requirements

a. Legal Background

The US Ecology site is licensed by the state of Washington pursuant to its agreement state authority delegated by the United States Nuclear Regulatory Commission ("NRC") under section 274 of the AEA, 42 U.S.C. § 2021 and 10 C.F.R. part 150. US Ecology also operates pursuant to a special nuclear material license issued by the NRC. Relevant standards applicable to the site under the agreement state program are found at WAC title 402 and are promulgated under

authority of the Washington Nuclear Energy and Radiation Control Act, RCW § 70.98.

These regulations include standards equivalent to federal regulations issued by NRC found at 10 CFR parts 20 and 61. Although the US Ecology site existed prior to NRC's 1982 promulgation of 10 CFR part 61 requirements for the land disposal of radioactive wastes, these standards, or their equivalent, are nevertheless applicable to the site in many instances through the site license originally issued under the authority of 10 CFR part 20. In addition, US Ecology is subject to detailed licensing requirements that are site specific and generally based upon the regulatory requirements referenced above.

b. Waste Receipt and Packaging

Since operations began in 1965, all low-level waste received at the site has been disposed of in trenches under carefully specified design waste form and operating conditions that are designed to comply with the evolving and comprehensive NRC regulatory scheme.

All such waste must be packaged and transported in accordance with applicable U.S. Department of Transportation Regulations and NRC regulations. License condition 14. No pyrophoric, hazardous, reactive or chemically explosive

materials or materials violently reactive to water or agitation may be received at the site. License Condition 20. Wastes may not contain or be capable of generating toxic gases, vapors or fumes during transportation, handling or disposal. License Condition 19.

The State of Washington Radioactive Materials license makes clear the importance of proper waste form in the regulatory scheme. See generally, License Conditions 24-38. In general, all materials received at the site containing liquids must be stabilized, solidified or treated by sorption prior to disposal. License conditions 24 and 25 require the following:

> Except as allowed under Conditions 28 and 32, untreated liquids and sludges are not allowed for disposal. Liquids shall be rendered noncorrosive prior to treatment . . . Wet sludges or slurries such as evaporator bottoms shall be noncorrosive and shall be treated by stabilization or solidification....Liquids treated by stabilization shall be processed . . . using an approved stabilization medium. The resulting waste form shall contain no detectable, freestanding liquid and shall meet the stability requirements [found in NRC guidance and regulations]....

Id.

The permit notes that sorption of liquids is acceptable so long as the liquids are packaged in a DOT class 7A metal container lined with a 4 mil. plastic liner and the liquid is

contained in enough approved sorbent material to absorb at least twice the volume of waste. License condition 27.

For all these reasons, there are only minimal amounts of liquids, if any, buried at the site and minimal potential exists for their release due to the nature of their disposal, site climatological conditions and the lack of liquids in other wastes disposed alongside these materials.

License condition 22 requires that all waste be properly classified and marked as class A,B or C wastes in accordance with NRC rules and that stability be achieved either through stabilization or site engineered barriers (contingent upon express WDOH approval). These requirements insure that even after the required institutional control period of 100 years, wastes at the site and the disposal units themselves will remain stable enough to eliminate any significant risks of exposures to the public for the foreseeable future.

c. Trench Design and Operation

All low-level waste received since the US Ecology site began operating is contained in separate trenches located on approximately 30 acres of the facility. For trenches 1-6, waste placement terminated at three feet below grade. For all subsequent trenches, waste placement terminated at 8 feet below grade.

Once the trenches are filled, an interim cover approved by the WDOH must be installed along with interim markers displaying information regarding the disposal unit and the waste found within. The interim covers consist of up to 10 feet of site soils placed on the trench after backfilling of 3 or 8 feet of site soils brings the trench level up to grade. Six inches of cobble to form an interim cap are then placed above grade. Trenches are then super-charged with up to twenty feet of excavated soil, in order to minimize subsidence and prevent infiltration.

Final cover at the site is specifically designed to prevent any infiltration of water into the trench and eliminate any possibility of radiation exposure. Final covers at the site will consist of multilayered caps constructed with a low permeability geocomposite liner, followed by a synthetic cover, a liquid collection system and site soils. By placing an impermeable cap equipped with a liquid collection system over the trenches, the possibility of any liquids entering the trenches, is virtually eliminated.

The NRC radioactive waste disposal scheme differs fundamentally from the RCRA subtitle C requirements in its rejection of synthetic under liners and active maintenance, like leachate pumping. Because radioactive wastes may remain threatening for hundreds of years after the usual 30 year RCRA

post closure period has expired, radioactive waste disposal sites may not rely upon such approaches. Instead, AEA sites rely upon natural liners and carefully selected site characteristics as a means of retarding and mitigating releases of radioactive materials. This system of controls is characterized as passive rather than active and represents a fundamentally different control philosophy from RCRA.

In addition, NRC's ALARA concept requires that exposure of workers and the public remain As Low As Reasonably Achievable ("ALARA"). This too works against active maintenance since active maintenance measures such as those required under RCRA would result in increased exposure of workers and the public to radioactivity.

d. Site Environmental Monitoring Requirements

The site is subject to an extensive environmental monitoring program approved by the WDOH and the NRC. To date, there has been no showing by EPA or WDOE that supplementary efforts are necessary, beneficial or otherwise justified. See License Conditions 54-56.

Five groundwater monitoring wells are sampled on a quarterly basis for a wide variety of both radioactive and chemically hazardous constituents including pH, conductivity, nitrate, uranium, tritium, strontium, total organic carbon,

offsite wells?

No supporting info - license or closure plan?

total organic halogens, tetrachloromethane, tetrachlorethane, dioxane, methylethyl, pyridine and formaldehyde.

Samples are also analyzed for concentrations of benzene, toluene and xylene. To date the general range of concentrations for these latter constituents has been measured at no more than 2 parts per billion. Thus, there is no indication that any significant release has occurred. If it were to occur in the future, it would be detected immediately. Given these facts, no sound basis exists for imposing duplicative corrective action requirement at the site. Under the closure plan, groundwater monitoring will continue at the site for at least the next 100 years.

Perpetual care and maintenance accounts have been budgeted for sampling and closure purposes. To date, the Perpetual Maintenance Account contains approximately $18.6 million; the Site Closure Account contains approximately $10.4 million. A more detailed description of these accounts is contained in Appendix E.

US Ecology has also installed two vadose zone monitoring wells to experiment with soil gas sampling and analysis techniques. Vadose zone monitoring would provide additional protection against releases to groundwater by monitoring releases to the environment above the unconfined aquifer. Potential concentrations of both toluene and benzene, as well

for what units?

as tritium, would be monitored, thereby providing additional protection against the possibility of releases of chemical constituents.

e. Site Closure and Stabilization

As required by its licenses for both byproduct material and special nuclear material, US Ecology has prepared, and operates in accordance with, a detailed site stabilization and closure plan approved by both the state of Washington and the NRC that is designed to assure protection of health and the environment over the next 200-500 years. This closure plan is fully integrated into the current site license.[7]

The US Ecology closure plan contemplates two closure scenarios: Lease Closure and Capacity Closure. Under lease closure, the site would cease operations in the year 2063. A two year closure period would then follow ending in the year 2065. After a stabilization period, the custodial agency, (the State of Washington/DOE) would take over at the site. Institutional controls at the site under this scenario would be expected to last until at least 2167. Under the capacity closure scenario, the site would reach capacity in the year

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[7]It duplicates all significant environmental protections contained in the Part B permit application that US Ecology submitted under protest in 1985, but that EPA and WDOE never processed.

2112 and institutional controls would last until the year 2216. As is evident, these time frames exceed the usual 30-year RCRA post closure time frames by a factor of three.

The closure plan outlines a number of closure methods that will not require active maintenance and that will be compatible with future plans for the site. These include site security measures, installation of permanent monuments to avoid intrusion into waste trenches, federal land ownership and an extensive perpetual care and maintenance fund. Because the land will be owned in perpetuity by the federal government, most likely as a permanent part of the Hanford federal reservation, there is little likelihood of inadvertent use of the site for incompatible purposes.[8]

As is apparent from the foregoing discussion, the site license and the closure plan will amply protect human health and the environment from potential hazards. No showing that the WDOH oversight is inadequate has been made. The WDOH and NRC approved closure plan is specifically designed to detect

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[8]By letter dated October 29, 1985, US Ecology requested the WDOE, as the agency responsible for the administration of the lease, to place a notice in the deed as required by RCRA that the land has been used to manage hazardous waste and its use is restricted. Consistent with all correspondence since 1980, this letter again states that the Part B application was a protective filing because US Ecology did not believe it had accepted RCRA hazardous waste. See Part B Application, Attachment 2-6.

and adequately remedy any releases or future releases at the site, of any chemicals or radionuclides.

The chemical trench identified by EPA as a SWMU in the draft permit is covered by the closure plan. Since no releases from that trench have been detected, it is apparent that closure under AEA type conditions has functioned acceptably and will likely continue to do so. In addition, the closure plan provides express authority for future remedial action should that prove necessary.

Need to show that releases would have been detected.

Similarly, all structures, equipment and materials at the site, such as the other potential SWMUs identified in the Proposed Permit,[9] must be dismantled, decontaminated and disposed of prior to site transfer.

The initial closure plan has been approved by both the NRC and the State of Washington. An amendment submitted in October of 1990 is awaiting final approval. Imposition of RCRA corrective action at this time can only serve to disrupt this process costing NRC, WDOH and US Ecology significant time and resources with no corresponding environmental benefit.

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[9]SWMU 3, the resin ranks, were removed and the surrounding soil remediated pursuant to a plan approved by the State. SWMU 4 requires no further action. See Draft RCRA Facility Assessment Report by RRC Environmental Management, Inc.

Neither EPA nor WDOE has demonstrated any real need to impose corrective action at the US Ecology site. Indeed other SWMUs or potential SWMUs on the Hanford Reservation that are unquestionably part of the permitted "facility" and are far less pervasively regulated than the US Ecology site are not addressed at all in the Proposed Permit.

US Ecology is not attempting to avoid the need for environmental controls. But the proper agency to impose such controls is the WDOH. If EPA and WDOE are concerned about the potential SWMUs at the site, they should have raised such concerns in the far more appropriate context of the closure plan submitted to WDOE's sister agency WDOH. They could have consulted with or requested that WDOH require further monitoring or investigation of potential SWMUs. There has certainly been no claim or showing by EPA or WDOE that regulation by WDOH is not fully adequate to protect human health and the environment. EPA and WDOE should reconsider their initial decision to assert jurisdiction over the site for its own sake.

This point comes into even clearer focus when one considers that the state, through WDOE, is the lessee at the site and responsible for administering the perpetual care and maintenance fund. WDOE should well consider its role in exposing the State of Washington to further liability concerns

by affirmatively seeking the imposition of duplicative regulatory requirements at a site for whose clean-up it is financially responsible.

C. The Ecology Site Has Never Been Subject to RCRA Regulation

As noted earlier, EPA has never addressed US Ecology's arguments demonstrating that the US Ecology site never fell under the RCRA regulations. Yet those arguments were and are clearly correct:

- As US Ecology pointed out in 1985, the toluene and xylene in scintillation vials was not covered by EPA's 1980 listings of "spent solvents" because scintillation vials are commercial chemical products, not solvents. See "comment" to 40 CFR 261.33(d) and 45 Fed. Reg. 78541 (Nov. 25, 1980). EPA has expressly admitted that the original 1980 solvent listings only covered solvents in their pure form and could not have covered scintillation vials. 50 Fed. Reg. 18378 (April 30, 1985). Even when EPA broadened those listings at the end of 1985, it gave no indication that it intended to cover

scintillation vials thereafter. 50 Fed. Reg. 53316 (Dec. 31, 1985).[10]

- In addition, as the 1985 scintillation vial memorandum also made clear, any such vials were covered by a "small quantity generator" exemption and excluded from substantive RCRA regulation.

- US Ecology believes that scintillation vials are "byproduct" material exempt from RCRA regulation under the exclusion for "source, byproduct and special nuclear" material in RCRA § 1004(27). The clear purpose of this exclusion is to avoid duplicate regulation of substances that are comprehensively regulated under the AEA. To accomplish that purpose, it must apply to scintillation vials.

- EPA itself has conceded that because of the uncertainty about the regulatory status of "mixed waste", that waste did not become subject to RCRA regulation until 1986--well after US Ecology had stopped accepting scintillation vials. On

1985

[10]In any event, US Ecology stopped accepting scintillation vials in 1985. Accordingly, whatever EPA's December 31, 1985 rule might have provided, it would not have applied to US Ecology's activities.

September 23, 1988 EPA issued a Federal Register notice allowing facilities handling "mixed waste" to qualify for "interim status" under RCRA exactly as though "mixed waste" had only become subject to RCRA jurisdiction in 1986. 53 Fed. Reg. 37048. Since the US Ecology site stopped receiving scintillation vials in 1985, it never became subject even to the requirement to qualify for "interim status", much less to any other RCRA regulatory requirement.

- The chemical trench stopped accepting waste in 1972, well before the RCRA regulations were ever promulgated. For that reason, it, too, never came under RCRA jurisdiction.

In short, the US Ecology site has never disposed of wastes that were subject to RCRA regulatory requirements at the time they were being managed. The argument for EPA jurisdiction over the hazardous component of "mixed waste" has always rested on the need to assure compliance with the "hazardous waste" regulatory standards of RCRA subtitle C. That basic justification is totally absent here.

D. Assertion Of RCRA Jurisdiction Over The US Ecology Facility Would Be Inconsistent With The Requirements Of The AEA

We have shown that the US Ecology site cannot lawfully be included in the Proposed Permit because (1) the US Ecology site has no relation to the Proposed Permit and therefore cannot be part of the "facility" that it covers; (2) all environmental risks at the site are already comprehensively regulated under the AEA, and (3) the site has **never** been subject to RCRA regulation.

Each of these arguments stands on its own. But each of them also demonstrates that including the US Ecology site in this permit would be "inconsistent" with the AEA within the meaning of RCRA § 1006(a), which provides that:

> nothing in this Act shall be construed to apply to (or to authorize any state, interstate, or local authority to regulate) any activity or substance which is subject to ... the AEA of 1954 ... except to the extent that such application (or regulation) is not inconsistent with the requirements of such Acts.

In using the term "inconsistent", Congress picked a word with an accepted meaning, and set it in a context that can only make that meaning broader.

When a statute allows states to regulate an area except where state rules are "inconsistent" with Federal regulation, state rules are preempted if they contradict Federal

requirements and if they present "an obstacle to the accomplishment and execution" of the Federal scheme--for example, if they

> address matters already covered by the federal regulations, impose substantial burdens on applicants, and create the risk of confusion, conflicts and delays.

Southern Pac. Transp. v. Public Serv. Com'n of Nevada, 909 F.2d 352, 355, 357 (D.C. Cir. 1990). Courts have applied the same principle under the AEA, finding that, despite a specific reservation of state authority over non-radioactive wastes, the Federal statute preempts state regulation of waste streams in which radiation and non-radiation hazards are "inextricably intermixed." Brown v. Kerr-McGee Corp., 767 F.2d 1234 (7th Cir. 1985).[11] If we use these authorities to interpret the term "inconsistent" in RCRA § 1006(a), we must conclude that RCRA will cease to apply whenever it would "substantially interfere" with efforts under the AEA to regulate radioactive waste.

But in fact, the term "inconsistent" should receive a **broader** reading where it addresses the relationship between two Federal statutes than it has received where the

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[11]Accordingly, to the extent "corrective action" requirements in the proposed permit might rest on state law, they would also be preempted. See Pacific Gas and Electric Company v. State Energy Resources Conservation and Development Commission, 461 U.S. 190 (1983).

relationship between the states and the Federal government is at issue. In the second case, the question concerns the relationship between two Constitutionally separated levels of government. Duplication and inconsistency that might be acceptable so as to assure the ability of each level to achieve its major goals should have no place in cases where two statutes must be reconciled at the same level of government. Indeed, RCRA requires EPA to administer RCRA consistent with all "other Acts of Congress [that] grant regulatory authority to the Administrator", RCRA § 1006(b), so as to "avoid duplication."[12] These principles set forth in § 1006(b) of RCRA must also govern the determination of "inconsistency" between statutes set out in § 1006(a). If they did not, then there would be less incentive to achieve harmony in statutory interpretation between agencies than there is to achieve harmony among EPA statutes, even though harmony between agencies is clearly both needed more and intrinsically harder to accomplish. Accordingly, "inconsistency" within the meaning of RCRA § 1006(a) must include needless duplication between two regulatory schemes serving the same function.

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[12]See U.S. v. Burns, 512 F. Supp. 916 (W.D. Pa. 1981). (In light of the PCB regulatory scheme under the Toxic Substances Control Act, EPA could not seek injunctive relief under RCRA for improper handling, storage, and disposal of PCBs.)

Nothing in EPA or DOE regulations, or in any other source of law, contradicts this natural reading of the statutory language and purpose. RCRA § 1004(27) automatically excludes "source, byproduct and special nuclear material" from RCRA regulation. EPA and the DOE have both taken a very narrow view of what this term covers. But they did this largely because they viewed the "inconsistency" provisions of RCRA § 1006(a) as a more flexible and policy-oriented vehicle for avoiding conflicts than the definition of "solid waste," with its accompanying exclusion for "source, byproduct and special nuclear" materials. See 52 Fed. Reg. 15937, 15940 (May 1, 1987). Yet despite numerous promises of forthcoming clarification, neither DOE nor EPA has **ever** clarified what "inconsistency" actually means, either in general or in the context of a specific regulatory action.[13]

Accordingly, the question must be addressed in this permit proceeding. If ever a case where RCRA application was inherently weak, it is this one.

First, the same activities that RCRA "corrective action" would address are **already** subject to comprehensive AEA

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[13]Since neither EPA nor DOE has interpreted the meaning of "inconsistent" in this proceeding, no conflict between agency approaches has yet emerged. But in the event of such a conflict, it is clear that the DOE interpretation, not the EPA interpretation, would govern. [See 52 Fed. Reg. 15937 (May 1, 1987).

Don't agree

regulation, both under the operating license, and under the Closure Plan.[14]

Doesn't matter property/owner seeking permit

Second, the US Ecology site **never** came under the RCRA hazardous waste regulatory system. Yet it is the need to make this system applicable to ongoing waste management activities that has justified all prior EPA assertions of jurisdiction over nuclear facilities.

Third, since the **prospective** RCRA **regulatory** requirements of Subtitle C have no application to the US Ecology site, any assertion of RCRA jurisdiction must rest on the need to make "corrective action" applicable. But "corrective action" lies at the periphery, not the center, of RCRA's statutory purposes. The argument for invading the jurisdiction of other agencies to make "corrective action" applicable is far weaker than the argument for a similar effort to extend the reach of Subtitle C.

Fourth, the US Ecology site has a separate purpose, a separate operator, and completely separate operations from anything directly covered by the Proposed Permit. It cannot

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[14]Indeed, as noted earlier, the Closure Plan includes the key terms from the Part B RCRA permit application that US Ecology submitted under protest in 1985, but that EPA never processed.

lawfully be included in that "facility" for corrective action purposes.

There is nothing RCRA corrective action could accomplish at this site that has not already been required--generally in a stricter and more elaborate form--under the AEA. RCRA might require the wastes at the site to be characterized. But under the AEA, they were characterized before they were ever accepted--only certain types of wastes were allowed. RCRA might require monitoring. But groundwater monitoring is already required as an operating condition, and more monitoring will be required as a closure condition. RCRA might address the security of waste disposal. But the exact present and future methods of waste disposal have already been set out in the operating license and the closure plan. RCRA might address the chemical trench. But the chemical trench is already being addressed under the Closure Plan.

In short, this is a case for the principle: **Meaningless duplication is "inconsistency."** EPA and the WDOE have proposed a permit that will require US Ecology to deal with a completely new set of regulatory agencies, on a new timetable, over matters already addressed and long settled under the AEA. EPA and the WDOE may defend their actions by asserting that it is not yet clear that any flat conflict in requirements will result. But it is already clear both that there will be a

duplication of regulatory burdens, with no environmental benefits. The inclusion in RCRA of a specific bar on "inconsistent" activities means nothing if it does not cover cases like this.

IV. CONCLUSION

The US Ecology facility cannot lawfully be included within the Proposed Permit to be issued to DOE and its Contractors. US Ecology is not and was not a party to the Proposed Permit. DOE and its contractors exercise no control over the US Ecology facility. Without a permit issued to US Ecology, EPA lacks statutory authority to require corrective action. The US Ecology facility is and has been pervasively regulated by WDOH and NRC since 1965. Imposition of RCRA corrective action upon US Ecology would produce no discernable environmental benefit. Any claim by EPA to RCRA jurisdiction over the site is tenuous at best. Imposition of RCRA corrective action requirements upon the site threatens the viability of the existing closure plan for the site and is either duplicative or flatly inconsistent with carefully considered regulatory provisions designed in accordance with regulations promulgated under authority of the AEA.

The Proposed Permit seeks, without reason, justification, or legal authority to impose RCRA corrective action at the US Ecology low level radioactive waste and special nuclear materials

disposal site regulated by the WDOH and the NRC. Neither EPA nor WDOE have participated in or expressed more than a passing interest in the extensive regulation of the site by their sister agencies, the NRC and WDOH. Yet they now seek, solely by virtue of a permit issued to a third party, to intrude upon the operation of one of the nation's principal low level radioactive waste disposal sites. If EPA and WDOE have concerns regarding the environmental safety of the US Ecology site, the proper, economical and legally correct course of action would be for them to consult with the agencies that bear primary responsibility for the site. Yet it is precisely because neither EPA nor WDOE can properly articulate such a concern in any credible fashion that they are forced to strain both the law and the facts as they have done.

This tortured misapplication of a proposed RCRA permit to impose cleanup requirements upon US Ecology at the cost of abrogating fundamental distinctions between their own statutes is a feeble attempt to overcome the obvious deficiencies in the agencies approach under RCRA. It raises troubling questions about the agencies motivation and, at a minimum, demonstrates how truly ill-considered their actions are. EPA and WDOE have more than enough to do at the Hanford Reservation without looking for additional projects that lie well beyond their statutory authority. This is particularly so where there is nothing to be gained by way of environmental protection.

Nuclear Engineering Company, Inc.
9200 SHELBYVILLE ROAD, SUITE 526 • P.O. BOX 7246
LOUISVILLE, KENTUCKY 40207 PHONE (502) 426-7160

November 18, 1980

EPA Region X
M/S 530-A
1200 Sixth Avenue
Seattle, WA 98101

EPA ID #: WAD060048360

Gentlemen:

Nuclear Engineering Company, Inc. operates a commercial low-level radioactive waste disposal facility at Richland, Washington. The site is operated under the authority of the State of Washington, pursuant to Section 274 of the Atomic Energy Act of 1954, 42 USC 2011, et seq (AEA), as amended.

It is the position of Nuclear Engineering Company that it is neither the intent of RCRA nor the regulations adopted by EPA thereunder that the radioactive waste disposed at our facility be subject to RCRA. However, in order to preserve our rights should it be ultimately determined that certain of our activities are in fact subject to RCRA, we filed a "Notification of Hazardous Waste Activity" prior to August 19, 1980, and subsequently received an EPA identification number for our facility.

On October 24, 1980 (see attached) we requested of Mr. Costle an RIM which would permit the State of Washington, under its Section 274 agreement with the NRC, to continue to regulate those low-level radioactive waste disposal activities presently being carried out at our Richland site. As of this date the EPA has not responded to our request.

Under the circumstances, we are filing Form 1, General Information, for the Consolidated Permits Program with the Environmental Protection Agency in order to preserve our rights should it be ultimately determined that certain of our activities on our low-level radioactive waste disposal site are subject to RCRA. Please note that we have not completed EPA Form 3510-1(6-80) with respect to Question II E since this question is still to be resolved by the EPA. Also, we have not filed Form 3 but have instead included as a separate enclosure a list of responses to the technical criteria requested in Form 3.

In summary, this filing is not to be construed as a waiver of our position that our Company's low-level radioactive waste disposal operations at Richland, Washington, are not subject to EPA regulations under RCRA.

In the meantime, we shall continue to accept naturally-occurring and accelerated-produced low-level radioactive waste or by-product, source and special nuclear low-level radioactive waste which are slightly contaminated with materials such as toluene, at our low-level radioactive waste disposal site at Richland, Washington. These activities shall be conducted in accordance with the statutes, rules, regulations, and license conditions applicable to the low-level radioactive waste facility. We trust that the Environmental Protection Agency will address this question of jurisdiction at its earliest convenience.

Sincerely,

NUCLEAR ENGINEERING COMPANY, INC.

T. S. Baer
Vice President

TSB/bt

cc: Jane Axelrad
EPA Office of General Counsel

Nuclear Engineering Company, Inc.
9200 SHELBYVILLE ROAD, SUITE 526 • P.O. BOX 7246
LOUISVILLE, KENTUCKY 40207 PHONE (502) 426-7160

October 24, 1980

Douglas M. Costle
Administrator
Environmental Protection Agency
401 "M" Street, SW
Washington, DC 20460

Dear Mr. Costle:

Nuclear Engineering Company, Inc. (NECO) operates two commercial low-level radioactive waste disposal facilities in the western United States, one located at Beatty, Nevada, and the other on the U.S. Department of Energy Hanford Reservation in Washington State. The sites are licensed under Section 274 of the Atomic Energy Act of 1954, 42 USC 2011, et seq (AEA), as amended, by the States in which the facilities are located.

Low-level radioactive material in the form of waste products is shipped to these facilities for disposal. Most of the waste materials are either by-product, source, or special nuclear material as defined in the AEA, and are excluded by the United States Environmental Protection Agency under the Resource Conservation and Recovery Act, P.L. 94-580, 42 USC 6901, et seq (RCRA).

Naturally occurring and accelerator produced isotopes contained in waste materials are also disposed of at these facilities. By law these isotopes do not currently fall within the jurisdiction of the U.S. Nuclear Regulatory Commission (NRC) but are controlled by the individual states and have been incorporated into the regulatory programs of both Nevada and Washington.

This action on the part of both states is a logical extension of the need to cover all radioisotopes and sources of ionizing radiation in one set of rules and to have these rules administered by one agency. The agency regulating radioactive waste disposal activities in Nevada is the Nevada Department of Human Resources, and in Washington is the Department of Social and Health Services.

The problem to be described herein arises when the following facts are recognized:

1) Naturally occurring and accelerator produced isotopes are not regulated by the NRC under its authority as

defined in the AEA and consequently are not excluded from the EPA's authority under RCRA.

2) Naturally occurring and accelerator produced isotopes are not currently addressed in the EPA's regulations implementing RCRA.

3) Certain naturally occurring and accelerator produced isotopes, notably, Carbon-14 and Tritium (H-3), are used extensively for medical and university research and are frequently mixed with solvents such as toluene and xylene, prior to radioanalysis. These solvents are defined as hazardous under RCRA and constitute about 15% of the commercial low-level radioactive waste on a national basis.

4) These radioactive materials are covered by State health regulations and are controlled as extensively as by-product, source, and special nuclear materials.

As you may know, the NRC is currently developing regulations (10 CFR 61) that will further assure the public health and safety at low-level waste disposal facilities. These proposed regulations make provisions for siting, closure, post-closure maintenance and perpetual care among other things.

In view of the above, we recommend that the EPA regulations be amended, or clarified through Regulatory Interpretation Memoranda (RIMS) so that:

1) all low-level radioactive waste disposal sites licensed by the NRC be exempt from RCRA;

2) all low-level radioactive waste disposal sites licensed by Agreement States be exempt from RCRA;

3) all low-level radioactive waste disposal sites licensed by the NRC or Agreement States be exempt from RCRA when the hazardous wastes contain radioactive materials in sufficient quantity to warrant disposal in a low-level radioactive waste site.

If the above action is not taken, the result could be to effectively shut down the vast majority of medical research in the U.S., since disposal of these materials in other than low-level waste disposal facilities is prohibited by State statutes. To do otherwise would also promote an unnecessary and confusing overlap of regulatory processes.

Douglas A. Cossie

In order to preserve our rights under the interim status standards promulgated by EPA, NECO submitted the required information to the EPA to meet the preliminary notification filing requirements. However, since it is our position that it was not the intent of RCRA to regulate activities currently overviewed by the NRC, NECO will defer submitting the Part A application pending resolution by the EPA with the NRC and the States of Nevada and Washington on this issue.

Sincerely,

NUCLEAR ENGINEERING COMPANY, INC.

T. S. Baer
Vice President

TSB/bt

cc NRC - Document Mgmt Branch

8911280128

US Ecology, Inc.
9200 Shelbyville Road, Suite 526
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Louisville, Kentucky 40207
502 426-7160

Appendix B

USEcology

Mr. Charles E. Findley, Director
Hazardous Waste Division
U. S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

October 29, 1985

Mr. Richard A. Burkhalter, P.E.
Supervisor, Industrial Section
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Gentlemen:

Enclosed is US Ecology, Inc's Part B Application and Closure/Post Closure Plans for the Richland, Washington facility. This facility, located on federally owned property, is a commercial low-level radioactive waste site, licensed by the State of Washington and the Nuclear Regulatory Commission (NRC). Its daily operations are supervised on a full time basis by on site State inspectors and all activities are also monitored by the Nuclear Regulatory Commission and its Agreement State program audits. The facility has also been the subject of considerable State and Federal legislative scrutiny and, as such, its operations have been closely monitored by the public.

As you are aware, in November, 1980, US Ecology, Inc. (then known as Nuclear Engineering Company, Inc.), the site operator, made a protective filing for a Resource Conservation and Recovery Act (RCRA) Part A application in order to preclude any issuance of noncompliances regarding its receipt of scintillation vials which items may have been interpreted as falling within the RCRA-sphere of regulation. Since that initial filing in 1980, the company has drafted various letters and has met on numerous occasions with federal and state regulatory officials as well as Congressional representatives in order to try and resolve the potential conflicts which exist between the RCRA and 10 CFR 61 regulatory schemes. The present situation of dual statutory jurisdiction places the company under the regulatory purview of the NRC, EPA, Washington State Departments of Ecology and Social and Health Services, as well as interfacing with the Department of Energy. The company has repeatedly sought

to have but one regulatory agency or single-line of authority tasked with the overall responsibility for regulating the site. Such a designation will avoid the potential for conflicting enforcement policies or philosophies, and in turn will assure a coordinated, appropriate and timely response to specific regulatory demands.

However, during the pendency of these activities dedicated to resolving this issue, the company received an April 30, 1985 letter from US EPA, Region X, requesting that the company submit a RCRA Part B application for the Richland facility. While the company is complying with this request by filing the previously referenced documents, it also wishes to point out that it believes that the attached Part B filings may not be required in this specific instance. Specifically, the Part B filings are allegedly being mandated due to the company's receipt of mixed waste -- in this case being confined to the constituents of scintillation vials received at the site. These vials contain substances of toluene, xylene, and benzene, some of which were previously thought to be potential subjects of RCRA regulation. However, their receipt at the site as small quantity generator produced items, as well as their designations and/or shipping configurations, now casts serious questions as to the appropriateness of their inclusion as RCRA regulated substances.

While the presence at the facility of scintillation vials with chemical constituents is known, whether such materials are RCRA regulated is a separate issue. Small quantity generators of hazardous wastes are not RCRA regulated and are not required to use an EPA Uniform Hazardous Waste Manifest form. Since the facility has not received any such forms and the generators have contractually warranted to US Ecology that they will comply with all applicable laws and have indemnified US Ecology for any failure to do so, it can be assumed that the generators do not believe the waste to be RCRA regulated. Even though the company has substantial reservations regarding this material's classification as RCRA regulated, the company took the added precaution of advising its customers via a September 13, 1985 letter (See Attachment B), that effective October 28, 1985, US Ecology will no longer accept scintillation liquids contining toluene, or xylene in any physical form for disposal at its low-level radioactive waste facility in Richland, Washington. Obviously, such prohibition was confined solely to RCRA regulated substances. For a further discussion of the company's position on this matter, see Attachment A, "Scintillation Vials".

US Ecology has limited its discussion solely to the contents of scintillation vials as it believes that this is the only material received at the site which could potentially be RCRA regulated. This position is predicated on the fact that US Ecology is the only company disposing of commercial low-level radioactive waste to have filed a Part A or Part B application and the only waste item which it receives at Richland which is different from that received

at other facilities is scintillation vial materials. Therefore, to conclude otherwise would be contrary to existing facts and regulatory enforcement posture and would give rise to serious constitutional questions regarding equal protection.

The company believes that although there exists some question as to the regulation of this material, its present action was necessary in order to obtain a formal ruling from the agencies regarding this material, and thus requests a formal response as soon as practical. The desire for a formal response is necessary in that the Richland site is the only commercial low-level radioactive waste landfill which currently accepts this waste. Although scintillation vials constituted less than three per cent of the waste received at the facility, we believe this issue has national significance because of the potential impact on medical applications. The issue thus warrants a quick resolution by the Agency as to whether the vials are RCRA regulated in order to avoid a material disruption in the nation's medical and research communities.

For your information, and as set forth in the Part B, US Ecology will complete by November 8, 1985, the installation of five site-associated monitoring wells and thus will be able to conduct RCRA monitoring if it is determined to be applicable. Previous monitoring (in accordance with the company's existing licenses) utilized DOE wells which were located in the vicinity of the site.

US Ecology is submitting its Part B and Closure/Post Closure applications as a protective filing. As such, the company does not, by submitting these documents, admit to the applicability of RCRA to the Richland low-level radioactive waste disposal facility, nor does it waive its rights to supplement or withdraw such documents or request administrative or judicial relief on this matter.

Please be advised that US Ecology, Inc. intends that this letter and attachments be incorporated as an integral part of our Part B and Closure/Post Closure applications.

Very truly yours,

S. V. Wright, Jr.

Sidney V. Wright, Jr.
Vice President, Radiological Division

SVW/sw 251

Attachment

ATTACHMENT A

SCINTILLATION VIALS

Scintillation vials contain low-level radioactive materials and toluene, benzene, and xylene. Such vials are produced for use in such settings as hospitals and medical research facilties throughout the United States as a part of medical and other scientific testing performed at those institutions. Laboratory procedures that use these vials perform such vital functions as determining the levels of hormones, vitamins or drugs in a patient, diagnosing pregnancy, and detecting cancers and other diseases such as hepatitis. These materials in the vial are often referred to as the "scintillation cocktail".

A scintillation cocktail is often composed of a scintillating material, a surfactant that serves as an emulsifier, and a solvent to serve as a suspension for the scintillation materials and surfactant. The solvent also has the important function of absorbing the energy produced by the radioactive materials, and transferring that energy to the scintillating material. This function of the solvent is vital to the usefulness of the scintillation vial.

Typical solvent materials for these scintillation vials are xylene, toluene, benzene or other similar organic materials. When these solvents are included in a scintillation cocktail formulation, they constitute an integral part of a usable product not intended for discard. That is, those solvents are a part of the vials as a product. The solvents never separately become waste before they become a part of the scintillation cocktail, nor are they mixed with any hazardous waste either before or after their addition to the cocktail.

At the time when the scintillation formulation is prepared and placed on the shelf for future use, the resultant mixture is a product and not a solid waste as defined in RCRA. At the time that the vial is used, thereby becoming a waste (though not a hazardous waste), the solvent is nothing more than part of that used product.

As outlined in greater detail below, the mere fact that the used scintillation vial may contain a solvent as a part of its content is irrelevant in determining whether the scintillation vial and its contents taken as a whole should be classified as a "hazardous waste". Instead, one must look at the vial and its contents at the time it becomes (or is intended to become) discarded in order to determine whether it is classifiable as hazardous waste. The xylene, toluene, benzene, or similar materials contained in the scintillation cocktail were not placed into the mixture in order for that organic constituent to be disposed of. The fact that the organic component in question was added to the formulation in preparation of a product, and was not in fact added to a solid waste, is important in a final determination of the applicability of RCRA to scintillation cocktails.

40 CFR 261.1(a) outlines the scope of the different Subparts A through D that make up Part 261, as follows:

> (1) Subpart A defines the terms 'solid waste' and 'hazardous waste," identifies those wastes which are excluded from regulation under Parts 262 through 265, 270, 271 and 124 and establishes special management requirements for hazardous waste produced by small quantity generators and hazardous waste which is used, re-used, recycled or reclaimed.
>
> (2) Subpart B sets forth the criteria used by EPA to identify characteristics of hazardous waste and to list particular hazardous wastes.
>
> (3) Subpart C identifies characteristics of hazardous wastes.
>
> (4) Subpart D lists particular hazardous wastes.

In order for a waste to be characterized as "hazardous waste," it must either fall within a list in Subpart D or contain one of the four characteristics outlined in Subpart C. (There is a provision in Subsection 261.1(b) which allows alternative methods for declaring a material a hazardous waste, but those are not relevent to this discussion, since there has been no action regarding the materials covered here as is contemplated in that section. See 40 CFR 261.1(b).

As outlined further below, the scintillation vials do not fall within any of the lists contained in Subpart D. Likewise, they do not possess any of the characteristics contained in Subpart C. (The sole exception to the absence of a hazardous characteristic is the possibility that vials might be ignitable. Even if the vials are ignitable, this is not sufficient to allow their classification as a hazardous waste because the Company continues to express its willingness to require that the material be placed in absorbent material or otherwise handled to eliminate its ignitability, and, thus, no longer provide a basis for its classification as a hazardous waste.)

Subpart D Lists

Subpart D contains four lists of specific waste. See 40 CFR 261.30 thorugh Section 261.33, and the Appendices thereto. Those lists are as follows:

- F-codes, which list specific hazardous waste from non-specific sources;

- K-codes, which cover generic process waste from specific sources (no specific chemicals); and

- P- and U-codes, which apply to discarded commercial chemical products when intended for discard.

First consider the list of P- and U-code waste.

The P-code and U-code Lists

Both P-code and U-code lists contain specific chemicals which are designated hazardous when they are:

(1) discarded or intended to be discarded as commercial chemical products; or

(2) manufacturing chemical intermediates having the generic names listed in those tables; or

(3) any off-spec (off specification) commercial chemical products; or

(4) manufacturing chemical intermediates; or

(5) containers or inner liners removed from containers being used to hold one of those products; or

(6) residues or contaminated soil or water from a cleanup of a spill of one of those commercial chemical products.

In a comment contained in 40 CFR 261.33 immediately preceding the P- and U-code list, EPA explains the meaning of the phrase "commercial chemical products or manufacturing chemical intermediate having the generic name" as referring:

> ...to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of a commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as the manufacturing process waste that contains any of the substances listed in paragraph e or f. (Emphasis added.)

In the background document for Subtitle C, Section 3001, Section 261.33 issued by EPA Office of Solid Waste on April 30, 1980, the Agency by way of the following comments makes the intent of the applicability of those P- and U-code lists quite clear. On page 5 of that background document EPA states:

> in the development of the proposed rules, a number of persons pointed out that the important part of the hazardous waste generated throughout the country were commercial chemicals that are normally not discarded but, for a variety of reasons, are occasionally discarded.

> Examples given were reduction of inventory, changes in product line, cancellation of pesticides, no further use of remaining stocks and residuals from batch processing manufacturing or formulating operations. In particular, operators of solid waste management facilities indicated that some 'wastes' which they receive are discarded pure chemicals as opposed to typical waste from manufacturing or other activities. These same persons also indicated that off specificaiton chemicals are sometimes discarded. The agency recognized that some of these chemicals and off specification materials were toxic and, even though discarded, only occasionally (and usually in small amounts), could pose a substantial hazard to human health or the environment.

In response to concerns or questions from the regulated community as to whether any solid waste which contained one of those listed chemicals in the P- or U-code list was a hazardous waste, EPA responded on page 9 of the background document:

> A number of commentators misunderstood the proposed rules and assumed that any waste, including manufacturing process waste, containing any of the chemicals listed in the Appendices III, IV, V, and XII would be a hazardous waste. This led several of these commentators to urge that a quantity or concentration level below which the waste would not be hazardous be established for each chemical listed in the appendices. Other commentators urged that, if the appendices only applied to pure chemicals and then only apply when they are discarded, these points should be emphasized. The agency recognizes the language of the proposed rules may have been confusing. Consequently it has substantially rewritten the provision, currently in Section 261.33 of the final rule, and has added an extensive comment to clarify the point raised by these commentators.

The comment referred to in the previous quotation is the comment previously cited on the previous page of this memo. EPA further stated on page 10 of that same document that:

> A few commentators seemed to suggest that Appendices III, IV, V and XII should be used to cause waste containing any of the listed chemicals to be a hazardous waste. This would essentially change the list into a 'characteristic' with its attendant responsibilities for the generator. The agency did not intend such a result. However, the

agency has revised its criteria for listing hazardous waste (See Section 261.11 of the final rules) to include this concept. The agency has developed a list of hazardous constituents, Appendix VIII, and will presume that a waste containing any of those constituents is a hazardous waste unless consideration of other factors, such as quantity of the waste, concentration of the toxic agent or mobility of the toxicant etc., causes the Agency to conclude that the waste does not pose a substantial threat to human health or the environment. This criteria requires the agency to make a determination to list such waste; it is not the responsibility of the regulated community to designate unlisted waste as hazardous waste, because they contain materials on Appendix VIII. Appendix VIII does in fact contain the toxic substances listed in 261.33(e) of the final rule. (Emphasis added.)

Finally, in that background document, EPA concluded on page 20:

> In addition, the agency substantially modified the final list of chemicals. First it has listed only commercial chemical products from manufacturing chemical intermediates, chemicals that are not normally discarded. The reason for this is that Section 261.33 is exclusively designed to regulate these materials in the event they are discarded or intended to be discarded, or discarded as off specification materials, or discarded as residuals in containers or in liners of the containers or spilled. Where the agency's interest in a chemical is because it is a hazardous constitutent of a solid waste, the agency will list the waste or classes of waste that typically or frequently contain such chemicals, in Section 261.33 261.32. The principal effect of this approach has been to eliminate as a class the chemicals listed in appendix which derive from a list of toxic chemicals that are typically found in industrial wastewaters, or its constituents of hazardous waste. (Emphasis added.)

Concurrent with the initial promulgation of 40 CFR 261 in 180, US EPA pulbished a "Guide to the Regulations". In that publication EPA answered the very basic question, "What is Section 261.33?" In answer the agency stated the following:

> Section 261.33 contains a listing of 361 commercial chemical products that are hazardous waste if and when they are discarded, because these are valuable commercial products, that normally are not discarded. For various reasons, however, they are occasionally discarded and when this occurs EPA believes these products may pose a present or potential hazard to human health or the environ-

ment. Thus Section 261.33 brings these commercial products under hazardous waste regulations if and when they are discarded or intended to be discarded. (Emphasis added.)

Additionally, EPA responded to the question "Is a waste a hazardous waste if it contains a commercial product listed in Section 261.33(f) but does not exhibit any of the four characteristics?", EPA's response was that:

> It is probably not a hazardous waste. If the waste is not listed as a hazardous waste, is not a mixture containing a listed hazardous waste, and does not exhibit any of the four characteristics it is not a hazardous waste by virture of containing a commercial product listed in Section 361.33(e) or (f) unless the commercial product was discarded by mixing into the waste. (Emphasis added.)

Also answered in the document was the question "Is a facility that stores the commercial products listed in Section 261.33 prior to their sale subject to the regulations?" EPA's response was:

> No. The commercial products listed in Section 261.33 are subject to regulation only when they are discarded or intended to be discarded. (Emphasis added.)

Even as late as May 9, 1985, John Skinner by issuance of a memorandum regarding the statutory interpretative guidance on treatment of bulk hazardous waste acknowledged the distinction between mixing of materials with product and mixing of materials with waste. Mr. Skinner stated that:

> Section 3004(C)(1) prohibits the placement in a landfill of bulk liquid waste to which absorbents have been added, but does not ban the landfilling of absorbed materials if the absorbent was added before the material became a waste. Hence, the ban applies to a spill of commercial chemical product or manufacturing chemical intermediate listed in Section 261.3 if the absorbent was added after the product became a waste.

Having now established that scintillation cocktails when disposed of are not a commercial chemical product listed as a P- or U-code, it must be determined if the solid waste generated by the use of that scintillation cocktail is contained as an P- or K-code.

K-code List

As stated in Section 261.32, the K-code list includes solid wastes that are listed as hazardous wastes from specific sources. This section's requirement that hazardous waste be derived from specific sources quite

clearly results in the exclusion of liquid scintillation cocktails from the list of hazardous waste by virtue of absence from that table. Clearly the process of using scintillation cocktails in any manner is not contained in the K-code list.

Consideration must now be given to the inclusion of liquid scintillation cocktails in which organics are a component on the list of F-codes.

F-code List

Section 261.31 provides that the F-codes cover hazardous wastes that come from nonspecific sources. F001 through F005 do contain specific solvents which are considered hazardous by virtue of the F-codes when they are spent and intended for discard. Benzene is not included in any of these F-code lists. Xylene and toluene are mentioned in these lists; however, this fact does not require or determine that scintilaltion vials containing xylene or toluene are, therefore, to be classified as listed hazardous wastes. Consideration must be given to the application of the term "spent solvents" as contained in Section 261.31 to see that the scintillation vials are not covered by any of these F-code lists.

On page 31 of the 40 CFR 261.31 background document dated May 2, 1980, EPA explains the following basis for listing substances (including solvents) in the F-code lists:

> Waste resulting from usage of organic solvents typically contains significant concentrations of the solvent. Examples of waste from usage of organic solvents include still bottoms from solvent recovery and spent solvents from dry cleaning operations and maintenance and repair shops.

This basis of the listing of the solvents under F001 through F005 codes does not contemplate the use of solvents in scintillation cocktails and for the purposes for which scintillation cocktails are used, as a source of hazardous waste. This is further evidenced in the analysis in the above noted background document relative to the sources of the waste in typical disposal practices. As stated by EPA:

> [t]he primary solvent-using industries and the quantities of solvents they use annually are as follows: ...paint and allied products or industrial operations, surface cleaning, pesticide production, laundry and dry cleaning operations, pharmaceutical manufacture, solvent recovery operations. Id at p. 36.

This list clearly does not include use of the solvents in scintillation formulations. The only point of contention may be use in the pharmaceutical industry. However, this point is clarified on page 42 of the doucment, in the explanatory material relating to the production of pesticides, pharmaceuticals and other organic chemicals:

Solvent applications in the production of pesticides, pharmaceuticals and other organic chemicals include usage as a reaction (synthetic) medium, and the usage in equipment cleaning. The solvents used are primarily non-halogenated and are typically selected for compatibility with the production process. Toluene is the most widely used solvent in pharmaceutical manufacture, methanol is used as the reaction solvent in nylon 66 production, and acetone is used as the solvent in the production of cellulose acetate.

Waste from solvent usage in these industries take the form of off-specification product material, equipment cleaning waste, and solvent recovery still bottoms. The destination of all solid waste is not known, but a large percentage is either reclaimed in house or by contract recovery operation.

Absent from all of the above explanantions about the application of F001 through F005 codes to spent solvents is any implicit or explicit reference to use of organic solvents in formulation of scintillation cocktails. In the "Guide to the Regulations" published by US EPA in 1980, the following question and response are contained regarding the application of the term "spent solvents":

Q. Are the spent solvents listed in Section 261.3 generated by specific processes or any materials that contain these solvents considered hazardous?

A. The spent solvents listed in Section 261.31 covers spent solvents generated by any and all processes; hence they are not limited to spent solvents derived from specific processes.

These listed spent solvents themselves are hazardous waste. Also any solid waste with which these listed spent solvents are mixed are hazardous waste. Solid waste that may contain some amount of solvents from the manufacturing or other activity in which the solvents are used are not, however, hazardous waste by virtue of their solvent content; they may, however, be hazardous waste for other reasons. (Emphasis added.)

EPA does not view discarded scintillation cocktails, including those containing solvents, in the same that EPA views spent solvents under F-code or K-code lists. This view by EPA is evidenced by the answer to another question contained in that Guideance Document involving hazardous wastes generated by hospitals. In answering that question about hospitals, EPA excluded any mention of some wastes and included others, but most importantly, in making the analysis, EPA specifically excluded any mention of the F-code or K-code

lists. These lists were excluded, because EPA does not view their classifications as including any activities performed at hospitals. Hospitals use and discard scintillation vials. Thus, EPA does not believe that used scintillation vials fall within the F-code or K-code list classificaitons of Subpart C.

Clear from the above discussion is the apparent intent on the part of the Agency that the spent solvents referred to in the F-code list include solvents which have been used in processes normally associated with solvents, such as paint stripping, degreasing, etc. All of these indications on the part of the Agency as to the applicability of spent solvent and F-codes indicate that products in which one of the listed solvents is one of several ingredients are not intended to be categorized as spent solvents when disposed of merely by virtue of the content of the solvent.

In summarizing the non-applicability of RCRA Subpart D codes to scintillation cocktails, one can draw analogy to paints that were manufactured with solvents as one of their constituents. The waste from such paint after its use will contain high levels of the solvents which were included as one of the paint's constituents. EPA has stated that the treatment of such paint waste under RCRA should be through an examination for possible applicability of one of the four subtitle C characterisitics (as opposed to the Subpart D lists). As in the case of scintillation cocktails, the product paint contains solvent as an ingredient. The residue paint is not included in a P- of U-code list as a discarded commercial chemical product. In evaluating the waste paint scenario, EPA has stated that the F-code spent solvents are intended to encompass solvents which have been spent by their use in a traditional solvent process, such as degreasing, stipping, and the like. They were not intended to encompass paint product wastes which contain a solvent by virtue of the solvent content of the original product, nor paint product waste which has had solvent added as a product in order to act as a thinning agent to facilitate easier use of the paint.

Applying the paint analogy above, scintillation cocktails are purchased or provided as product formulations containing a solvent along with a scintillator and surfactant or detergents. Most of these scintillation formulations purchased from manufactures have already been formulated prior to their purchase by the eventual user. Like the resultant paint product waste, the discarded scintillation cocktail contains the solvent by virtue of the use of the solvent in the original product formulation, and not the use of the solvent in a traditional or classic sense.

Thus, discarded scintillation vials or scintillation cocktails, while including organic chemicals as part of their formulation, are in no way included in any Subpart D list (i.e., P-code, U-code, K-code and F-code lists). Consideration must be given to the possible applicability of one of the four Subpart C characteristics (i.e., ignitability, reactivity, corrosivity and EP toxicity).

Subpart C

To determine if the resultant waste scintillation vial is hazardous under such guidelines, one must examine whether the materials are ignitable, reactive, corrosive or EP toxic. The only characteristic of the four contained in Subpart C which might possibly be applicable is that of ignitability (D001).

Many scintillation cocktails containing organic materials have liquid flash points of less than 140 degrees Fahrenheit. If the small-quantity-generator exemption does not apply, the resultant liquid might be classified as an ignitable waste under the D001 code.

Having found the "hazardous characteristics" of the liquid scintillation cocktails as it is contained in the vial in liquid form, the form in which the material will be received must be examined.

Assuming that the scintillation cocktail might be treated as a RCRA hazardous waste by virtue of the characteristic ignitability (D001), when the cocktail is received in solid form (suitably absorbed), the determination for ignitability of a solid must be applied. The solid waste characteristic as stated in Section 261.21(2) is that the waste:

> ...is not a liquid and is capable under standard temperature and pressure, of causing through friction, absorption or moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creats a hazard.

EPA has concurred in this assessment via a request to EPA through its RCRA hotline. Therefore, the scintillation cocktails suitably absorbed and received by US Ecology would not be RCRA regulated hazardous wastes, even if they could otherwise be classified as ignitable hazardous waste without such absorption.

APPENDIX C

Detailed Comments on the Draft Permit, Fact Sheet, and Draft RCRA Facility Assessment Report

The totality of information contained in the Draft Permit, the accompanying Fact Sheet, and the Draft RCRA Facility Assessment Report, prepared by PRC Environmental Management, Inc. ("PRC"), do not show that any remediation is necessary at the US Ecology facility or why it is necessary to include US Ecology in the Permit. The three documents contain inaccurate information and are inconsistent and wholly speculative with regard to the need for remediation of any hazardous substances at the facility. US Ecology is uncertain at this time whether there is any information in the administrative record to support the agencies' principal determinations. US Ecology has attempted unsuccessfully to identify and review any such information.[1] The following

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[1]On February 24, 1992 US Ecology submitted a Freedom of Information Act request to EPA for all records and information regarding US Ecology, its parent company American Ecology, and/or its predecessor, Nuclear Engineering Company. US Ecology contacted Department of Ecology regarding this same request on February 24, 1992 and submitted a request for public records on February 26, 1992. US Ecology was initially told that all publicly available records regarding US Ecology were in the library at the Department of Ecology in Lacey and went to the agency to review this information. With the exception of the Draft RCRA Facility Assessment Report, these documents consisted entirely of reports submitted by or on behalf of US Ecology. US Ecology was told at that time that the information we requested had not yet been collected or reviewed for

discussion addresses the inaccuracies, inconsistencies, and speculative nature of the three documents:

- **Permit p.3, lines 14-17,40; Fact Sheet p.1, Fourth Paragraph.**

US Ecology is not a Permittee under the Permit and has not filed an application to become one. And yet the Permit purports to impose obligations on US Ecology pursuant to its terms as if it had filed an application and would be a Permittee.

- **Permit p.4, lines 21-23 and p.5; Fact Sheet p.2.**

The Permit is to ensure proper implementation of the Hanford Federal Facility Agreement and Consent Order ("FFACO") and "(e)nforcement of all the conditions of this permit, including Part IV, will be primarily through the procedures identified in the FFACO."

Part IV of the Permit includes US Ecology, and yet it was not a party to the negotiations creating the FFACO and the FFACO is not binding upon US Ecology. The parties to this

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exemptions. By letter dated February 20, 1992 US Ecology also specifically requested documentation regarding employee interviews referenced in the 1987 Commercial Hanford Facility Site Closure/Perpetual Care Phase One Final Report from Department of Ecology. To date US Ecology has received acknowledgement from both agencies of these requests. Only as of the afternoon of March 12, 1992 has US Ecology been informed by EPA that responsive documents were available for review; there has still been no response from WDOE.

agreement are the Environmental Protection Agency, the Washington State Department of Ecology, and the United States Department of Energy.[2] This agreement is binding and enforceable only against the parties to the agreement. [3] Although the agreement contemplates agents, contractors and/or consultants of the Department of Energy, and requires them to comply with the terms of the agreement[4], no mention is made of US Ecology, or parties similar to US Ecology. US Ecology is not an agent, contractor and/or consultant of the Department of Energy, and thus is not bound by the agreement.

To include US Ecology in this Permit and thereby attempt to enforce the FFACO against it is an injustice to US Ecology when it was not even a party to the FFACO negotiations wherein many of the conditions, milestones, and schedules of the Permit were agreed upon and have been incorporated by reference. See Permit I.A.4. US Ecology's unique situation vis-a-vis the Permittees has not been considered. By this Permit alone the agencies attempt to impose an additional and inappropriate regulatory scheme upon US Ecology merely because

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[2]See FFACO, Article II (7).

[3]See FFACO, Article II (12)

[4]Id.

it is geographically located within the boundaries of a facility that is the subject of the FFACO and this Permit.

- **Permit I.A.1.b.; Fact Sheet re I.A.1.b.; and Fact Sheet pp.33-4.**

Areas of concern that are "Lands leased by the State of Washington," "are not actively controlled by the Richland Field Office of the Department of Energy," and "which were excluded from the FFACO or which are otherwise determined to be necessary to address in this permit" are included in Part IV, and include US Ecology. In spite of the fact that USDOE did not and does not control the activities of US Ecology, and in spite of the fact that the State of Washington is US Ecology's landlord, the Permit suggests that only "the landowner (USDOE), as the permittee, is being required to perform corrective action to remediate releases from these units as necessary to protect the human health and the environment." Fact Sheet p.34. The State of Washington cannot avoid liability for the US Ecology facility merely because it is the principle author of the Permit.[5]

The parcel of land US Ecology currently occupies is owned by the United States as represented by the United States

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[5]Note that elsewhere in the Permit the State has managed to specifically exclude from the definition of the Hanford Facility for the purposes of this Permit any state-owned land within the boundaries of the Hanford Site. Permit III.1.B.d.

Atomic Energy Commission (the "Commission"). The State of Washington (the "State") leased from the Commission a 1,000 acre tract containing this parcel in 1964 for a term of 99 years("Prime Lease") for the purposes of encouraging the development of nuclear industry related enterprises.[6] California Nuclear, Inc sublet 100 acres of this land in 1965 from the State for development and use as a low-level radioactive waste disposal facility, for a term of 10 years, with an option to renew for two additional fifteen year periods.[7] Subsequently, US Ecology acquired California Nuclear. In 1976 a new sublease was executed between US Ecology (known as Nuclear Engineering Company) and the State, for a 15-year term, with the option of renewing for one additional 15-year periods.[8] The term of this sublease began in 1976 upon the expiration of the prior sublease. This sublease was amended on January 11, 1980 and January 14,

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[6]See lease between the State of Washington and the Atomic Energy Commission, dated September 10, 1964.

[7]See lease between California Nuclear, Inc. and the State of Washington, dated July 29, 1965("State/Cal lease"). This is contrary to the Site Closure Plan, which incorrectly describes this as a 99-year sub-lease.

[8]See lease between Nuclear Engineering Company and the State of Washington, dated February 26, 1976("State/NECO lease").

1982.[9] In 1990, US Ecology extended the Sublease for an additional 15 years.[10]

In the Prime Lease, the State incurs a number of obligations relating to the maintenance and cleanup of the site. For example, the State is required to abide by all laws and obtain all necessary permits.[11] If the State fails to comply with any applicable laws, the Commission can terminate the lease.[12] Upon the expiration or termination of the lease, the State shall, at its own expense, take all measures necessary to decontaminate the land.[13] If the Commission performs any work to this end, the State must reimburse the Commission for the cost. In addition, the State entered into a perpetual maintenance agreement with the Commission, providing for a perpetual maintenance fund.[14] Thus, they have also incurred responsibility to fund or assure funding of any

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[9]See lease amendment dated January 11, 1980 and lease amendment dated January 14, 1982.

[10]See lease amendment dated April 1990.

[11]See Prime Lease § 11.

[12]See Prime Lease § 7.

[13]See Prime Lease § 9.

[14]See discussion in Appendix E regarding the perpetual care and maintenance account and the site closure account.

cleanup.[15] Therefore, under the terms of the Prime Lease, the State of Washington is liable for the clean-up of this parcel of land.

The State has preserved and maintained this responsibility even under, or in spite of, the sublease. This is evidenced by the control that the State retains in both the sublease with California Nuclear and with Nuclear Engineering. For example, the State retains the right of approval over all subleases.[16] Also termination clauses similar to those in the Prime Lease exist in the subleases.[17] The State also retains access to the premises for the protection of the health and safety of the public, for taking readings or samples from, or for servicing, maintaining or repairing, or replacing the State's environmental monitoring devices, and for inspection of the premises to determine if the company is complying with the sublease[18].

However, in both subleases the relevant company, "agreed to assume all obligations and responsibilities" that the State

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[15]See Appendix E.

[16]See State/Cal Lease and State/NECO lease, Article II(8).

[17]See State/Cal Lease and State/NECO lease, Article IX

[18]See State/Cal Lease and State/NECO lease Article VI

did in the Prime Lease.[19] Although each company, thus US Ecology, is liable for the obligations, the State retains its liability. In addition, indemnification clauses exist in each sublease identical to those in the Prime Lease.[20] The State's obligations are not extinguished by the subleases. The subleases merely give the State a cause of action against US Ecology as successor in interest to both companies. Both the Prime Lease and the subleases provide for the continuing obligation of the parties during the closure and post-closure periods. Therefore, if there is any cleanup to be performed at the US Ecology facility, the State is as lessor equally liable for such cleanup. The State cannot avoid this liability merely because the Permit attempts to hold the DOE solely responsible.[21]

Additionally, in 1983, the WDOE became the administering agent for the lease. As administering agent, they are aware of the nature and extent of the perpetual maintenance account and the site closure account. Although WDOE is asserting the need for corrective action, they are ultimately responsible

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[19]See State/Cal Lease and State/NECO lease Article II(2).

[20]See State/Cal Lease and State/NECO lease, Article X(3).

[21]Although US Ecology has provided indemnification for certain activities, this does not dissolve the State's responsibility.

for overseeing corrective action pursuant to both law and the sublease.

- **Draft Permit and Fact Sheet re I.A.1.b., IV.A.2., IV.P.4., and IV.P.4.a.**

The documents are totally unclear regarding who is responsible for any activities under the Permit at the US Ecology site. The documents are internally inconsistent regarding whether the agencies have determined that the US Ecology site is to be included at this time for purposes of investigation or remediation.

Condition I.A.1.b. provides that the US Ecology facility, because it is on land leased by the State of Washington, is, either as a "Solid Waste Management Unit" or "area of concern", subject only to the provisions of Part IV of the Permit, as well as any references in Part IV to conditions in other Parts. The Fact Sheet regarding this condition explains that "(w)hile it is required that these units be investigated for past releases (under either the State or Federal program) it is not the intent of this permit to set operating conditions for those units," and therefore only Part IV applies. (Emphasis added) Condition IV.A.2. provides that "(t)hose Solid Waste Management Units on Table IV.1. (including US Ecology) shall be subject to all provisions of this section of the Permit." Condition VI.P.4 (sic) addresses US Ecology specifically. The Fact Sheet explains that "(i)t

has been determined that the US Ecology site is a SWMU requiring investigation." (Emphasis added) Condition IV.P.4.a. requires the "Permittees" to submit a "RCRA Facility Investigation Work Plan" (RFI) for the US Ecology facility within 90 days a written request by the agencies. The Fact Sheet for this condition states: "It is the intent of the regulatory agencies to have the US Ecology site remediated." (Emphasis added) The Fact Sheet discussion of Part IV generally confirms that the agencies have already determined "that there have been releases to environmental media from past practices" for those units subject to Part IV which were excluded from the FFACO; and that it is the "Permittees" who are required to submit the RFI for each unit subject to Part IV. Fact Sheet pp.33-4.

While it is clear that Part IV was intended to address units requiring remediation that were not part of the FFACO, it is not clear that US Ecology is one of them. The documents reflect the agencies' uncertainty whether only further investigation is required, or whether it is certain that releases have occurred and remediation is necessary. (The PRC Report, as discussed below, sheds no meaningful light on this issue.) Of all of the Part IV units, it is only with respect to US Ecology that the Permit calls for some action to be taken upon the future request on a date uncertain by the agencies; all other units are subject to actions within set

time periods of the effective date of the Permit. IV.P. et seq.

If action under the Permit at the US Ecology site is necessary, it is clear from the above-referenced conditions that the Permittees are required to take such action. US Ecology is not one of the three Permittees identified in the definitional section and elsewhere throughout the Permit and Fact Sheet.

- **Permit Introduction; Permit and Fact Sheet re IV.A.2,, IV.A.1.b., and IV.P.4.a.**

The US Ecology facility is the only unit in the Permit where any remediation is to be conducted under the State of Washington Model Toxics Control Act (MTCA). Inclusion of US Ecology to solely achieve this unlikely eventuality is misuse by the agencies of the purpose and authority of the Permit .

The Introduction and the Permit throughout make clear that the Permit is issued pursuant to the federal RCRA and State Dangerous Waste Regulations authority. For those units that were not part of the FFACO, Part IV of the Permit is the sole mechanism for addressing investigation and remediation of the units. IV.A.2. Condition IV.P.4.a., addressing solely US Ecology, is one of the conditions jointly enforced by the two agencies pursuant to only the RCRA and Dangerous Waste authorities, respectively. Permit Introduction p.6. But

because "Washington is not yet authorized to implement the corrective action provisions of RCRA, therefore EPA is issuing the corrective action portion of this RCRA permit." Public Notice. Wholly unique to the US Ecology facility, the agencies have made the following determination:

> It is the intent of the regulatory agencies to have the US Ecology site remediated. To accomplish this, however, Ecology intends to address remediation of the site under the authority of the Model Toxics Control Act (MTCA). Based upon the results of the remedial investigation, a decision will be made on the next phase of the work.

Fact Sheet re IV.P.4.a.

This is a tortured misapplication of this RCRA permit at best. If MTCA cleanup at the US Ecology site is possible and appropriate, WDOE can choose and attempt to apply such authority directly outside this Permit. This is especially appropriate where for all other units that the Permit defines as CERCLA Past Practice (CPP) units, the Permit specifically exempts such units from inclusion in the Permit. Condition IV.A.1.b. The Fact Sheet for this condition explains that "CPP units are completely excluded from the terms of this permit as they fall within the regulatory authority of the CERCLA program as opposed to the RCRA program." If this is true for the application of CERCLA, why should it also not be the case for the ostensible application of MTCA to the US

Ecology facility? US Ecology should be exempt from inclusion in this Permit by the same reasoning.

- **PRC Report.**

The information contained in the PRC Report is derived primarily from US Ecology, primarily its Part B Application Closure/Post-Closure Plan. Where the PRC Report goes beyond the Part B documents, it is inaccurate, speculative, and unfounded.

(1) Page 1, Section 1.0, Third Paragraph.

The PRC Report makes reference to the fact that EPA has authority to require corrective action for release of hazardous waste and constituents from SWMUs at RCRA-regulated facilities.

The US Ecology facility is not a RCRA-regulated facility. On October 24, 1980, US Ecology's predecessor, Nuclear Engineering Company, Inc., sent a letter to the Administrator of EPA first raising the very issues which are belatedly the subject of this Permit. (Appendix A, Attachment 2-3) This letter specifically requested a dialogue with the Agency regarding the fact that low-level radioactive waste disposal sites licensed by the NRC be exempt from RCRA. Nuclear Engineering requested a timely response from the Agency

because of the then upcoming deadline to file a Part A Application. The Agency never responded to this letter.

By letter dated November 18, 1980, Nuclear Engineering filed Form 1, General Information as part of the Part A process emphatically stating that it was the position of the company that RCRA was never intended to regulate low-level radioactive waste disposal facilities and that the company was not subject to EPA regulations under RCRA. (Appendix A, Attachment 2-3) This filing was made solely to preclude the commencement of any noncompliance enforcement action regarding the receipt of scintillation vials at the Richland facility. Once again, the EPA never responded to the company's specific request to resolve the issue of EPA jurisdiction.

On April 30, 1985, EPA Region 10 requested that the company file a RCRA Part B Application. By letter dated October 29, 1985, (Appendix B) US Ecology submitted an extensive Part B Application and Closure/Post-Closure Plans for the facility. This letter indicates that the company has repeatedly sought to resolve the issue of RCRA jurisdiction and that the Agency consistently failed to respond. This letter again makes it emphatically clear that the company was submitting the Part B documents as a protective filing and was not waiving its rights to withdraw the documents or to challenge the application of RCRA. The Part B documents

themselves are replete with numerous reservations and nonwaivers with respect to RCRA jurisdiction. See, for example, Section 4.0, paragraph 2 regarding low-level radioactive waste "may be defined as RCRA hazardous; Section 4.5.4 regarding closure of "the last RCRA disposal unit, if it is so classified"; and Section 4.5.6 regarding discussion of Inventory Removal as not applicable "since no RCRA waste are stored at the facility." US Ecology's 1985 letter further states that effective October 28, 1985 "US Ecology will no longer accept scintillation liquids containing toluene, or xylene in any physical form for disposal at its low-level radioactive waste facility in Richland, Washington" until resolution of the RCRA issue. The extensive Part B documentation was submitted to both EPA Region 10 and WDOE.

To the company's knowledge, the application was never reviewed by Agency personnel, no comments were received, nor was the application approved. When US Ecology personnel attempted to discuss this application with the agencies in 1989, WDOE personnel generally responded that they were not aware of what had happened regarding the application; EPA personnel stated that the company should talk to WDOE.

(2) Page 8, Section 3,2.

The report correctly notes that low-level radioactive waste has been buried in "unlined trenches." As discussed

elsewhere in these comments, such unlined trenches are appropriate for an NRC facility, but not for a RCRA one.

(3) Page 8, Section 3.2, Last Paragraph.

The statement that Trench 13 is a proposed trench is inaccurate. PRC has confused Trench 13 with Trench 12.

(4) Page 9, Section 3.2, First Paragraph.

The PRC Report states that "there is suspicion that uncontainerized liquid waste have also been disposed of in this chemical trench." (Emphasis added.) The basis for this suspicion is purportedly that a former US Ecology employee told DOE "staff" that past practices included the disposal of uncontainerized waste. US Ecology has not been able to confirm this "suspicion," questions whether any such statements were ever made to DOE "staff," and submits that the conclusion by PRC is unfounded and may be slandering.

(5) Page 9, Section 3.2, Second Paragraph.

"US Ecology acknowledges receipt of scintillation fluids," but never "the likelihood that hazardous or mixed waste were disposed of in trenches prior to November 1985" subject to RCRA jurisdiction. As discussed in (1) above, the Part A was filed solely as a protective filing; the Part B was filed solely because the Agency required US Ecology to do so.

The PRC Report ignores the company's emphatic denials of the applicability of RCRA to the low-level radioactive waste and mischaracterizes the content of the various documents. See, for example, US Ecology's ten-page discussion of scintillation vials, Attachment B to the October 29, 1985 letter to EPA.

(6) Page 9, Section 3.3.

PRC's "Regulatory History" is incomplete and inaccurate. The history is incomplete in that it fails to include the fact that both agencies failed to review and to respond to the company's Part A and B applications in spite of follow-up requests by the company to do so. This section is inaccurate in several respects. First, as discussed in (1) above, the letter accompanying the Part A did not "express uncertainty" regarding the applicability of RCRA; the company denied its application and reserved its rights in spite of its having to file. Secondly, US Ecology never sought interim status or permitted status under the RCRA regime. US Ecology does not consider that it "lost interim status" it never sought. It "is not permitted to receive RCRA-regulated waste" because it has never sought, except under compulsion, such permitted status. Finally, PRC notably fails to recognize the failure of the agencies to in any way respond to the documents filed by US Ecology.

(7) Page 11, Section 4.1, Third Paragraph.

As discussed in (4) above, the PRC Report reflects uncertainty ("may") regarding the disposal of uncontainerized waste. In the final sentence, the Report expresses its own uncertainty ("may be RCRA hazardous waste") regarding the applicability of RCRA to the site's waste.

(8) Page 11, Section 4.1, Final Paragraph.

The PRC Report states that "(t)he chemical trench is unlined and not covered with an impervious cap." The PRC Report fails to include the fact that the chemical trench is included in the Site Stabilization and Closure Plan submitted to the Washington State Department of Health, Office of Radiation Protection, on October 29, 1990 pursuant to US Ecology's license with that agency. As discussed, the Closure Plan includes a multi-layered cap, with both a synthetic and low permeability cover, for the chemical trench as part of the overall facility closure.

The PRC Report states that "(t)here are no documented releases for this unit." This statement fails to specifically recognize that the groundwater and other monitoring conducted by US Ecology pursuant to its licenses with the NRC and State Department of Health affirmatively demonstrates that there have been no releases from the chemical trench. With respect

to SWMU 1, the chemical trench, the agencies have failed to show that there have been releases of substances requiring remediation.

(9) Page 12, Section 4.2, First Paragraph.

The PRC Report correctly notes that the US Ecology Part B Application "states that Trenches 1 through 11A all contain minor amounts of randomly-placed low-level radioactive waste that may be defined as RCRA hazardous." (Section 4.1, second and third paragraphs.) That the chemicals "may be defined as RCRA hazardous," repeated several times in the Closure Plan portion of the Part B, must be read in context. As discussed, the cover letter and the document as a whole repeatedly deny the applicability of RCRA. Because the agency required US Ecology to submit the Part B, the document, when referring to the waste in question, accurately reflects that whether the waste are indeed RCRA waste is a question still to be determined; the use of the "may" reflects this fact.

(10) Page 12, Section 4.2, Last Paragraph.

The PRC Report notes that the low-level radioactive waste "trenches are unlined and are not covered with an impervious cap" and "(t)here are no documented releases from these units." Again, the PRC Report fails to include a discussion of the details of the multi-layered cap in the Closure Plan

submitted to the State Department of Health. Again, the PRC Report fails to show that the monitoring pursuant to the licenses at the facility demonstrates that there have been no releases of substances from the trenches, rather than create the inference that there is simply no documentation regarding releases.

(11) Page 13, Section 4.3.

The PRC Report fails to include a discussion of the fact that the underground tanks were closed in accordance with a plan submitted to and approved by the State of Washington.

(12) Page 14, Section 4.4, Last Paragraph.

Contrary to the PRC statement, the oil tank is stored on a bermed cement pad.

(13) Page 14, Section 5.0, First Paragraph.

The PRC Report concludes: "Potential exposure pathways for humans include inhalation and ingestion of contaminated soil particles, dermal exposure to contaminated soils, and inhalation of volatile organic compounds." With respect to the chemical trench and the scintillation vial waste, this conclusion is professionally irresponsible. The chemical trench was closed in 1972; the facility ceased receiving scintillation vials in 1985. As required by the low-level

radioactive waste regulations, all waste was immediately buried to prevent worker exposure, and all waste have since been covered with a layer of cobbles or site soils. It is impossible to conclude that "inhalation is primary pathway of concern."

The State of Washington's own Assessment of Risk Associated with Operation of the Hanford Commercial Low-Level Radioactive Waste Disposal Facility, prepared by ICF Incorporated June 30, 1987, does not support the PRC conclusion. Assessing all five pathways of potential risk, that report concluded that there is a moderately likely-to-occur risk from airborne contaminants if, and only if, "some future waste shipment to the LLW disposal site would contain enough flammable or explosive material that an accident during handling could cause an explosion of fire that could disperse the shipment." (Section 3.2.1). The likelihood of this occurring "is strongly affected by the extent to which the regulatory agencies inspect and enforce the rules," and is lessened by the inspections performed by US Ecology personnel, as well as by the on-site State inspector, on incoming shipments. This scenario simply does not apply to the now long-since deeply buried scintillation vials and chemical waste.

(15) Page 15, Section 6.0, First Paragraph.

The PRC Report concludes: "The Hanford site is seeking a RCRA permit to handle hazardous waste, and the US Ecology facility, as part of the site, is therefore subject to corrective action." This statement is wholly conclusory, wrong, and does not comport with federal or state law.

(16) Page 15, Section 6.0, Second Paragraph.

As discussed above, the PRC's conclusion that "(i)t is likely that there have been environmental releases from SWMU 1 (chemical trench)" is speculative. All monitoring at the site, including ground monitoring in five wells, demonstrates that releases have not occurred. US Ecology has received contradictory information from Joe Witzcak of WDOE regarding his allegations set forth in the PRC report. Finally, the PRC Report fails to address the results of the vadose zone monitoring program being conducted.

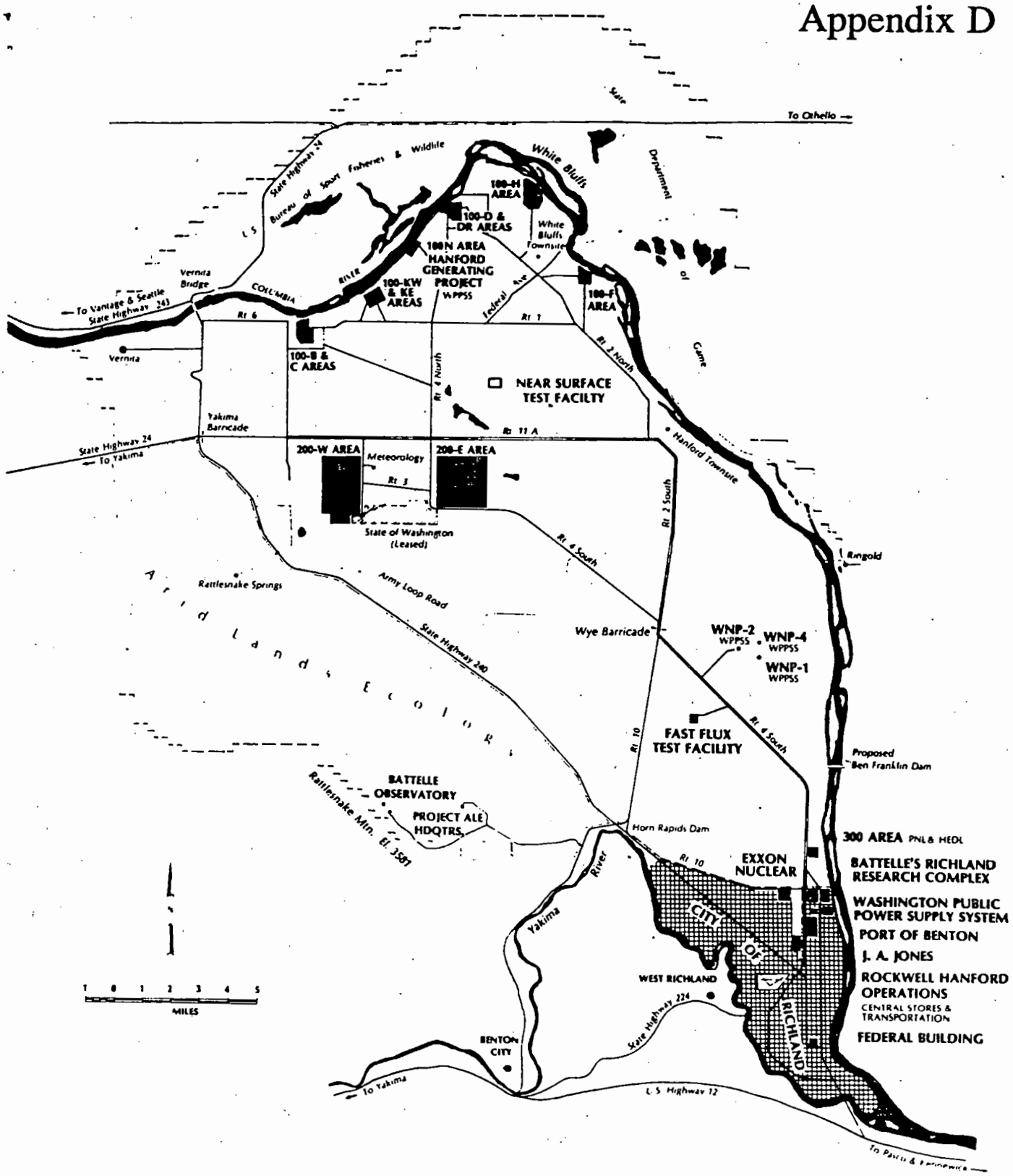
(17) Page 16, Section 6.0, First Paragraph.

The PRC's unsubstantiated conclusion that "(e)nvironmental releases have potentially occurred from SWMU 2" is meaningless.

(18) Table 1.

In light of the above discussion, words used by PRC throughout this table, "could result" or "possible releases," reveal further the speculative and unsubstantiated nature of the PRC report generally.

Appendix D



HANFORD SITE

Department of Energy

APPENDIX E

I. Perpetual Maintenance Fund Regarding the US Ecology Facility Site

The 1965 Session Laws for Washington State amended RCW 43.31 to give the director of Department of Commerce and Economic Development, through the Office of Nuclear Energy Development, certain powers and duties relating to nuclear energy. The director became responsible for the perpetual surveillance and/or maintenance of radioactive materials held for waste management purposes at any publicly or privately owned facility located within the state. This function is currently being implemented by the Washington Department of Ecology.

In order to finance this responsibility, the director was given the power to collect fees from public or private parties holding radioactive materials for waste management purposes. He could collect a total of not less than five cents, nor more than fifty cents, per cubic foot of space occupied by materials held, stored or buried. All fees were transmitted to the State treasurer who placed the money in an account labeled "perpetual maintenance fund." This fund was to be used exclusively for surveillance and maintenance costs at waste management facilities.

The director was also given the authority to enter into agreements with the federal government to assume perpetual surveillance and/or maintenance of lands leased or purchased from the federal government and used as a burial or storage site for radioactive wastes.[1] In July of 1965, the State, pursuant to this authority, and the Commission entered into a perpetual care agreement, where the State assumed perpetual care of the present US Ecology facility site ("Site").[2]

The State agreed to deposit annually during the term of the sublease with California Nuclear, or any successor sublessee, $2,000 or 5 cents for each cubic foot of radioactive waste stored or buried, whichever is greater. The deposits were placed with the State Treasurer, who placed the money in the Perpetual Maintenance Fund described above. The fund was earmarked exclusively for defraying the costs of insuring perpetual maintenance and surveillance of the Site. If at any time the Commission or the State decided that the fund is not sufficient, or that a surplus of funds exist, the Commission or the State may request an increase or decrease

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[1]With regard to the present US Ecology facility, in the 1964 lease between the Energy Commission and the State of Washington the State agreed to return the leased premises to the government with radioactive contamination reduced to a level satisfactory to the Commission, except land or facilities over which the State agrees to assume perpetual care under agreement with the Commission.

[2]See Perpetual Care Agreement, dated July 29, 1965.

respectively, in the State's annual deposit. A review of the adequacy of the fund is required to be made at the expiration of the lease between the State and the Commission. The Commission and the State must mutually approve any disbursement from the fund.

Upon expiration or termination of the lease between the Commission and the State, the Perpetual Maintenance Fund will be transferred to the Government for deposit in a trust fund of the United States Treasury to be used exclusively for surveillance and maintenance of the Site. The Commission, in lieu of requiring the transfer, may elect to sell the State the land. If the land is sold to the State, the perpetual maintenance agreement will be terminated.[3]

In the 1965 sublease between the State and California Nuclear Inc., California Nuclear agreed to undertake all surveillance and maintenance as required by applicable laws.[4] If at any time California Nuclear defaults or fails to comply with the terms of its licenses, or withdraws from the premises, the State must assume surveillance and maintenance obligations and pay surveillance and maintenance costs.

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[3]Presumably, the RCW would still require the maintenance of the fund.

[4]See lease between California Nuclear, Inc. and the State of Washington.

California Nuclear agreed to pay to the State $2,000 annually during the sublease and five cents for each cubic foot of radioactive waste in excess of forty thousand feet of waste stored or buried annually. The State had the option of raising this amount to fifty cents as necessary. In order to assure that these funds would be readily available and unencumbered, California Nuclear, prior to commencement of burial or storage operations, deposited twenty thousand dollars in escrow as collateral for the annual minimum payments.

In the February 26, 1976 sublease between the State and Nuclear Engineering Company, the company again agreed to undertake all surveillance and maintenance as required by law, regulation or licenses.[5] With the sole exception of the amounts required, the provisions were unchanged from the 1965 sublease. Nuclear Engineering agreed to pay eight cents for each cubic foot of radioactive materials and wastes buried or stored. The Company also agreed to deposit an amount equal to that due for fifty thousand cubic feet of material every January first, to be used as a credit against their obligations.[6] The 1980 amendments to the sublease between the

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[5]See lease between the State of Washington and California Nuclear.

[6]Subsequently the Commission and the State amended the Perpetual Care Agreement on July 22, 1976. The State must deposit annually a sum of money

State and Nuclear Engineering Company raised the amount payable to twenty five cents per cubic foot, with a deposit for 100,000 cubic feet of material due each January 1.[7]

The 1982 sublease amendment further raised the rates to one dollar and seventy five cents for each cubic foot of materials or waste buried or stored.[8] When the amount collected reached six million dollars or the Northwest Interstate Compact of Low-Level Radioactive Waste Management was formally ratified by Congress, the State was required adjusted the rate to reflect the prevailing rate at other sites across the nation.[9] Within two months of the fee adjustment, the State and US Ecology were required to conduct a joint technical study to reevaluate the then existing site conditions as they related to the adequacy of the perpetual care and maintenance account. The account, as of January 1992, contained $18.6 million. No money has been withdrawn from this account.

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equal to the net amount received by the State from the subleases during the year.

[7]See Sublease Amendments dated 1980.

[8]See Sublease Amendments dated 1982.

[9]This Amount was reached in 1984.

II. Site Closure Account

The 1982 sublease amendments also provided for a closure fee to be deposited in a segregated account in the Perpetual Maintenance Fund. These fees are to be used for paying all reasonable costs of closure after the termination of waste disposal activities as required under the facility license and Article X of the sublease. The Company agreed to pay, on a quarterly basis, twenty five cents per cubic foot of radioactive materials and waste permanently stored or buried at the low-level radioactive waste facility. The payments were to continue until the effective date of the exclusionary provisions of the Northwest Interstate Compact on Low-Level Radioactive Waste Management is formally ratified by Congress or the balance of the account reaches one million dollars. At this point the parties will conduct a joint technical study to determine whether additional closure fees are required. Although technical meetings have been held between US Ecology and the State, this study has not been completed.

In the event that the Company performs closure activities at the facility after the termination of waste disposal activities, the State warranted that the Company will be reimbursed, plus a reasonable profit, from the monies collected for closure. The State, after satisfactory performance of closure by the Company or any other entity,

must transfer any unexpended monies from the closure account to the perpetual maintenance account. By January 30, 1982, the company posted a surety bond of five hundred thousand dollars, effective for a period of one year, payable to the State should the company leave the site without accomplishing the closure conditions of the license. On January 30, 1983 the company posted a surety bond for one year in an amount which represented the difference between five hundred thousand dollars and the present balance of the closure account.

In 1989 a new RCW section was added to ensure site closure under the amendments to the sublease. The provision provides for two accounts under the perpetual maintenance fund, the site closure account and the perpetual maintenance account. The site closure account is exclusively available to reimburse the site operator for its closure costs plus a reasonable profit. If a balance remains after closure, it will be transferred to the perpetual maintenance account.

State of Washington Substitute House Bill 2956, which was signed into law on March 13, 1990, allowed the Department of Ecology to transmit a $10.00 per cubic foot surcharge into the closure fund. The balance in this account as of September 30, 1990 was $4,646,837.19. Due to the surcharge, this number increased to approximately $10.4 million by January 1992. No money has been withdrawn from this account.

VOLUME 1 OF 3

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HANFORD SITE COMMENTS ON THE DRAFT PERMIT FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE FOR THE HANFORD FACILITY

SUBMITTED
MARCH 16,1992

COMMENTS ON PART IV - CORRECTIVE ACTIONS FOR PAST PRACTICE

Condition: IV. CORRECTIVE ACTIONS FOR PAST PRACTICE
Page, lines: Page 83 through 102
General comment: Part IV of the Draft Permit contains such an extensive number of problems that Part IV should be rewritten in its entirety. The commenters would be willing to work with the Department and the Agency to develop an appropriate corrective action section for the Permit. Regardless of how the agencies address the commenters' principal or alternative comments, the commenters do not waive their objection to the inclusion of the full condition or any overly broad portion thereof in the Permit.

Justification: The proposed corrective action conditions of this Draft Permit contain so many deficiencies that it is essentially impossible to provide all the necessary comments that would be required to correct its' deficiencies.

A major deficiency posed by Part IV of the Draft Permit is its lack of consistency with the FFACO. The Draft Permit conditions in Part IV are not consistent with the FFACO process, which itself is a federal facilities agreement and a consent order, binding upon the DOE-RL, the Agency, and the Department. The FFACO defines the process to be followed for corrective action activities on the Hanford Site. The FFACO provides for an integrated program of conducting corrective action pursuant to RCRA and remedial actions pursuant to CERCLA, under the processes set forth in the FFACO. However, the Draft Permit corrective action provisions improperly establish an essentially separate and substantially different permit-based program. The FFACO, at Paragraph 16, provides that the activities covered by Part Three of the FFACO will satisfy the corrective action requirements of Section 3004(u) and (v) of RCRA for a RCRA permit and Section 3008(h) for interim status releases. The FFACO further states at Paragraph 19 that *EPA and Ecology agree that when permits are issued to DOE for hazardous waste management activities pursuant to Part Two of this Agreement, requirements relating to remedial action for hazardous waste management units under Part Three of this Agreement shall be the RCRA corrective action requirements for those units, whether that permit is administered by EPA or Ecology.*

In accordance with this paragraph of the FFACO, the corrective action section of the Permit should merely reference the FFACO and indicate that conduct of activities under Part Three of the FFACO satisfies the corrective action requirements of the Permit. Only the final corrective action decisions need to be incorporated into the Permit as these decision are made. All other matters, including schedules, will be addressed by the provisions of the FFACO. This would be consistent with the Agency's guidance for corrective action at federal facilities covered by an interagency agreement, as discussed in the July 27, 1990 proposed regulations for Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities (55 FR 30798-30884). This also would be consistent with other permits issued to federal facilities by the Region 10 Office of the Agency, such as the Fort Wainwright Permit (AK62100022426) (Comment Attachment D).

In contrast to this, the Draft Permit proposes that corrective action requirements be imposed upon the DOE-RL for activities not covered by the

FFACO. The Draft Permit proposes to require the DOE-RL to be responsible for corrective action at facilities that are not under the DOE-RL's direct control, such as the BPA-owned or used lands, and the US Ecology site located on land subleased to US Ecology by the state of Washington. For any of these non-DOE-RL managed sites, SWMUs are not identified in the Draft Permit.

Should the Agency or the Department believe some form of investigation or remediation is necessary for these non-DOE-RL managed sites, the appropriate course of action would be for the Agency or the Department to issue an Order requiring such action to the BPA* or US Ecology under the other authorities available to the agencies.

In addition, the Draft Permit appears to strive to create additional responsibility on the part of the DOE-RL even where longstanding policy to the contrary has been established by the Agency. For example, the Draft Permit ignores the Agency's policy on treating major subunits of a cabinet department as independent landowners. Under this policy, the BPA is an independent party from the DOE-RL. The condition seeks to impose upon the DOE-RL the obligation for corrective action at the BPA Midway Substation and Community, a property owned by BPA even before the existence of the DOE-RL.

The DOE-RL is involved in an extensive environmental restoration project with regard to its activities at the Hanford Facility. The DOE-RL should not be burdened with the additional responsibilities of managing or performing work to clean up wastes of other parties. This action should be the responsibility of the BPA or US Ecology or the state of Washington. The Draft Permit provisions would only serve to force the DOE-RL to reassign money and manpower from environmental restoration activities to carry out permit-mandated activities relating to other parties. Inclusion of corrective action requirements in this Permit for those non-DOE-RL managed sites should be deferred until such other actions have been exhausted.

The FFACO also states (Paragraph 47) that *all work described above [remedial or corrective actions] ... shall be governed by this FFACO Part Three.* However, the Draft Permit contains detailed provisions in Part IV that propose to separate out and accelerate work on units covered by the FFACO, describes new criteria that will control how past practice work will be carried out, and imposes permit conditions and processes on corrective action work that should be governed by the FFACO.

These Draft Permit conditions are inconsistent with the carefully negotiated requirements of the FFACO, which is an agreement that is legally binding on the Department, would result in ad hoc (and unilateral) reprioritization of restoration work at the Hanford Site by the Department, and inefficient expenditures of human and monetary resources.

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*The BPA already has initiated a voluntary remediation activity at the Midway Substation and Community. The BPA has a strong policy of acting responsibly to protect and enhance the environment. There is no necessity to "force-fit" BPA owned land into the correction action section of the DOE-RL's final status Permit.

The Draft Permit indicates that most corrective action provisions are issued by and based on both state and federal authority and, in several cases, on state-only authority; when in fact, the HSWA Amendments to RCRA and the FFACO require that the EPA issue and administer the corrective action portion of a final status permit unless and until the state program is authorized to act in lieu of the federal program [refer to 42 U.S.C. 6926(g)]. The state of Washington has not been so authorized. The state lacks authority independent of RCRA and the FFACO to impose corrective action on the Hanford Site. In addition, a state-only corrective action requirement would be considered a state removal or remedial action, which under 42 U.S.C. §9620(a)(4) is inapplicable to federal sites listed on the National Priorities List. Furthermore, it is the policy of the Department elsewhere in the state for the corrective action portion of the permit to be issued by the Administrator [refer to Chemical Processors, Inc., No. WAD000812909 (Comment Attachment F)].

The Fact Sheet indicates that many of the Part IV conditions are standard conditions when in fact very few, if any, of the Draft Permit conditions are found in permits issued by the Department. An extremely detailed set of corrective action conditions are included that have not been found in any other permits reviewed by the commenters. These conditions are clearly inconsistent with the FFACO and are contrary to applicable law. The Hanford Site has been listed on the National Priorities List (54 FR 41015), October 4, 1989, pursuant to the CERCLA. Permit conditions that are inconsistent with the conduct of activities being carried out pursuant to the FFACO are inappropriate and are precluded by applicable law [refer to 42 USC 9620d(4)].

Even if it were determined that corrective action was appropriate under the Permit for some units not covered by the FFACO, the extensive corrective action provisions contained in Part IV are not appropriate and should be developed with input from all potentially affected parties.

In addition, throughout Part IV of the Draft Permit, arbitrarily set schedules are established that are likely to be unobtainable, not only because of the lack of any apparent consideration of the amount of work being requested and the lack of information about the non-DOE-RL managed sites, but also because of the lack of consideration of the internal DOE-RL review cycles and the effect such priorities would have on work already scheduled. The DOE-RL has no information as to the degree of effort that might be necessary to carry out activities at the non-DOE-RL managed sites, which have been included in Part IV of the Draft Permit. It is arbitrary on the part of the Agency or Department to impose upon the DOE-RL the detailed form of corrective action requirements that are contained in Part IV for non-DOE-RL managed areas. These requirements would force the parties to become involved in a series of permit modifications to revise these conditions to reflect the real capability of the DOE-RL, and to structure the requirements to be consistent with corrective action regulations being developed by the Agency.

In addition, the DOE-RL contractors (WHC and PNL) should not be identified as responsible for corrective action responsibilities on the Hanford Site.

Part IV of the Draft Permit totally fails to distinguish between DOE-RL and its contractors as permittees. The Draft Permit might be read to hold WHC and PNL responsible for corrective action on the Hanford Site. The Hanford

contractors have no responsibility for corrective action for either areas covered by the FFACO or non-DOE-RL managed areas of the Hanford Site.

The entire Draft Permit, and Part IV in particular, mischaracterizes the nature of contractor responsibilities under the law because it inaccurately portrays the DOE-RL, WHC, and PNL as equal permittees with no distinction of responsibilities. (Even when read together with Draft Permit condition I.A.2, Page 13, lines 26-29, the Draft Permit only recognizes a distinction of contractor responsibility by geographical areas.) This approach ignores the functional differences among DOE-RL and its contractors. The DOE-RL is responsible for overall management and operation of the Hanford Facility, including policy, programmatic funding, scheduling decisions, and general oversight. The contractors, limited by the terms of their contracts, are responsible for certain day-to-day activities such as waste analysis, waste handling, monitoring, container labeling, personnel training, and recordkeeping.

In 40 CFR 260.10 "operator" is defined as the person responsible for the overall operation of a facility. This definition is applicable to corrective action under 40 CFR 264.101. Neither WHC nor PNL are responsible for the overall operation of either the Hanford Facility or any individual TSD unit within the Hanford Facility. The DOE-RL, the Department, and the Agency previously agreed in the FFACO that the DOE-RL owns and operates the Hanford Facility. The contractors have more limited and specific roles under their contracts with the DOE-RL and should not be identified as responsible for corrective action on the Hanford Facility.

In the Fact Sheet, in comments pertaining to Draft Permit condition I.A.2, the Department has recognized that the contractors responsibility should be limited on both a functional and geographic basis to the "day-to-day operations at certain units." The Department also incorrectly designated the contractor responsibilities by geographical areas. Refer to comments to Draft Permit Page 7, lines 23-24 and 26-27, Attachments 3 and 4. In many cases, a unit for which a contractor might have responsibilities is located in areas of the Hanford Facility for which the contractor has no other responsibilities.

The Fact Sheet is totally devoid of any justification or even discussion of the responsibility of WHC and PNL, as purported permittees, for corrective action on the Hanford Site.

At Page 34 of the Fact Sheet, in discussions pertaining to the BPA and US Ecology lands, the Agency and the Department state that *the landowner (USDOE), as the permittee, is being required to perform corrective action...*". This might be read as limiting this requirement to one permittee, DOE-RL. However, even this limiting language was not carried into the Draft Permit.

Issuing the Permit to the "U.S. Department of Energy-Hanford Facility" will avoid mischaracterizing the nature of responsibilities under the law. A similar action was taken by the state of Texas and EPA in issuing a RCRA final status permit to the "U.S. Department of Energy-Pantex Plant" (Comment Attachment C). Also refer to comments to Draft Permit condition on Page 1, lines 28-37 (Title Page) and Draft Permit condition I.A.2 on Page 13,

lines 26-29. Also refer to the Agency permitting approach for Fort Wainwright Alaska Permit No. AK6210022426 (Comment Attachment D).

Additional details on all of these points, as well as other concerns, are contained in the individual comments on Part IV conditions. While the comments attempt to shed light on the deficiencies of this section, the commenters remain firmly convinced that Part IV should be withdrawn in its entirety. The specific comments should not be construed as a waiver of that position or an acceptance of this Part IV or any condition therein.

Condition: IV.A. EFFECT OF PART IV, RCRA PAST PRACTICE ACTIONS
Page, lines: Page 83, lines 5 and 8
Comment/Action: (1) Change title of Part IV to **"CORRECTIVE ACTION"**
(2) Change title of IV.A to "EFFECT OF PART IV, RCRA CORRECTIVE ACTIONS"

Justification: The term "Past Practice" originated with the FFACO and covers all waste units within the DOE-RL managed elements of the Hanford Site. The term includes those areas that do not qualify as SWMUs. The term "Corrective Action" is more appropriate for this section of the Permit. Using the terms inconsistently will result in confusion both with the public and in future actions and will result in the inefficient usage of resources.

Condition: IV.A.1. Integration with the FFACO
Page, lines: Page 83, line 10
Comment/Action: Add the following paragraph:

> All SWMUs that are under the management of the DOE-RL will be addressed within the FFACO. The DOE-RL managed SWMUs requiring investigation will be assigned to an operable unit and will be subject to investigation and remediation through either RCRA or CERCLA past practice processes within the FFACO.

Justification: This language will ensure consistency with the FFACO. All identified SWMUs under DOE-RL management at the time of the FFACO, along with other waste units, including one time releases, were assigned to operable units for investigation and corrective or remedial action, if necessary, as part of the FFACO. A process was established as part of the FFACO to add new units, when identified, to the appropriate operable unit or even to create a new operable unit if necessary. The intent was to ensure a specific management area was addressed as a whole instead of by individual unit. By including all units within the FFACO, one planning and prioritization system is used to ensure the highest priority work is accomplished first. Furthermore, the FFACO integrated process will achieve greater efficiency and cost effectiveness than could occur under a nonintegrated program. Following approval of the FFACO, many new SWMUs have been identified and assigned to operable units. It is anticipated that this will continue as further scoping investigations are conducted throughout the Hanford Site. Part IV of this Permit must be consistent with the FFACO.

Condition: IV.A.1.a
Page, lines: Page 83, lines 12-17
Comment/Action: Reword to Read:

> All RCRA Past Practice (RPP) activities performed pursuant to the FFACO will not be subject to this Permit, with the exception of documenting the selected corrective or interim measure via a permit modification in accordance with permit condition IV.O. All schedules of compliance shall be maintained as part of the FFACO. Extensions of the due dates for all actions required by the schedules of compliance, including submittals, shall be covered by the change control process in the FFACO. Reporting and information also will be governed by the FFACO.

Justification: This change is required to ensure consistency with the FFACO. In the development of the FFACO, it was the intent of all parties that all schedules of compliance for both CERCLA and RCRA past practice units that are covered by the FFACO would be developed and maintained as part of the FFACO. The requirements, documentation, processes, reporting, and ground rules for carrying out RFI/CMSs, Corrective Measures, and Interim Measures are defined in the FFACO under Article XIII and Section 7.0 of the FFACO Action Plan. A permit modification would be issued following the RFI/CMS (or equivalent for an interim measure) to document the remediation decision within the RCRA permit, but the follow-on actions would continue to be carried out as part of the FFACO. This would result in a single integrated cleanup plan for the DOE-RL managed portion of the Hanford Site.

The change also is required to make the Permit consistent with the requirements of the CERCLA (42 USC 9601-9675, as amended). The Hanford Site has been listed on the National Priorities List pursuant to CERCLA. (Refer to National Priorities List in 54 FR 41015, October 4, 1989). Pursuant to CERCLA, the program for remedial actions being taken pursuant to that statute precludes application of the Permit to those actions within the scope of the FFACO. [Refer to U.S. v. Colorado, USDC Colorado, 33 ERC 1585 (August 14, 1991)].

In the supplementary information contained with the July 27, 1990 proposed rule on corrective action (57 FR 30798-30884), the Agency stated under VII.F (Federal Facilities): *Many Federal facilities at which hazardous wastes are managed will be subject to both CERCLA remedial action and RCRA corrective action authorities. In many such cases, EPA intends to coordinate the application of RCRA and CERCLA authorities through the use of interagency agreements (IAGs), as provided under the authority of 120(e) of CERCLA. The IAG will provide the vehicle for explicitly defining the procedural and technical requirements for corrective action, in satisfaction of the statutory and regulatory authorities of both RCRA and CERCLA.*

The schedules for all scheduled RCRA corrective or interim actions subject to the FFACO must continue to be governed by the FFACO, even though the schedules might be incorporated into this Permit. This will maintain consistency and proper integration between RCRA and CERCLA activities.

Condition: IV.A.1.b
Page, lines: Page 83, lines 19-21
Comment/Action: Delete "section of the" on line 21.

Justification: This change will ensure consistency with the FFACO. By indicating that this section of the Permit does not specifically apply to the CERCLA past practice units, the Permit language might be interpreted to mean that the other sections of the Permit do apply. None of the provisions of this Permit apply to the CERCLA past practice units activities covered in the FFACO. Any other interpretation would be beyond the authority of the Permit and inconsistent with the FFACO. It also would be contrary to the requirements of CERCLA. The Hanford Site has been listed on the National Priorities List.

Condition: IV.A.2. Requirements for SWMUs
Page, lines: Page 83, lines 23-26
Comment/Action:
(1) Retitle IV.A.2 to read:

Requirements for non-Permittee managed SWMUs

(2) Delete Midway Substation and Community, North Slope, 351 Substation, Central Waste Landfill, and Hanford Site Waste Units from Table IV.1.

(3) Revise sentence to read:

Permit conditions IV.B through IV.P apply only to those SWMUs listed on Table IV.1, with the exception of that process specified in permit condition IV.A.1.a for incorporation of selected remedies.

(4) Reference to US Ecology or other BPA lands as SWMUs is inappropriate. The individual SWMUs located within the State leased lands or the other BPA lands not owned by the BPA must be identified and listed individually.

Justification: The effect of revised Draft Permit condition IV.A.1 as proposed in this comment submittal is that all SWMUs located on the DOE-RL managed portion of the Hanford Site will be addressed by the FFACO. Therefore, Draft Permit condition IV.A.2 should only address SWMUs that are not located on the DOE-RL managed portion of the Hanford Site. Deletion of the noted facilities from Table IV.1 is further based on the comments provided for Draft Permit conditions IV.P.1, IV.P.3, IV.P.5, IV.P.6, and IV.P.7.

The Fact Sheet recognizes that some of the units listed in Table IV.1 are contained in the FFACO, but states the units can be better addressed directly as part of the Permit. The Agency, the Department, and the DOE-RL agreed in 1989 through the FFACO that these units should be addressed as part of the FFACO to ensure all cleanup activities at the Hanford Site are properly integrated and prioritized. Provisions were included in the FFACO to allow for identification and conduct of interim actions, if deemed necessary. The arguments given in the Fact Sheet are not valid, in that all the appropriate action identified in the Draft Permit relative to the DOE-RL managed SWMUs could be carried out under the FFACO. Neither the Department nor the Agency

have requested, in accordance with the FFACO, acceleration of the activities that have been included under this Draft Permit (e.g., accelerated action at the North Slope 2-4,D burial site). For these DOE-RL managed areas, Draft Permit conditions IV.B through IV.N, and IV.P are covered by the FFACO. This includes the contiguous operating area consisting of the 100 Areas, 200 Areas, 300 Area, 400 Area, 1100 Area and 600 Area; as well as the 700 Area; and the North Slope area. Not covered by the FFACO are the SWMUs located within State leased lands, and any SWMUs that might be located within the other BPA lands not owned by BPA. (However, if the BPA is not treated by the Department and the Agency as an independent subunit of the DOE, those units also would have to be considered within the scope of the FFACO and would be excluded from separate treatment under this Permit.) Also not covered by the FFACO is the Washington Public Power Supply System leased area, which will be addressed in a separate RCRA permit. The following identifies how the FFACO covers these conditions for the DOE-RL managed areas.

Standard Conditions--Standard conditions are found throughout the FFACO. Section 5.2.2 of the FFACO Action Plan addresses RCRA Sections 3004(u), 3004(v), and 3008(h). Paragraph 106 of the FFACO addresses off-site access. Enforceability for failure to comply is addressed in Article XX of the FFACO.

Reporting Requirements--Article XXXII of the FFACO addresses reporting requirements, which are further detailed in Section 8.0 of the FFACO Action Plan. The FFACO also provides for access to data, submittal of documentation upon request, and maintenance of Administrative Records.

Interim Measures--Interim measures are addressed in Paragraph 39 of the FFACO and Section 7.2.4 of the FFACO Action Plan.

Interim Measures Recordkeeping and Reporting Requirements-- Reporting is addressed under Article XXXII of the FFACO and Section 8.0 of the FFACO Action Plan. Section 9.0 of the FFACO Action Plan provides for the development and maintenance of a complete Administrative Record for each interim measure, in addition to corrective measures, satisfying the requirements as for a CERCLA Administrative Record for response actions.

Notification Requirements for and Assessment of Newly Identified Solid Waste Management Unit--Section 3.0 of the FFACO Action Plan under Paragraph 3.5 identifies the Waste Information Data System (WIDS) as the primary vehicle for listing all waste units within the DOE-RL managed portion of the Hanford Site. The DOE-RL has developed a system using the WIDS database for notification of newly identified SWMUs. These SWMUs would be added to the applicable operable units through a change to the FFACO, using the FFACO change control process. An initial assessment of the newly identified SWMU is conducted as part of the identification process. Further assessment, if necessary, would be conducted in accordance with the schedule established for the operable unit. If a newly identified SWMU of significant concern is added to a low priority operable unit, then the operable unit might be reprioritized and addressed sooner or the SWMU could be addressed separately under the FFACO.

RCRA Facility Investigation (RFI) Work Plan; RCRA Facility Investigation Final Report and Summary Report: Remedies not Requiring Corrective Measure Studies (CMS); Corrective Measure Study Plan; Corrective Measure Study Final Report; Remedy Selection/Corrective Measure Implementation--These Draft Permit conditions are addressed within Subsection 7.4 of the FFACO Action Plan, which is titled "RCRA Past-Practice Unit Process". The specific documentation associated with the process is identified in Section 9.0 of the FFACO Action Plan.

Investigative Derived Waste--Refer to specific comments on this Draft Permit condition IV.I.

Permit Modification for Remedy--As agreed to in the FFACO, a permit modification will be issued to the final status Permit to document the approved proposed remedy. The schedule of compliance for carrying out the remedy will be maintained within the FFACO in accordance with Section 11.0 (Work Schedule and Other Work Plans) of the FFACO Action Plan, and modified in accordance with Section 12.0 (Changes to Action Plan/Supporting Schedules) of the FFACO Action Plan.

Facility Solid Waste Management Units-Corrective Action Schedule of Compliance-- Article XVI (Schedule) of the FFACO and Sections 2.0 (Major Milestones) and 12.0 (Change to Action Plan/Supporting Schedules) of the Action Plan provide the processes for maintaining schedules of compliance for all activities governed by the FFACO. Appendix D of the FFACO Action Plan lists all enforceable milestones and provides the Work Schedule.

Provisions exist to modify the FFACO, if necessary, to better address these areas. In addition, supporting requirements to the FFACO can be agreed to by the parties, and incorporated into the FFACO via inclusion in Appendix F, *Supporting Technical Plans and Procedures.*

Condition:

IV.B. STANDARD CONDITIONS
IV.C. REPORTING REQUIREMENTS
IV.D. INTERIM MEASURES
IV.E. INTERIM MEASURES RECORDKEEPING AND REPORTING REQUIREMENTS
IV.F. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED SOLID WASTE MANAGEMENT UNIT
IV.G. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED RELEASES AT SWMUs
IV.H. RCRA FACILITY INVESTIGATION (RFI) WORK PLAN
IV.I. INVESTIGATIVE DERIVED WASTE
IV.J. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT
IV.K. REMEDIES NOT REQUIRING CORRECTIVE MEASURE STUDY (CMS)
IV.L. CORRECTIVE MEASURES STUDY PLAN
IV.M. CORRECTIVE MEASURES STUDY FINAL REPORT
IV.N. REMEDY SELECTION/CORRECTIVE MEASURES IMPLEMENTATION

IV.O. PERMIT MODIFICATION FOR REMEDY
IV.P. FACILITY SOLID WASTE MANAGEMENT UNITS - CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

Page, lines: Pages 83 through 102, generally

Comment/Action: Conditions IV.B through IV.P. Note: These are general comments addressing Draft Permit conditions IV.B through IV.P and apply to all of those Draft Permit conditions. Specific additional comments that apply only to an individual Draft Permit condition are addressed separately in later comments.

(1) With exception of certain elements under Draft Permit condition IV.O for selection of remedy, the Draft Permit conditions contained within sections IV.B through IV.P only apply to those SWMUs identified on Table IV.1. Therefore, if the Hanford Site contractors remain identified in some capacity as part of this Permit, then the term "Permittees" for Part IV purposes should be changed or clarified to mean only the "DOE-RL or such other party who may be leasing or otherwise utilizing the land subject to the corrective action requirements".

(2) Delete all references to provisions of the Washington Administrative Codes (WAC) and "the Director".

(3) Change the permit condition enforcement authority on Page 6 of the Draft Permit to indicate that all Part IV conditions are enforceable by the Agency only.

(4) Delete all conditions that are identified in the Draft Permit condition authority table (Page 6) as State-only requirements, which includes IV.I.2 through IV.I.8, and IV.P.3c,e.

(5) Delete, wherever it appears, the statement that a rejection of a second submission might be deemed noncompliant with the Permit. The language appears on at least the following pages: Page 86, lines 10-12 and 28-30; Page 88, lines 19-21; Page 90, lines 34-36; Page 92, lines 45-47; Page 93, lines 37-38; Page 95, lines 5-6 and 31-33; Page 98, lines 23-25; and Page 100, lines 17-19.

(6) Include provisions within Section IV for "technical impracticability", "temporary units", "corrective action management units", and "action levels".

Justification: The Hanford contractors have no responsibility for corrective action for either areas covered by the FFACO or non-DOE-RL managed areas of the Hanford Site. While the contractors should not be identified as permittees in any capacity, if the contractors are included in any manner, the language of Part IV must indicate that the corrective action portion of the Permit is not their responsibility. The reference to "other parties who may be leasing or otherwise utilizing the land subject to corrective action" should be added to allow deliverables to be prepared and submitted by these parties, such as the BPA, the state of Washington, or US Ecology, who are actually responsible for the SWMUs (to the extent any exist) on land not directly managed by the DOE-RL.

The corrective action provisions of RCRA are part of the HSWA provisions, which are required to be implemented by the Agency unless and until the Agency

has approved a state program to operate in lieu of the Agency program [42 U.S.C. §6926(g)]. The Agency has not authorized the state of Washington to implement a corrective action program in lieu of the Agency program. Therefore, all activities performed under Part IV of this Permit must be required by, and reports or deliverables directed to, the Administrator of the Agency. The Agency program is a comprehensive federal program that preempts any state program. The Department has no authority independent of RCRA and the FFACO to implement a corrective action program at the Hanford Site. A state corrective action requirement would be considered a state "removal or remedial action" requirement which under 42 U.S.C. 9620(a)(4) is inapplicable to a federal facility listed on the NPL. Current Department policy is that the Agency issues and administers the corrective action provisions of permits [Refer to Chemical Processors, Inc. WAD000812909 (Comment Attachment F)].

Therefore, all references to, submittals to, approvals by, or requirements of the "Director and Administrator" should refer solely to the "Administrator". Similarly, reference to state administrative codes or assigning corrective action related decision-making authority to the Director of the Department through this Permit is inappropriate. There is no legal basis for the Department to include State-only or joint enforcement conditions. All conditions addressing corrective action must have a basis in federal laws or regulations and be enforced only by the Agency unless and until the state of Washington's corrective action program is approved by the Agency to operate in lieu of the Agency program.

The statement that rejection of a second submission could be deemed as noncompliance is not a standard condition in corrective action permit requirements. Compare Fort Wainwright, No. AK6210022426 (Comment Attachment D). It is not unprecedented for the Department or the Agency to reject a document on one defect the first time and on completely different grounds another time. Only the Permittee's failure to respond to the reasons given for the first rejection should be grounds for a permit violation.

Technical Impracticability: The July 27, 1990 proposed rule for RCRA Corrective Action (55 FR 30884) states, at proposed 40 CFR 264.531, that the Regional Administrator can make a determination that remediation of a release to a media cleanup standard is not required when remediation is technically impracticable. The determination of technical impracticability generally would involve a determination of both engineering feasibility and reliability. In other situations, a determination of technical impracticability could be made when remediation might be technically possible, but the scale of operations required might be of such a magnitude and complexity that the alternative would be impracticable. This Agency proposal is further discussed as part of the supplementary information to the July 27, 1990 proposed rule in Sections IV.F.6.c and IV.H.5 of the preamble to the proposed rule. The language from the proposed rule should be included in the Permit or incorporated by reference.

Temporary Units: In the July 27, 1990 proposed rule for RCRA Corrective Action, at proposed 40 CFR 264.551(b), the EPA proposes the use of temporary units. According to the proposed regulations, the EPA is of the opinion that certain technical requirements established under 40 CFR Part 264 might be inappropriate for the management of hazardous waste during corrective action,

and might in fact discourage prompt cleanup. Therefore, the EPA has proposed that temporary units might be needed for temporary storage of waste generated during the corrective measures phase and allows such waste to be stored in these types of nonpermitted units for a period of 180 days. An allowance for temporary units should be included in Section IV. This EPA proposal is further discussed as part of the supplementary information in the preamble (Section IV.J.3.a) to the July 27, 1990 proposed rule.

Corrective Action Management Units: The July 27, 1990 proposed rule for RCRA Corrective Action provides, at proposed 40 CFR 264.551(c) and 264.501, flexibility in defining the boundaries of a waste management unit. As stated in the preamble to the proposed regulations at Section IV.J.3.b, corrective action at RCRA facilities will address broad areas of contamination, which might or might not themselves contain discrete waste management units. For example, soil surrounding one or more leaking surface impoundments, landfills, or tanks might be contaminated. The EPA could consider the site as a whole and select a remedy that best addressed the entire area of contamination. The EPA believes that the entire area of contamination could be considered to be a waste management "unit" under RCRA. Thus, these areas would be designated as corrective action management units (CAMUs). The Permit should incorporate language into Section IV that allows the development of CAMUs.

Action Levels: The Draft Permit does not indicate action levels or criteria under which the Agency will require a corrective measures study. The July 27, 1990 proposed rule for RCRA Corrective Action, at proposed 40 CFR 264.521, would require a corrective measures study whenever concentrations of hazardous constituents in an aquifer, surface water, soils, or air exceed action levels for any environmental medium. The Agency has indicated that the action levels specified in the proposed rule are health-based and environmental-based levels determined to be indicators for protection of human health and the environment. The Permit should establish "action levels" that parallel those contained in the proposed rule. This EPA proposal is further discussed as part of the supplementary information to the July 27, 1990 proposed rule in Section IV.E.2 of the preamble.

IV.B. STANDARD CONDITIONS

Condition: IV.B.2
Page, lines: Page 83, line 45
Comment/Action: Delete "pursuant to Paragraph 106 of the FFACO,"

Justification: It is not clear that the DOE-RL might have legal authority to use § 106 of CERCLA, which is the statute addressed in Section 106 of the FFACO, to obtain access for a non-CERCLA action.

Condition: IV.B.3
Page, lines: Page 84, lines 12-16
Comment/Action: The sentence beginning on line 12 states that "Five (5) copies of these plans, reports, notifications or other submissions shall be submitted to the Director and two (2) copies to the Administrator and sent by certified mail or hand delivered as specified in Condition I.E.22 of this

Permit". I.E.22 addresses annual reporting. Delete the sentence in its entirety.

Justification: There is no regulatory requirement to submit five copies of documents by certified mail or hand delivery. The condition that "five (5) copies of these plans, reports, notifications or other submissions shall be submitted to the Director and two (2) copies to the Administrator and sent by certified mail or hand delivered as specified in Condition I.E.22 of this Permit" (emphasis added) is further flawed because there is no such specification at condition I.E.22. In fact, I.E.22 specifies compliance with annual reporting requirements of WAC 173-303-390. The WAC 173-303-390(2) requires that the owner or operator *submit a single copy of an annual report to the department by March 1 of each year.* Although the Permittee will take precautions to ensure that materials submitted reach their destinations safely, there is no basis for attempting to establish a permit condition that it be done as prescribed.

Condition: IV.B.4
Page, lines: Page 84, lines 20-22
Comment/Action: Delete "and those required by the current RCRA Past Practice (RPP) operable unit work schedule contained in Appendix D of the FFACO," from the sentence on these lines.

Justification: This is consistent with the FFACO, which indicates that the selected remedy for a RCRA corrective action will be documented in the Permit via a permit modification. The milestones and schedules contained within the FFACO for RCRA Past Practice corrective actions satisfies the requirement for schedules of compliance for all SWMUs located within the DOE-RL managed areas of the Hanford Site. The FFACO is referenced in the Permit, and there is no need to add the schedules of compliance via a permit modification to the Permit. The schedules must be maintained and controlled using the FFACO change process. This is required to maintain the integration and prioritization of RCRA and CERCLA cleanup activities on the Hanford Site.

The plans, reports, and studies for the DOE-RL managed areas of the Hanford Site are covered by the FFACO, and with exception of documentation of the selected remedy in accordance with permit condition IV.O, should not be included in the permit. Most of the documents in question are approved by the Agency and the Department in accordance with the FFACO, and undergo public review in accordance with the FFACO public review processes. A follow-on permit modification would result in a second public review process, which is redundant and unnecessary. The parties have already agreed in the FFACO, which is a binding interagency agreement and consent order, on the process to be used for such documents. Pursuant to the FFACO, only the remedy selection document is to be later incorporated into the Permit. If all of these additional documents that are covered by the FFACO were incorporated into the Permit, it would be necessary to further state in this condition that:

> Extensions of due dates for such submittals shall be made through the change control process of the FFACO.

Condition: IV.B.5
Page, lines: Page 84, lines 34-42
Comment/Action: Delete this condition.

Justification: No regulatory basis is established to require, as a condition of the Permit, that all raw data be kept for the time period identified. Because this condition also as written affects non-DOE-RL managed sites, the parties responsible for those sites also would have to comply with this condition rather than the DOE-RL. In any event, because of the expected life of the Hanford Site, the effect of this condition is to require raw data to be kept essentially indefinitely, which is not reasonable or required by the regulations.

IV.C. REPORTING REQUIREMENTS

Condition: IV.C.2
Page, lines: Page 85, lines 18-21
Comment/Action: Delete this condition.

Justification: The items to be retained in the operating record should be addressed in Permit condition II.I.1. After Permit condition II.I.1 is modified to be consistent with the actual regulations for operating records (i.e., WAC 173-303-380), that permit condition alone should identify material to be kept in the operating record.

The intent of WAC 173-303-380 is clearly not that the operating record be used as an open ended central repository for any and all data, reports, etc. Inclusion of extensive additional documents that would be required by this condition dilutes the utility of the operating record. The condition also is unreasonably vague and ambiguous as to what documents fall within its scope, and no regulatory basis for the request is provided.

IV.D. INTERIM MEASURES

Condition: IV.D.3
Page, lines: Page 85, lines 40-46
Comment/Action: The 30-day time frame to produce the IM Work Plan is extremely short. Delete the words "within 30 days of written request by the Director and the Administrator" in lines 41 and 42 and replace with:

> within a reasonable time period agreed upon among the Permittee, the party responsible for the site in question, and the Administrator.

Justification: While 30 days might be a reasonable time for small, well defined jobs, more complex efforts will require additional time to include conduct of some level of investigation before a complete work plan can be prepared. In addition, these sites are on parcels of land not under active management of the DOE-RL, but rather by a third party such as the state of Washington and US Ecology (under sublease from the state of Washington) or the BPA. Additional time must be permitted to allow for coordination with these

parties, who are the parties actually responsible for any SWMU activities on their sites.

Condition: IV.D.4
Page, lines: Page 85, lines 48-50
Page 86, lines 1-12
Comment/Action: Revise the text in this section to reflect that immediate response to a release can be conducted, without an approved IM plan, as required to protect human health and the environment by adding to the sentence the words:

> except that an immediate response to a release might be conducted without an approved IM plan or revision to an approved plan when required to protect human health and the environment.

Justification: Until such time that an approved plan is in place, the Permit should not preclude actions from being taken that are necessary to respond to releases to protect human health or the environment.

Condition: IV.D.7
Page, lines: Page 86, line 35
Comment/Action: Delete the condition.

Justification: There is no regulatory basis to require a certification of completion for engineered IM or is any proposed under the Agency's proposed corrective action regulations (55 FR 30798-30884). No similar requirement is included in other permits issued (refer to Chemical Processors, Inc., WAD00091209). This condition as proposed in the Draft Permit would result in management inefficiency and wasteful expenditure of taxpayer resources.

Condition: IV.D.8
Page, lines: Page 86, lines 40-42
Comment/Action: In line 40, change reference to "II.M.3." to "II.L.3". Delete the last sentence of this condition dealing with as-built drawings.

Justification: II.M.3 does not exist. There is no regulatory basis to require design changes to be converted into the form of as-built drawings for correction action activities. An Engineering Change Notice or other change tracking document is all that should be necessary. Typically, Engineering Change Notices will be tracked against a drawing until is it both economical and practical to incorporate into an as-built drawing. Incorporation of as-built drawings into a permit is not required by the regulations, would be wasteful of resources, and would result in unnecessary modifications to the permit.

IV.E. INTERIM MEASURES RECORDKEEPING AND REPORTING REQUIREMENTS

Condition: IV.E.1
Page, lines: Page 86, lines 46-47
Comment/Action: Delete this condition in its entirety.

Justification: Permit Condition IV.D.4 has no requirement for inspection logs.

Condition: IV.E.3
Page, lines: Page 87, lines 5-18
Comment/Action: (1) Revise the requirement on lines 7 and 8 to reflect semiannual reporting requirements by changing the word "quarterly" to "semiannually" and change the sentence beginning in line 8 to state:

> The semiannual reports shall be submitted on the 90th day following the preceding semiannual period.

(2) Delete IV.E.3(a), lines 12 to 17 and replace with
a) summaries of any required progress reports on the construction of engineered IM measures."

Justification: The quarterly reporting requirements are not required by the regulations and would result in management inefficiencies and poor use of resources. Refer to WAC 173-303-645(11)(g), which states similar reports are to be prepared semiannually. There is no technical or regulatory basis to require more frequent reporting requirements. The increase in the time period to prepare the semiannual report is necessary to reflect the fact that the 21-day time period provided is unreasonable to collect and prepare the data requested, especially in view of the need to coordinate data from non-DOE-RL managed activities.

With respect in the Draft Permit condition to the requirement for certification of completion of construction by "registered, independent professional engineers", there is no regulatory basis for any certifications in the proposed Agency corrective action regulations or the Department's WAC 173-303. In addition, commenters have previously provided comments on the inappropriateness of requiring certifications by an "independent" registered engineer as defined in this Draft Permit. The comments on this point made on the definition of 'Independent' at Page 10, lines 45 through Page 11, line 3 of the Draft Permit are incorporated herein by reference.

Condition: IV.E.4
Page, lines: Page 87, lines 34-36
Comment/Action: Delete this permit condition.

Justification: The intent of WAC-173-303-380 is clearly that the operating record not be used as an open ended central repository for any and all data, reports, etc. In addition, this condition deals with SWMUs not under the management of the DOE-RL, but instead the BPA, the state of Washington, and

US Ecology. Therefore, it is not reasonable to expect the DOE-RL, as the Permittee, to maintain all the records required under this section in the operating record. Most of the records might be maintained by US Ecology and the BPA. The items to be retained in the operating record should be addressed in permit condition II.I.1. After permit condition II.I.1 is modified to be consistent with the actual regulations for operating records (i.e., WAC 173-303-380), that permit condition alone should identify material to be kept in the operating record.

IV.F. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED SOLID WASTE MANAGEMENT UNIT

Condition: IV.F.1
Page, lines: Page 87, lines 41-43
Comment/Action: Change the sentence to read:

> The Permittee shall notify the Administrator in writing of any newly identified SWMU found in those areas of the facility that are outside the portion of the Hanford Facility covered by the FFACO, no later than 30 days after identification as a SWMU.

Justification: The SWMUs in areas covered by the FFACO will be addressed by FFACO reporting mechanisms. The July 27, 1990 EPA proposed rule for corrective action (55 FR 30798-30884) proposes a 30 day period for notification of newly identified SWMUs under proposed 40 CFR 270.30(l)(12)(i). This in itself is a tight schedule. No reasonable basis exists to shorten the time period from that currently stated in the proposed regulation especially in view of the fact that this section applies to lands not directly managed by the DOE-RL and would require coordination with other responsible parties. Unreasonably short, unilaterally established time schedules result in inefficient management of resources and will harm the overall cleanup effort by requiring more time to be spent on administrative actions, such as requests for permit modifications. The FFACO process must be followed for those portions of the facility covered by the FFACO.

Condition: IV.F.2
Page, lines: Page 87, line 50
Comment/Action: Change "90 days" to "180 days".

Justification: If the Permittee (i.e., DOE-RL) must be responsible for coordinating corrective actions being performed by other parties (BPA, US Ecology, state of Washington, etc.), a 90-day time period is inadequate to allow the coordination to take place that will be necessary to prepare and return the SA plan for areas where the Permittee has no direct control.

Condition: IV.F.3
Page, lines: Page 88, lines 16-19
Comment/Action: Rewrite the first sentence to say:

> If the Administrator rejects the SA plan, the Administrator shall notify the Permittee and the party currently leasing or utilizing the land of the Plan's deficiencies. Due dates for submittal of a revised plan will be negotiated and agreed to by the Permittee, the party currently leasing or utilizing the land (i.e., the affected parties), and the Administrator, taking into account information needs, the level of detail required, and Permittee's and other affected parties' review and approval schedule for preparing the revised plan.

Justification: The amount of time required to gather information and process the revised plan (including document preparation, review, and approval) can not be determined by the EPA alone. Input must be obtained from parties actually performing the work as to how long it will take to revise a plan. For Ecology or EPA to set due dates, based on some unspecified criteria, is inappropriate and inconsistent with efficient management of the required activities.

IV.G. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY IDENTIFIED RELEASES AT SWMUS

Condition: IV.G.1
Page, lines: Page 89, lines 17-20
Comment/Action: (1) In the first sentence, following the word constituents, add "from a SWMU on portions of the Hanford Facility not covered by the FFACO,".
(2) In line 19, change "15 days" to "30 days."

Justification: The sentence as written could be interpreted as any release, which is addressed in the follow-on sentences, whereas the section is specific to releases from SWMUs. In Section IV.B.2 of the supplementary information to the July 27, 1990 proposed rule for corrective action (55 FR 30798), the EPA states: *Although this definition of release is quite broad, §3004(u) is limited to addressing releases from solid waste management units. Thus, there may be releases at a facility that are not associated with solid waste management units, and that are therefore not subject to corrective action under this authority.*

The July 27, 1990 EPA proposed rule for corrective action proposes a 30 day period for notification of releases of hazardous waste or constituents from SWMUs under 40 CFR 270.30(l)(12)(i). There is no regulatory basis or justification to shorten the time from that currently identified in the proposed regulation. Unreasonably short, unilaterally established time schedules result in inefficient management of resources and will harm the overall cleanup effort by requiring more time to be spent on administrative actions such as requests for permit modifications.

The FFACO process must be followed for those releases on portions of the facility covered by the FFACO and those actions should be excluded from this Permit as noted in the earlier comments on Part IV Draft Permit conditions.

IV.H. RCRA FACILITY INVESTIGATION (RFI) WORK PLAN

Condition: IV.H.1
Page, lines: Page 89, line 40
Comment/Action: Change "90 days" to "180 days".

Justification: If the Permittee (i.e., DOE-RL) must be responsible for coordinating the corrective actions that might need to be performed by other parties (BPA, US Ecology, state of Washington), a 90-day time period is inadequate to allow the coordination to take place that will be necessary to prepare and return RFI work plans for areas where the Permittee has no direct management control.

Condition: IV.H.1.a
Page, lines: Page 90, lines 7-9
Comment/Action: Delete the words "..the qualifications of personnel performing or directing the investigations, including contractor personnel,..." and substitute:

..."the general qualifications of the contractor"...

Justification: A requirement for the general qualifications of the company is adequate and justified. The requirement for including the qualifications of individual personnel in the RFI is unnecessarily restrictive and often unattainable, because of the length of time involved in work plan approval and implementation, which could potentially result in the substitution of other individuals for those initially assigned to the project. No regulatory basis for this requirement is provided.

Condition: IV.H.2.b
Page, lines: Page 90, lines 30-34
Comment/Action: Rewrite the first sentence to say:

If the Administrator rejects the RFI Work Plan, the Administrator shall notify the Permittee and the party currently leasing or utilizing the land, in writing, of the RFI work plan's deficiencies. Due dates for submittal of a revised plan will be negotiated and agreed to with the affected parties, taking into account information needs, the level of detail required, and the Permittee's and other affected parties review and approval schedule for preparing the revised plan.

Justification: The amount of time required to gather information and process the revised plan (including document preparation, review, and approval) can not be determined by the EPA alone. Input must be obtained from the parties actually performing the work as to how long it will take to revise a plan.

For the Agency to independently set due dates, based on some unspecified criteria, is arbitrary and inconsistent with efficient management of the required activities.

Condition: IV.I. INVESTIGATIVE DERIVED WASTE
Page, lines: Page 90, line 45 through Page 92, line 8
Comment/Action: Delete Condition IV.I and all its subparts in its entirety. Delete attachment 10 to the Draft Permit.

Justification: This section is inconsistent with the FFACO with regard to application to areas included within the FFACO and premature as to adoption for areas not included in the FFACO. In reviewing this Draft Permit condition on IDW, of concern is the complete absence of any mention of the agreements and strategies that have been negotiated pursuant to the FFACO. The information contained in Draft Permit conditions IV.I.1 through IV.1.8 not only fails to provide for reasonable management of past practice IDW, but also is inconsistent with regard to the directives provided in the current approved procedure [Environmental Investigation Instruction (EII) 4.2] for handling this material.

With regard to IDW that results from activities on the DOE-RL managed sites, those activities are covered by the FFACO and cannot be subject to this Part IV. A specific technical IDW Working Group (hereinafter Working Group) was established pursuant to the FFACO to develop a policy on IDW for FFACO activities. The Working Group was formally established by all parties to the FFACO at the General Topics Unit Managers' Meeting of December 18, 1990, and has been actively meeting and negotiating in good faith until the Department notified the EPA (Tim Nord to Paul Day) in a letter dated November 18, 1991 (Comment Attachment AA), that the Department was shifting responsibility for the IDW strategy to the new Policy Development Unit and that this unit wanted to be assured that the strategy was compliant with Dangerous Waste Regulations. The letter stated that the strategy was expected to be held up until February 1992; it went on to state that: *The three parties have done a remarkable job of working through very difficult issues and are close to agreement*. The DOE-RL expects that the Working Group will complete the process of developing the IDW procedure for FFACO work.

Because of the large number of RCRA past practice and CERCLA past practice units at the Hanford Site and the extremely large volumes of IDW that will be generated, it was determined reasonable to develop under the FFACO a management approach that would establish one method of operation for IDW generated from RCRA and CERCLA past practice units. This approach is consistent with the FFACO and the EPA proposed regulations on corrective action, which both emphasize integration and consistency of RCRA and CERCLA requirements. The DOE-RL has reached agreement with the Agency for management of IDW where the Agency is the Lead Regulatory Agency, as defined in the FFACO. The agreement has been detailed in the document *Strategy for the Management of Investigative Derived Waste*.

To date, the evolution of the management of IDW generated as a result of Hanford Site RCRA/CERCLA site environmental restoration activities has been a function of numerous negotiations between the principals (DOE-RL, the Agency,

and the Department) along with their respective contractors. Initially, EII 4.2, entitled *Interim Control of Unknown, Suspected Hazardous and Mixed Waste* (portions of which were paraphrased in this Draft Permit condition) governed all waste generated from the Hanford Site environmental restoration activities. It soon became apparent that the constraints imposed by EII 4.2 were inappropriate with regard to the management of IDW. The cost required to manage past practice IDW per RCRA regulations (as mandated by EII 4.2) were prohibitively excessive, especially considering the lack of appreciable benefit regarding protection of human health and the environment.

Draft Permit condition IV.I, as written, if applied to any DOE-RL managed work, would result in significant increases in cost to the taxpayer, without any appreciable environmental benefit and would be inconsistent with the FFACO.

With regard to establishment of a policy for the sites that are not subject to the FFACO, the commenters believe it is premature to establish a procedure of this sort. The only sites of those identified in the Draft Permit, which might fall outside the FFACO and therefore be subjected to corrective action under this Permit, are certain BPA lands that are used by, but not owned by the BPA and, potentially, the US Ecology site. No SWMUs have been identified yet on the BPA sites and, as noted in the Fact Sheet, the US Ecology site is expected to be remediated outside the Permit pursuant to MTCA. The commenters do not have any knowledge about the conditions at those sites and cannot reasonably determine whether this IDW is appropriate for those sites. An IDW plan should be specifically developed for each of these sites as part of the individual work plans with consideration for the specific concerns that might be relevant at each such site.

The Purgewater Management Plan is included as part of the FFACO via incorporation in Appendix F to the FFACO and applies to those units governed by the FFACO. It might not be appropriate to apply the Purgewater Management Plan to the potential US Ecology site or the BPA sites governed by this section of the Permit, as these sites are not managed by the DOE-RL, and it is not known what issues might be involved at those sites.

Condition: IV.I.1 through IV.I.8
Page, lines: Page 90, line 47 through Page 92, line 7
Comment/Action: While specific comments are made on the subparts of Draft Permit condition IV.I, comments are made only to point out the significant technical problems and inconsistencies that would be engendered by adoption of these sections of the Draft Permit and to identify some of the major areas where the Draft Permit IDW policy conflicts with the IDW policy being developed under the FFACO. As stated in the previous comment, all these conditions should be removed from the Draft Permit.

Condition: IV.I.1
Page, lines: Page 90, lines 47-48
Comment/Action: Delete this condition.

Justification: The Purgewater Management Plan is included as part of the FFACO via incorporation in Appendix F to the FFACO and applies to those units governed by the FFACO. It might not be appropriate to apply the Purgewater Management Plan to the potential US Ecology site or the BPA sites governed by this section of the Draft Permit, as these sites are not managed by the DOE-RL, and it is not known what issues may be involved at those sites.

Condition: IV.I.2
Page, lines: Page 91, lines 1-3
Comment/Action: Delete this condition. Any IDW plan ultimately agreed upon should reflect IDW containment criteria as identified in EII 4-2, Section 6.0, "Procedure" and EII 4.3, section 6.0, "Procedure".

Justification: The condition text does not reflect current approved containment criteria provided in EII 4.2 or negotiated containment criteria provided in EII 4.3.

The requirement to containerize all non-groundwater IDW will be unreasonable depending on the type of investigation being undertaken and the extent of contamination present. With respect to the type of investigation, it is overly burdensome to require all IDW to be placed in containers when a backhoe, for example, is used to collect site characterization samples. Soil samples collected from the 1100-EM-1 Operable Unit were collected using a backhoe and all IDW was returned to the point of generation. The DOE-RL recognizes that the 1100-EM-1 Operable Unit is a CERCLA unit; however, similar types of sample collection most likely will be undertaken at RCRA corrective action units. This type of activity expedites investigation activities and also reduces the costs associated with placing IDW in containers, and the subsequent management of those containers.

As negotiations are completed for the IDW policy to be developed pursuant to the FFACO, another key factor is that the intent and scope of the FFACO extends beyond that defined under Section 3004(u) of RCRA. Whereas, under RCRA 3004(u), investigations are restricted to known or suspected releases of contamination from SWMUs. The investigations carried out under the FFACO for both CERCLA and RCRA past practice operable units will address units, including those that do not qualify as SWMUs, for which no such release is documented or even suspected. If contamination is known or suspected, then the proper controls will be applied in accordance with the agreed to procedures.

Condition: IV.I.3
Page, lines: Page 91, lines 5-8
Comment/Action: Delete this condition. Any IDW plan ultimately agreed upon should reflect consideration of the container marking criteria as provided in EII 4.2, Section 6.1, "Container Preparation", and EII 4.3, Section 6.1, "Container Preparation".

Justification: Text does not reflect current approved containment criteria provided in EII 4.2 or negotiated containment criteria provided in EII 4.3. The above referenced criteria is as agreed to by the parties to the FFACO.

Condition: IV.I.4
Page, lines: Page 91, lines 10-34
Comment/Action: Delete this condition.

(1) Any IDW plan ultimately agreed upon should reflect consideration of "Constituent of Concern" sample analysis criteria negotiated by the Working Group for corrective action generated waste, which is contained in EII 4.3.

(2) It is not necessary or cost effective to require analysis of containerized IDW, when the associated sample analysis will suffice.

Justification: This Draft Permit condition is inconsistent with the sample analysis criteria established in EII 4.3 for past practice IDW. Containerized IDW should not require sampling and analysis. At the time an investigation is being performed, field samples are collected routinely and analyzed for the constituents of concern as identified in the associated investigation work plan. As site characterization samples are collected, the footage interval is recorded so that the analyses from any given site characterization sample can be correlated to the corresponding container of IDW generated from a specific depth. There is no regulatory justification to require redundant sampling of the unit in question and the IDW generated from that unit. Through negotiations already conducted, the EPA has determined that site characterization information can be used to perform designation on corresponding IDW. In fact, the Department, through the Working Group, has also agreed that this is an appropriate approach to reduce analytical costs that would otherwise result from redundant analysis.

When this requirement is combined with the requirement that all non-groundwater IDW will be containerized, the costs of investigations would increase significantly, with no appreciable benefit. As noted under Draft Permit condition IV.I.2, the extent of investigation on all past practice operable units will exceed those required under RCRA corrective action provisions, in that samples will be taken within areas and units that have no documented or suspected release of hazardous wastes or constituents.

Condition: IV.I.5
Page, lines: Page 91, lines 36-44
Comment/Action: Delete this condition. Any final IDW policy ultimately agreed upon should include adding after "reduction" on line 44:

or until 7 days after the request is made if no response is received

Justification: Ensuring a timely response from the regulators will avoid unnecessary delays in achieving progress towards the cleanup of the Hanford Site.

Condition: IV.I.6
Page, lines: Page 91, lines 46-47
Comment/Action: Delete this condition.

Any IDW plan that is ultimately agreed upon should: (1) Allow requests to extend the 180 days for samples requiring special handling or analysis, such as those requiring use of "Hot Cells".

(2) Contain text that reflects the time provided for validation of analysis results as 21 days following receipt of the results by the DOE-RL or the DOE-RL contractors, and an additional 15 days to be provided for submittal of validated results to the regulators.

Justification: Special handling and analysis for such samples might require more than 180 days. Also, only so much laboratory space is available for use, especially hot cells. The language proposed also provides consistency between current and negotiated procedures (EII 4.2 and EII 4.3) and the FFACO.

Condition: IV.I.7
Page, lines: Page 92, lines 1-3
Comment/Action: Delete this condition. Any IDW plan that is ultimately agreed upon should reflect the disposal directives in the strategy for long-term management of past practice IDW as detailed throughout the text of EII 4.3.

Justification: The Draft Permit condition as stated is overly burdensome. Drilling operations associated with site characterization activities typically generate one drum of drill cuttings for every 10 feet of drilling. When drilling operations are conducted at the 200 East Area of the Hanford Facility, this could result in 20 or more drums of IDW generated from each borehole, which does not include other solid waste generated from these activities. Other sites that might ultimately be addressed under the Permit could have similar concerns. Because of the large volumes of IDW that will be generated, and recognizing that investigations will extend far beyond those SWMUs that have documented releases or are suspected of release, the DOE-RL and other affected parties need flexibility to determine whether or not IDW is subject to the dangerous waste regulations and to make appropriate treatment or disposal determinations without receiving prior regulatory approval. In addition, if the DOE-RL were not allowed to make treatment or disposal decisions until receiving written regulatory concurrence, it virtually would be impossible to meet any 90-day accumulation time period as required per Draft Permit Condition IV.I.8.

Condition: IV.I.8
Page, lines: Page 92, lines 5-7
Comment/Action: Delete this condition. Any IDW plan that is ultimately agreed upon should reflect consideration that in DOE-RL managed areas, non-groundwater corrective action IDW will be stored at operable unit-specific centralized waste container storage areas for eventual incorporation into the corrective action identified in the permit modification, or, if a hazardous waste or constituent and removed off the operable unit site, will be managed

in a permitted interim status or final status TSD unit within 90 days of waste removal from the operable unit.

Justification: The commenters believe that a flexible management approach for IDW is required to address the multitude of drums of IDW that will be generated at the Hanford Site. The IDW above dangerous waste designation limits should be managed in accordance with the substantive requirements of WAC 173-303-630 within a central location. Each operable unit would have such a central location for IDW generated from that operable unit. All accumulated IDW would be treated and/or disposed in accordance with the permit modification for the selected RCRA corrective action. Again, this is an area where both the Agency and the Department agreed, through the Working Group, that this is an appropriate action, considering the large volumes of waste at hand and the number of SWMUs at the Hanford Site.

IV.J. RCRA FACILITY INVESTIGATION FINAL REPORT AND SUMMARY REPORT

Condition: IV.J.1
Page, lines: Page 92, line 11 and lines 18-20
Comment/Action: (1) On line 11 change "90 days" to "180 days."
(2) Delete sentence starting with "The RFI Final Report shall present" starting on line 18.

Justification: If the Permittee must be responsible for coordination of corrective actions due to activities of other parties (BPA, US Ecology, state of Washington, etc.), a 90-day time period is inadequate to allow the coordination to take place that will be necessary to prepare and return reports for areas where the permittee has no direct management control.

There is no regulatory requirement that the RFI Final Report present all the information gathered under the work plan. This would make it so massive as to be useless. The rest of the paragraph adequately describes the contents of the final report [Refer to Fort Wainwright, No. AK 6210022426, Attachment 12 (Comment Attachment D)]. The record supporting the report will contain all the relative backup information.

Condition: IV.J.2.b
Page, lines: Page 92, lines 41-45
Comment/Action: Rewrite the first sentence to say:

> If the Administrator rejects the reports, the Administrator shall notify the Permittee and the party currently leasing or utilizing the land, in writing, of the report's deficiencies. Due dates for submittal of revised reports will be negotiated and agreed to by the affected parties, taking into account information needs, the level of detail required, and the Permittee's and other affected parties' review and approval schedule for preparing the revised reports.

Justification: The amount of time required to gather information and process the revised reports (including document preparation, review, and approval) can

not be determined by the Agency alone. Information must be obtained from the parties actually performing the work as to how long it will take to revise the reports. For the Agency to independently set due dates, based on some unspecified criteria, is arbitrary and inconsistent with efficient management of the required activities.

IV.K. REMEDIES NOT REQUIRING CORRECTIVE MEASURE STUDY (CMS)

Condition: IV.K.2.b
Page, lines: Page 93, lines 33-36
Comment/Action: Rewrite the first sentence to say:

> If the Administrator rejects the proposal, the Administrator shall notify the Permittee and the party currently leasing or utilizing the land, in writing, of the proposal's deficiencies. Due dates for submittal of revised reports will be negotiated and agreed to by the affected parties, taking into account information needs, the level of detail required, and the affected parties review and approval schedule for preparing the revised reports.

Justification: The amount of time required to gather information and process the revised reports (including document preparation, review, and approval) can not be determined by the Agency alone. Information must be obtained from the parties actually performing the work as to how long it will take to revise the reports. For the Agency to independently set due dates, based on some unspecified criteria, is arbitrary and inconsistent with efficient management of the required activities.

IV.L. CORRECTIVE MEASURES STUDY PLAN

Condition: IV.L.1
Page, lines: Page 94, lines 46-48, and Page 95, lines 37-47
Comment/Action: (1) Replace sentence starting on Page 95, line 45 that begins "Where Department..." with the following:

> Where Department health-based standards have been adopted that are more stringent than federal levels, Department standards shall be substituted for federal levels.

(2) The standards defined here should be consistent with those being used under the FFACO for both RCRA and CERCLA past practice activities and with the Agency's proposed corrective action criteria.

(3) The proposed excess upperbound lifetime risk on Page 94, line 38 should be $1x10^{-4}$, not $1x10^{-6}$

Justification: The first change is made to clarify that federal standards cannot be superseded by informal Department "guidelines", but only by regulatory standards that have been adopted as part of the Washington State authorized RCRA Program.

Because the non-DOE-RL managed SWMUs are located within the overall Hanford Site, it might not be appropriate to have different standards, either between the FFACO and this section of the Permit, or between RCRA verses CERCLA.

The criteria for triggering a Corrective Measures Study appear to be much more vague than contemplated in Sections 264.520 and 264.521 of EPA's proposed Subpart S Corrective Action Rule, which provide specific and detailed criteria for establishing "action levels". The Draft Permit excludes much of this criteria.

With respect to cleanup levels, in the supplementary information to the July 27, 1990 proposed rule for RCRA corrective action (55 FR 3709-30884), the Agency states in Section V.B of the preamble:

One of the more controversial issues related to corrective action is the cleanup goals for contaminated media, or "how clean is clean." EPA has not attempted in this rule or elsewhere to establish specific cleanup levels for different hazardous constituents in each medium. Instead, EPA believes that different cleanup levels will be appropriate in different situations, and that the levels are best established as part of the remedy selection process. Generally, however, the cleanup must achieve protective levels for future as well as current uses. This is the approach taken in today's proposal.

To be "protective" of human health, EPA believes that cleanup levels for carcinogens must be equal to or below an upperbound excess lifetime cancer risk level of 1 in 10,000 ($1x10^{-4}$). As proposed today, cleanup levels would be selected within the upperbound $1x10^{-4}$ to $1x10^{-6}$ risk range during the selection of remedy process; however, remedies at the more protective end of the range would ordinarily be preferred. For non-carcinogens, cleanup levels would be set at a level at which adverse effects would not be expected to occur. The application of this approach to specific media is described below.

Condition: IV.L.2
Page, lines: Page 94, line 11
Comment/Action: On line 11 change 90 days to 180 days.

Justification: If the Permittee must be responsible for coordination of corrective actions related to activities of other parties (BPA, US Ecology, state of Washington, etc.), a 90-day time period is inadequate to allow the coordination to take place that will be necessary to prepare a CMS Plan for areas where the Permittee has no direct management control.

Condition: IV.L.4
Page, lines: Page 94, line 33
Comment/Action: Insert word "Plan" following "approve the CMS".

Justification: This change is necessary to make the sentence technically correct.

Condition: IV.L.4.a
Page, lines: Page 95, lines 1-4
Comment/Action: Rewrite to say:

> If the Administrator rejects the CMS Plan, the Administrator shall notify the Permittee and the lessee or other parties currently utilizing the land, in writing, of the CMS Plan's deficiencies. Due dates for submittal of a revised plan will be negotiated and agreed to by the affected parties, taking into account information needs, the level of detail required, and the affected parties' review and approval schedule for preparing the revised plan.

Justification: The amount of time required to gather information and process the revised reports (including document preparation, review, and approval) can not be determined by the Agency alone. Information must be obtained from the parties actually performing the work as to how long it will take to revise the reports. For the Agency to independently set due dates, based on some unspecified criteria, is arbitrary and inconsistent with efficient management of the required activities.

IV.M. CORRECTIVE MEASURES STUDY FINAL REPORT

Condition: IV.M.2
Page, lines: Page 95, lines 27-31
Comment/Action: Rewrite to say:

> If the Administrator rejects the CMS Final Report, the Administrator shall notify the Permittee and the lessee or other party currently utilizing the land, in writing, of the deficiencies in the report. Due dates for submittal of a revised report will be negotiated and agreed to by the affected parties, taking into account information needs, the level of detail required, and the affected parties review and approval schedule for preparing the revised report.

Justification: The amount of time required to gather information and process the revised reports (including document preparation, review, and approval) can not be determined by the Agency alone. Information must be obtained from the parties actually performing the work as to how long it will take to revise the reports. For the Agency to independently set due dates, based on some unspecified criteria, is arbitrary and inconsistent with efficient management of the required activities.

IV.N. REMEDY SELECTION/CORRECTIVE MEASURES IMPLEMENTATION

Condition: IV.N.3
Page, lines: Page 98, lines 19-23
Comment/Action: Rewrite to say:

> If the Administrator rejects the proposed remedy, the Administrator shall notify the Permittee and the lessee or other party utilizing

the land, in writing, of the proposed remedy's deficiencies. Due dates for submittal of a revised proposed remedy will be negotiated and agreed to by the affected parties, taking into account information needs, the level of detail required, and the parties review and approval schedule for preparing the revised proposal.

Justification: The amount of time required to gather information and process the revised reports (including document preparation, review, and approval) can not be determined by the Agency alone. Information must be obtained from the parties actually performing the work as to how long it will take to revise the reports. For the Agency to independently set due dates, based on some unspecified criteria, is inappropriate and inconsistent with efficient management of the required activities.

IV.O. PERMIT MODIFICATION FOR REMEDY

Condition: IV.O.1.a
Page, lines: Page 99, lines 8-9
Comment/Action: Add the following note under IV.O.1.a:

The schedule of compliance, for remedies for those SWMUs governed by the FFACO, will be managed, controlled, and modified as part of the FFACO, which is referenced by this Permit. Reporting and information requirements for these SWMUs also will continue to be governed by the FFACO.

Justification: This change is necessary to maintain consistency with the FFACO. To provide for integration of RCRA and CERCLA cleanup work at the Hanford Site, it was the intent of all parties to the FFACO that all the schedules would be prioritized and maintained, including modifications to those schedules, as part of the FFACO. The FFACO also provides for the reporting and information requirements for those waste sites covered by the FFACO.

IV.P. FACILITY SOLID WASTE MANAGEMENT UNITS - CORRECTIVE ACTION SCHEDULE OF COMPLIANCE

Condition: IV.P.1. Midway Substation and Community
Page, lines: Page 99, line 17 to Page 100, line 19
Comment/Action: Delete this condition in its entirety.

Justification: The BPA is currently undertaking a voluntary cleanup action at the Midway Site. This request for deletion is based on the lack of any DOE-RL ownership or control over the BPA Midway Site. The Midway Substation and Community Site is owned by the BPA. The BPA is an independent power marketing agency that was in existence long before the DOE-RL activities on the Hanford Site. The BPA is a rate payer funded entity that derives its income from wholesaling electricity, and it would be inappropriate to place upon the nuclear activities division of the DOE the responsibility to assure corrective action of this separate organization's Midway Site. It is also noted that the BPA apparently constructed the Midway Substation in 1940, which is before the

establishment of the Hanford Site. The BPA has continued to maintain ownership of the Midway Site.

The EPA published a statement of statutory interpretation in 52 Fed. Reg. p. 7723 (March 5, 1986) that indicates the EPA's position that in some cases "ownership" should refer to major departmental subdivisions that exercise independent management authorities, such as the National Park Service and Bureau of Land Management in the U.S. Department of Interior, rather than to an entire executive department of the United States. The Federal Register Notice goes on to state:

EPA believes that recognition of these subdivisions is consistent with Congressional intent. EPA will propose a rule to clarify this position and explain more fully the rational for recognizing specific subdivisions. In the interim, EPA intends to recognize principal subdivisions as a matter of statutory interpretation on a case-by-case basis in individual permit proceedings.

It is the position of the DOE-RL that the independent nature of the BPA and the DOE-RL precisely fit the situation envisioned by EPA's statutory interpretation. The BPA is an independent power marketing agency managed by a separate administrator and operates on funds generated by wholesaling electricity. Only since 1977 has the BPA been a reporting component of the DOE. Before that time, the BPA reported to the Department of Interior. In both cases, it has been an independent organization. The DOE-RL, on the other hand, is a field office component of the Nuclear and Research and Development function of the DOE and is operated on Congressionally appropriated taxpayer funds. As such, the operations of the two organizations are far more distinct than the Department of Interior examples provided in the 1986 EPA Federal Register Notice, and it would be clearly inappropriate to hold the DOE-RL responsible for coordination, review, recordkeeping, reporting, and certification of corrective actions at a BPA-owned site.

The DOE-RL has extensive activities that must be managed and performed to carry out the environmental restoration program for the Hanford Site. It is wasteful of taxpayer resources to force the DOE-RL to take its limited resources away from the task it has at hand under the FFACO and apply these resources instead to management of a cleanup activity by the BPA, an independent power marketing agency. This is especially true when one considers that the BPA is strongly committed to environmental protection and already has initiated a voluntary cleanup of the Midway Site.

Furthermore, no rational basis is provided in the Fact Sheet for the EPA's apparent decision not to follow the statutory interpretation it promulgated in 52 Fed. Reg. p. 7723 (March 5, 1986).

Condition: IV.P.2. Other BPA Lands
Page, lines: Page 100, lines 26-29
Comment/Action: (1) Change title of IV.P.2 to:

BPA Facilities on Hanford Site land not Owned by BPA.

Identify specific SWMUs in Table IV.1 for this category. (2) Delete sentence starting on line 26 with "This plan shall specifically..." in IV.P.2.a. (3) If no SWMUs are identified, then delete IV.P.2.a in total and replace with statement that:

No SWMUs have been identified in these areas.

Justification: The RCRA corrective action provisions are established to deal with the release of hazardous waste or hazardous constituents from SWMUs. Groundwater wells are not SWMUs. Until such time that SWMUs are identified on the BPA lands not owned by BPA, there should be no requirement for a plan. In no event should a plan be required at this time to address more than the need to perform a SWMU assessment.

It is not reasonable or appropriate to designate an entire area of land as a SWMU, as currently shown on Table IV.1. The Agency recognized the limitations of the RCRA corrective action provisions and their application only to SWMUs in its July 27, 1990 supplementary information discussing the proposed regulations for corrective action (55 FR 30798-30884). Under the definition of Solid Waste Management Units in the supplementary information (Section IV.B.3) it is stated: *EPA recognizes that these interpretations have the effect of precluding 3004(u) from addressing some environmental problems at RCRA facilities. However, EPA intends to exercise its authority, as necessary, under the RCRA "omnibus" provision (3005(c)(2)), or other authorities provided in RCRA (e.g., 3008(a) and 7003) or CERCLA (e.g., CERCLA 104 or 106), or States, under State authorities, to correct such problems and to protect human health and the environment.*

The EPA has not identified any environmental problems at the BPA facilities on the Hanford Site (Midway is not part of the Hanford Site) with possible exception of the potential for groundwater wells to facilitate the transport of contaminants. If any problems are found or if the Agency or the Department wishes to pursue an investigation of the groundwater wells, an appropriate order issued in accordance with the other identified authorities should be issued to the BPA. The DOE-RL should be allowed to focus its limited resources on remediation of its activities pursuant to the FFACO, rather than becoming responsible for managing the activities of the BPA, an independent power marketing authority.

Condition: IV.P.3. North Slope
Page, lines: Page 100, line 31 to Page 101, line 25
Comment/Action: Delete this condition in its entirety, as the North Slope is addressed by the FFACO.

Justification: The North Slope area is not subject to corrective action pursuant to issuance of a hazardous (dangerous) waste permit because it is not

part of the permitted facility and is not on contiguous land to the permitted Hanford Facility. It is separated from the Hanford Facility by the state-owned Columbia River bed, and the Columbia River itself, which is a major natural barrier to contiguity of the sites. However, the North Slope is covered by the FFACO and will be appropriately addressed under FFACO.

The North Slope area already has been included in the FFACO as operable unit 100-IU-3. As listed in the FFACO, 100-IU-3 currently contains the USBR,2,4-D burial site and the entire Wahluke Slope Nike Missile Base. Per the FFACO change process, if other units are identified later within the North Slope area, the units would be added to 100-IU-3, or possibly a new operable unit would be formed. In addition, it should be noted that indications are that the MIL-PSN 04 well is dry.

If any near term actions are appropriate on the North Slope, the actions should be addressed in accordance with Section 7.2.4, Interim Response Action and Interim Measure processes, of the FFACO Action Plan. If the parties to the FFACO feel that earlier action is necessary at the 2,4-D site, an interim measure could be planned. The Fact Sheet's statement that such action could be performed quicker and cheaper under the Permit instead of the FFACO is not valid, because the processes in the FFACO for interim measures are equivalent to those that would be required under the Permit. As part of the FFACO, the action would be prioritized along with all other cleanup work to ensure the highest priority work is performed on the Hanford Site.

Draft Permit conditions IV.P.3.c., .d., and .e. all extend beyond the authority of the RCRA corrective action provisions. Such provisions under 3004(u) and 3004(v) are to address the releases of hazardous wastes and hazardous constituents from any SWMU at the facility or off-site, respectively. Other than for the purpose of identification of SWMUs, there is no authority to deal with solid wastes that are not hazardous, or to address items that might simply constitute potential physical hazards.

The areas north and east of the Columbia River are under the management and operation of the Washington State Department of Game and the U.S. Fish and Wildlife Service. Under the terms of these permit agreements, these agencies are responsible for maintenance and upkeep of these areas including maintenance of fence lines, roads, and cleanup of any trash or waste accruing in these areas since the agencies assumed responsibility. The DOE-RL and its contractors should not be required under this permit to perform general clean up and security control in areas where these other agencies have responsibility.

For all of the above reasons, condition I.P.3 should be deleted.

Condition: IV.P.4. US Ecology
IV.P.4.a
Page, lines: Page 101, lines 27-34
Comment/Action: (1) Change title to US Ecology SWMUs. (2) Add the following after "administrator":

> for all SWMUs that have released or are suspected to have released hazardous wastes or hazardous constituents.

(3) Delete the language in permit condition IV.P.4.a and replace it with: Reserved.

Justification: As previously noted in comments to permit condition IV.B.1, it is not appropriate to identify "US Ecology Site" as a SWMU. Table IV.1 must list the individual SWMUs on the Hanford Site. In addition, the specific actions under the authority of RCRA 3004(u) must be directed at the SWMUs, and not at the any site in general. Such actions can only be directed if there is a release of hazardous wastes or hazardous constituents, or a reasonable expectation that such releases have occurred. As noted in the Fact Sheet, the Department expects to conduct any remediation that might be necessary at the US Ecology site under the MTCA. There are several significant issues, such as the apparent inconsistency with the Atomic Energy Act in identifying a licensed commercial low-level waste disposal site as an SWMU, that would need to be addressed if the US Ecology site was included in the Permit. These issues could be avoided if this section of the Draft Permit was deleted. Because the state of Washington is the party that subleased the site to US Ecology and the Washington State Department of Health extensively regulates disposal activities at the site under US Ecology's license to operate a commercial low-level radioactive waste disposal site, correction of any problems at the US Ecology site should be addressed by the state of Washington under its lease agreement with US Ecology or its' radioactive waste disposal licensing authority. Any incorporation of corrective action provisions for US Ecology SWMUs should be deferred until the other available courses of action have been undertaken. As noted in the Fact Sheet, other processes are available to address any issue at the site.

Condition: IV.P.5. 351 Substation
Page, lines: Page 101, lines 36-41
Comment/Action: (1) Delete this condition in its entirety.
(2) The Fact Sheet statement that the 351 Substation is a location at which the BPA once operated is misleading.

Justification: The 351 Substation is a DOE-RL facility. Any release within a DOE-RL managed area of the Hanford Site is covered under Draft Permit condition IV.A.1. The 351 Substation is located within the area of the 300-FF-3 operable unit on land that currently is managed by the DOE-RL. Therefore, per the FFACO change process, the yellow cake contaminated area should be addressed as part of the 300-FF-3 operable unit. If earlier action is deemed necessary than the currently planned for 300-FF-3, then that action can be taken in accordance with Section 7.2 of the FFACO Action Plan.

In addition, because the 351 Substation was not a facility used to treat, store, or dispose of solid waste, the site is not a SWMU. The yellow cake contaminated area might not qualify as a SWMU. As an area contaminated with uranium, an AEA regulated "source" material, even if determined to be a SWMU, RCRA corrective action authority would only apply to the release of hazardous wastes or constituents, and not the radioactive constituents that are present. If this site is addressed under the FFACO, these issues are not significant, because all releases of hazardous wastes, constituents, or substances including radioactive components will be addressed at all waste sites, even if the sites are not SWMUs.

The 351 Substation always has been a DOE-RL managed unit. At one time, the BPA used a portion of the facility to support their other operations (i.e., for switching purposes). At no time has the unit or the land it is located on been turned over to the BPA for management. Therefore, this unit should not be included in Table IV.1.

Condition: IV.P.6. Central Waste Landfill
Page, lines: Page 101, lines 43-47
Comment/Action: Delete this condition in its entirety.

Justification: The Central Waste Landfill is included in the FFACO as part of the 200-IU-3 operable unit and is therefore covered under Draft Permit condition IV.A.1. All actions will be prioritized and planned as part of the FFACO. Depending on whether this operable unit is assigned as RCRA past practice or CERCLA past practice unit, a RI/FS or RFI/CMS work plan would be submitted in accordance with the process contained in the FFACO.

In reference to the statement made in the Fact Sheet concerning this unit, studies done in this area have identified several potential sources of the very low levels of contamination found beneath the Solid Waste Landfill. The exact source of the contamination is not known and might be from other sites within the operable unit. Should the Department and the Agency determine that accelerated action should be taken at this site the processes set forth in the FFACO should be used to undertake that action.

Condition: IV.P.7. Hanford Site Waste Units Report
Page, lines: Page 102, lines 1-9
Comment/Action: Delete this condition in its entirety.

Justification: The statement in Line 6 indicating these units are to be "addressed separately from the operable unit investigations of the FFACO" is not accurate. It is clearly intended under Section 3.1 of the FFACO to incorporate any releases or significant potential for release of hazardous substances or hazardous wastes from these units into the FFACO.

The Fact Sheet refers to all 244 units as SWMUs, which is not accurate.

Any required actions under RCRA or CERCLA associated with the 244 units contained within the Hanford Site Waste Management Units Report (HSWMUR) are already appropriately addressed in the FFACO based on the following.

- Approximately 120 of these units are the RCRA TSD units that are planned permitting and/or closure, in accordance with Part II of the FFACO.

- Approximately 40 of these units are not SWMUs and do not come under the authority of either the FFACO or the final status permit. Six units are product storage tanks (aboveground). The remaining are structures that were not used to treat or dispose of solid waste. Included are the eight surplus reactors that were previously addressed as part of the FFACO negotiations. Section 3.1 of the FFACO Action Plan addresses such structures as follows:

  In the event that a contaminated structure is found to be the source of a release (or presents a substantial threat of a release) of hazardous substances, hazardous wastes, or hazardous constituents to the environment, the investigation and remediation of such a release (to include remediation of structures, as necessary), where subject to CERCLA or RCRA, shall be subject to this Agreement" (i.e. the FFACO).

  Therefore, any such actions are covered by Draft Permit condition IV.A.1.

- The remaining units (approximately 80) are SWMUs that were used to treat or store solid waste, but do not qualify as TSD units. Any past releases (or spills) associated with these units have been identified within the FFACO operable units as release sites. Therefore, there is no further action associated with these units at this time. If at a later date action is necessary, the unit, or the release from the unit, will be picked up as part of the appropriate operable unit for action in accordance with Section 3.1 of the FFACO Action Plan.

Additional information on these units beyond that contained in the HSWMUR can be requested. Both the EPA and Ecology have been provided electronic access to the WIDS database. Any specific information requested should be on a unit-specific basis following a complete review of this database. Any such request for information pertaining to SWMUs identified in the FFACO should be made in accordance with the provisions available in the FFACO to obtain information, and not as a condition of this Permit.

Specific reference is made in the Fact Sheet to the 600 Area munitions burial ground located northwest of the Yakima Barricade. This unit is contained within the FFACO as part of operable unit 100-IU-1. If the Agency or the Department needs additional information on this SWMU beyond that contained in WIDS database, they can obtain such information through the FFACO processes.

This section of the Draft Permit simply appears erroneous and inconsistent with the FFACO. Any request for additional information either as a condition of this Permit or as a separate request for information, for the 244 units discussed previously, seems inappropriate. As noted previously, this section included all of the RCRA TSD units, all of which have had Part A permit applications, and some Part B permit applications and interim status closure plans submitted. Requiring a submittal that would take a significant amount of time and resources to prepare and submit would be an obvious distraction from more important work and does not appear to be necessary, consistent with

the FFACO, or well thought out in light of the significant data already available to both the Agency and the Department on these units.

Condition: Table IV.1
Page, lines: Page 102, lines 9-27
Comment/Action: Revise Table IV.I to include only specific BPA SWMUs on Hanford Site land not owned by the BPA, and identify specific SWMUs on the US Ecology site or reserve this section. All other components of the table should be deleted.

Justification: As previously discussed in other comments on Part IV these are the only sites, of those proposed in the Draft Permit, that are on contiguous land and that are not already addressed in the FFACO. No basis exists to address the other units in this Permit. With respect to the US Ecology site and the non-BPA owned land used by the BPA, it is necessary to list specific SWMUs rather than list whole areas, or to identify this section as reserved.

Condition: IV.P.8.1.
Page, lines: Page 102, line 27
Comment/Action: Include an additional condition in Part IV stating the following:

> Schedule Extensions for Activities not Covered by FFACO
>
> To the extent that activities required by Part IV of this Permit for areas not covered by the FFACO are not completed in accordance with the schedules contained in this Permit, and the Permittee can demonstrate to the Administrator's satisfaction that the Permittee used best efforts to accomplish the activity within the required schedule, the Administrator shall grant the Permittee an extension to the schedule contained in Part IV of this Permit. For the purposes of this permit condition, "best efforts" shall include performance of all activities necessary to award contract(s) is available to the Permittee, adequate planning, adequate operator staffing, adequate laboratory and process controls, operation of a backup or auxiliary facility or similar systems by the Permittee when necessary to meet the schedules in Part IV of this Permit. The Permittee shall notify the Agency in writing as soon as possible of any deviations or expected deviations from schedules in Part IV of the Permit. The Permittee shall include with the notification information to support that the Permittee has used its best efforts to meet the schedule in Part IV of the Permit. If the Administrator determines that the Permittee has made best efforts to meet the schedule, the Administrator shall notify the Permittee in writing by certified mail that the Permittee has been granted an extension and provide the Permittee a revised schedule reflecting this extension. Such revision of schedules in Part IV of this Permit shall not require a permit modification.

Justification: Schedule extension provisions for corrective action are commonly included in corrective action sections of permits and should be

included in this permit for consistency, especially in view of the lack of information available for the non-DOE-RL managed areas of the site. Schedule extension language of this form was included in the Chemical Processors, Inc. Permit WAD000812909 (Comment Attachment F).

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation
P.O. Box 638
PENDLETON, OREGON 97801
Area code 503 Phone 276-3449 FAX 276-3317

March 13, 1992

Dan Duncan
U.S. Environmental Protection Agency, Region 10
1220 Sixth Avenue,
Seatlle, WA 98101
FAX 206/ 553-0124

Dear Mr. Duncan:

RE: Submission of Comments on Site Wide Draft Permit

Attached please find the comments of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) on Washington state's Department of Ecology Site Wide Draft Permit for Hanford Cleanup.

Staff contact person is J.R. Wilkinson, Hanford Projects Coordinator, Environmental Planning and Rights Protection Program, CTUIR Department of Natural Resources, P.O. Box 638, Pendleton, OR, 97801. His phone number is 206/ 276-3449.

Sincerely,

Michael J. Farrow
Director of Natural Resources
Confederated Tribes of the Umatilla Indian Reservation

- - CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION - -

COMMENTS ON WASHINGTON STATE'S DEPARTMENT OF ECOLOGY SITE-WIDE PERMIT FOR THE DEPARTMENT OF ENERGY'S HANFORD NUCLEAR RESERVATION

INTRODUCTION

The Treaty of 1855 reserved for the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) the,

> *"exclusive right of taking fish in the streams running through and bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations in common with citizens of the United States, and of erecting suitable buildings for curing the same; the privilege of hunting, gathering roots and berries and pasturing their stock on unclaimed lands in common with citizens, is also secured to them."*

Lands ceded to the federal government by this treaty includes the site now occupied by the Department of Energy's (DOE) Hanford Nuclear Reservation. Hence, the CTUIR have treaty reserved rights at the Hanford Reservation, of which, the DOE are the federal agency in a fiduciary position.

The permitting of the following three facilities by Washington's Department of Ecology and the U.S. Environmental Protection Agency, signatories to the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement/TPA) along with DOE, represents movement towards addressing the various cleanup operations proposed by DOE. This permit for the 616 Non-Radioactive Dangerous Waste Storage Facility, the 183-H Solar Evaporation Basins, and the Vitrification Plant, inherently poise different issues.

Comments addressing each facility are not highly technical in detail, [i.e., commenting whether the current design of the Vitrification's Plant (Vit) off-gas treatment system will adequately protect the air shed], but rather are larger issues not addressed by the permit. Currently, the CTUIR lack the technical staffing to adequately review plans in detail for protection of treaty-reserved rights to the ceded lands. General comments, trailed by specific issues about each of the facilities, are as follows.

Confederated Tribes of the Umatilla Indian Reservation
Comments on Site-Wide Permit
March 13, 1992

GENERAL COMMENTS

On page 10 of 102 in the Permit, the term "independent" is defined relative to "engineer, expert," or "inspector." The CTUIR request that when independent consultants are required the tribes shall be given the first opportunity to provide this service. This request is based on the CTUIR's treaty reserved rights to their ceded lands and would provide the necessary basis for independent verification of cleanup operations. Additionally, this action would provide staffing enhancement for oversight capabilities at Hanford.

On page 17 of 102, the term "reasonable" is used in reference to "Duty to Mitigate." The permittee *"shall take all reasonable steps to minimize releases to the environment,"* and, *"reasonable [measures] to prevent adverse impacts on human health and the environment."* This is vague working, especially given the nature of what is being defined. What, or where, are the mechanisms to define what reasonable actually is?

On page 26 of 102, Section II.A.2.1., the CTUIR request that notification also be provided to tribal police and fire departments (503/ 278-0550) to allow for an assessment of needed actions to protect CTUIR tribal lands, tribal resources, and tribal members.

Protection of the groundwater and the Columbia River is paramount to the CTUIR. Section II.F., "Facility Wide Groundwater Monitoring," outlines several actions related to groundwater. The cultural basis of the tribes rests with the natural resources of the environment, one of which is water. Thus, the CTUIR request the tribes be allowed to independently monitor actions taken in regards to groundwater monitoring. This activity would allow the tribes to assess whether actions taken or planned will adequately protect tribal resources and treaty-reserved rights to the fisheries of the Columbia River.

Several sections deal with records (i.e., page 37, Section II.I.). Yet, there appears to be no mention of where the records will be located or their availability for review by the tribes or members of the general public.

In Section II.N., page 43, the CTUIR request advanced notification of shipments coming to Hanford of dangerous waste generated off-site. Due to the sovereign nation status of the CTUIR, their fire and police departments are the principle agency involved with incidents should it occur on tribal lands.

On the same page is section II.O., "General Inspection Requirements." Because of the ceded lands issue, the CTUIR request that inspections of any facility at Hanford include a CTUIR representative, especially given the nature of and the area of visual inspections. The national security of the CTUIR rests with protecting the natural resources of their ceded lands. Thus, this action would allow for independent verification of inspections and an assessment from a tribal perspective.

616 NONRADIOACTIVE DANGEROUS WASTE STORAGE FACILITY

Milestone M-12-02
Comments submitted based on *"616 Nonradioactive Dangerous Waste Storage Facility Dangerous Waste Permit Application"*, October 1991, DOE/RL-89-03, Revision 2. "This is an active storage unit for dangerous wastes which are shipped to off-site commercial treatment or disposal facilities."

Concerns expressed with the 616 are directed towards adequate CTUIR emergency preparedness and properly designed containment systems to protect Hanford's groundwater and the Columbia River. Again, an adequate review of plans for consistency in protecting CTUIR resources cannot be submitted due to a lack of personnel.

Given that *"[a]pproximately 18 times a year, depending on the rate of waste accumulation, ... [containers will] be transported to a permitted TSD facility."* The CTUIR currently lack the first responder equipment and personnel to protect the natural resources of the tribes in the event of a major transportation incident. Due to the sovereign nation status of the CTUIR, the CTUIR's police and fire departments are the lead agency in the event of a cross-CTUIR lands incident.

The potential this facility represents, IF an accident were to occur, is quite high given the wide variety of hazardous materials to be stored. In the event of a catastrophic accident, are the containment designs capable of protecting the groundwater and the surrounding environment?

This concern is heightened due to presence of a fault line in Gable Mountain. Will the building specifications be adequate to withstand a worst-case scenario? Additionally, when reviewing a map of shallow earthquakes in the Hanford region, a concentration can be found in the Cold Creek Valley. This issues should be rectified before completion of the facility.

Confederated Tribes of the Umatilla Indian Reservation
Comments on Site-Wide Permit
March 13, 1992

183-H SOLAR EVAPORATION BASINS

Comments based on "*RCRA Closure Experience with Radioactive Mixed Waste 183-H Solar Basins at the Hanford Site,*" WHC-SA-0705-FP, January 1990.

I was unable to locate the appropriate document to allow for adequate review so comments are based on the above mentioned work.

One missing point in the paper was the lack of radiological data. As quoted, "*[r]outine wastes consisted of uranium and technetium-99,*" yet the waste material was categorized as "*low-level, nontransuranic radioactive waste.*" What justification is there for this characterization? How can independent verification be sought?

The 100-H area also has a Chromium plume under it. What plans are there to prevent exacerbating the plume's movement to the Columbia River? Will the activities associated with closure have any influence on the plume?

HANFORD WASTE VITRIFICATION PLANT (VIT)

Milestone M-20-01
Documents reviewed were "*Tank Waste Disposal Program Redefinition*'" WHC-EP-0475, Revision 0, and, "*Hanford Facility Agreement and Consent Order Quarterly Progress Report for the Period Ending December 31, 1991,*" DOE/RL-92-2. For brevity I will use TWD and QPR, respectively, when referring to a document.

The previous two facilities represent relatively straightforward issues and concerns. However, the Vit Plant does not fall in this category. Here the concerns have to do with the overall program direction of dealing with the tanks' wastes. Several key points emerge, each with a lack of justification for moving ahead. Along with the Vit Plant are the attendant disposal issues, the "Grout" facility and the glass logs resulting from the vitrification process. What happens to the glass logs if the HLW repository is not open by the time the Vit plant is operational?

The same concerns expressed about the 616 facility apply to the Vit and grout/glass logs process. Will the facilities be sufficiently designed to ensure the safe operation of the facilities in case of an earthquake. Additionally, does the grout facility have the potential to change groundwater flow patterns?

On page 2-4 of the QPR, it states that "*[r]esolution of the environmental compliance and investigation of alternative pretreatment process and facility options, as well as other waste feed options for the HWVP, are continuing in support of the tank waste treatment program.*"

The question arises, why license a facility when so many variable and doubts may surface between the licensing of said plant and the actual operation of it? In other words, would it not be wiser to license each incremental step (i.e., the pretreatment process) allowing for the flexibility of alternative critical paths? For example, the TWD states on page 6-9 that the "*risk assessment model showed TRUEX process development is on the critical path for the program and, as a result, introduces a risk of program delay.*"

Why license the end facility when the steps to get the waste from the tanks through pretreatment and to the plant have not been established? Alternatives in pretreatment facilities should be debated, then license that facility and initiate a tank-to-pretreatment and back-to-tank operation cycle to ensure that the wastes can be adequately pretreated in a safe manner.

On a similar vein, I have been unable to identify the justification for reduced consideration of alternative methods, such as calcining, in-situ vitrification, or plasma arc furnace. Further, the research and development side of disposal issues appears lacking. What efforts are being made at enhancing cutting-edge technology and research? Thus, more basic analysis of a wide range of alternative technologies and those yet identified should be done prior to making the Vit Plant a "done deal."

CONCLUSIONS

The 616 and 183-H Basins both represent straightforward operations and should be permitted. However, the Vit Plant is not as clear of a permitting process and as such should not be licensed. Rather, the incremental steps to that possible end facility could be licensed to ensure that each step to final disposal of the tank waste is safely completed.

The concerns expressed about the Vit Plant also involve the attendant disposal facilities, the Grout facility and the glass logs. Concerns expressed are the lack of sound justification for disregarding other alternatives, the non-homogenous nature of the tank wastes and the low level of supporting laboratory analysis, and the unclear manner in which pre-treatment will occur.

DEPARTMENT of
NATURAL RESOURCES

CONFEDERATED TRIBES
of the
Umatilla Indian Reservation

P.O. Box 638
PENDLETON, OREGON 97801
Area Code 503 Phone 276-3449/3447

TELEFAX TRANSMISSION COVER SHEET

DEPARTMENT OF NATURAL RESOURCES
Administration & Environmental Planning

DATE: March 13, 1992

TRANSMISSION TO: Dan Duncan, EPA

TRANSMISSION FROM: J.R. Wilkinson, CTUIR

C.T.U.I.R. FAX # (503) 276-3317

NUMBER OF PAGES (Including this sheet): 7

NOTES: Attached are comments on side wide permit. Also, Ecolog has received a copy of the same comments.

jrw

IF TRANSMISSION IS UNREADABLE..PLEASE PHONE (503)276-3449/3447

WAD 8967
3-13-92 16C

Department of Energy
Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

MAR 1 3 1992

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MAR 1 6 1992
FEDERAL FACILITIES SECTION

In reply refer to: BPA-AJ

Mr. Daniel L. Duncan
U. S. Environmental Protection Agency, Region X
Hanford RCRA Program Manager
1200 Sixth Avenue, HW-074
Seattle, WA 98101

Re: Draft Dangerous (Hazardous) Waste Permit for the U.S. Department of Energy Hanford Site - Public Comment

Dear Mr. Duncan:

The Bonneville Power Administration (BPA) owns, and/or operates several electrical substations on the Hanford Site. BPA wishes to clarify its responsibilities regarding these facilities, in terms of the subject Draft Permit. We therefore offer the enclosed comments on the applicable portions of Part IV of the Draft Permit.

We appreciate your consideration of these comments. Should you have further questions, please contact Mr. Steve Sander of my staff at (503) 230-5139.

Sincerely,

Stephen R. Sander

for Alexandra B. Smith
Assistant Administrator
for Environment

Enclosure

cc:
Mr. Cliff Clark, DOE Richland
Mr. Bob Carosino, DOE Richland
Mr. Steve Woodbury, DOE Headquarters

PERKINS COIE

A LAW PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1201 THIRD AVENUE 40TH FLOOR • SEATTLE WASHINGTON 98101-3099 • (206) 583-8888

February 24, 1992

VIA FACSIMILE

Dan Duncan
U. S. Environmental Protection Agency
Hazardous Waste Division,
Federal Facilities Section
1200 Sixth Avenue
Seattle, WA 98101

Re: Comments on Hanford Draft Cleanup Permit

Dear Mr. Duncan:

This letter is a follow-up to our telephone conversation of this morning. I am writing on behalf of U. S. Ecology to request an extension of time for U. S. Ecology's comments on the draft Hanford RCRA cleanup permit.

U. S. Ecology requests an extension of the comment period for three reasons. First, our law firm first became actively involved in this matter on February 14, 1992 and must review numerous background documents before being able to assist in providing meaningful comments. Secondly, the Draft RCRA Facility Assessment Report for U. S. Ecology was not made available until the public hearings of February 18-20, 1992. Finally, several of the issues we intend to address are complex because the activities of U. S. Ecology facility are licensed by the Nuclear Regulatory Commission and the Washington Department of Social and Health Services, and because U. S. Ecology is not a permittee under the draft permit.

[09901-0001/SL920560.067]

Please call me at 583-8885 as soon as you have a decision regarding the request for an extension of time for comments or for a meeting. We appreciate your time and attention in this matter.

Very truly yours,

David Dabroski

DD:aab

cc: Dan Duncan
Barry Bede

Carrie / Christie
WA 8967
16C
2-24-92

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A LAW PARTNERSHIP INCLUDING PROFESSIONAL CORPORATIONS
1201 THIRD AVENUE, 40TH FLOOR • SEATTLE, WASHINGTON 98101-3099 • (206) 583-8888

February 24, 1992

VIA FACSIMILE

Dan Duncan
U. S. Environmental Protection Agency
Hazardous Waste Division, Federal Facilities Section
1200 Sixth Avenue
Seattle, WA 98101

Re: Comments on Hanford Draft Cleanup Permit

Dear Mr. Duncan:

I am writing on behalf of U. S. Ecology to request an extension of time for U. S. Ecology's comments on the draft Hanford RCRA cleanup permit.

U. S. Ecology requests an extension of the comment period for three reasons. First, our law firm first became actively involved in this matter on February 14, 1992 and must review numerous background documents before being able to assist in providing meaningful comments. Secondly, the Draft RCRA Facility Assessment Report for U. S. Ecology was not made available until the public hearings of February 18-20, 1992. Finally, several of the issues we intend to address are complex because the activities U. S. Ecology facility are licensed by the Nuclear Regulatory Commission and the Washington Department of Social and Health Services and because U. S. Ecology is not a permittee under the draft permit.

TELEX: 32-0319 PERKINS SEA • FACSIMILE: (206) 583-8500
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Please call me at 583-8885 as soon as you have a decision regarding the request for an extension of time for comments or for a meeting. We appreciate your time and attention in this matter.

Very truly yours,

David Dabroski

David Dabroski

DD:sab

cc: Toby Mitchellina
Barry Bede

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1201 THIRD AVENUE, 40TH FLOOR • SEATTLE, WASHINGTON 98101-3099 • (206) 583-8888

February 24, 1992

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VIA FACSIMILE

Toby Mitchellina
Department of Ecology
Mail Stop PV-11
Olympia, WA 98504

Re: Comments on Hanford Draft Cleanup Permit

Dear Mr. Mitchellina:

I am writing on behalf of U. S. Ecology to request an extension of time for U. S. Ecology's comments on the draft Hanford RCRA cleanup permit.

U. S. Ecology requests an extension of the comment period for three reasons. First, our law firm first became actively involved in this matter on February 14, 1992 and must review numerous background documents before being able to assist in providing meaningful comments. Secondly, the Draft RCRA Facility Assessment Report for U. S. Ecology was not made available until the public hearings of February 18-20, 1992. Finally, several of the issues we intend to address are complex because the activities U. S. Ecology facility are licensed by the Nuclear Regulatory Commission and the Washington Department of Social and Health Services and because U. S. Ecology is not a permittee under the draft permit.

TELEX: 32-0319 PERKINS SEA • FACSIMILE: (206) 583-8500

16C WA 0967

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SEATTLE OFFICE FACSIMILE
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ADDRESSEE Department of Ecology (FIRM OR COMPANY)

Toby Mitchell (INDIVIDUAL)

FROM DAVID DABROSKI

DATE 2-24-92

DIRECT DIAL (206) 459-6000

FAX NO. (206) 459-6859

☐ Fax Center Confirm Receipt

Confirmation Phone Number

Pages (Including Cover Sheet) 3

Client Number 0-0

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from WA 8967 FEB 18 1992
Dave Jansen 2-12-92

Oregon

DEPARTMENT OF ENERGY

February 12, 1992

RECEIVED
FEB 21 1992
RCRA PERMITS SECTION

David Jensen
Hanford Project Manager
Washington Dept. of Ecology
Nuclear and Mixed Waste
Olympia, WA 98504

5H-3206.525

Dear Mr. Jensen:

Oregon appreciates the opportunity to review the Draft Treatment, Storage and Disposal Permit for the Hanford Facility. The February 6 Permit briefing in Salem by Toby Michelina, Joe Stohr, Mary Getchell and Dave Nylander was very helpful. Your Department's continued cooperation with Oregon on Hanford issues is valued.

We have a good working relationship with Washington Ecology. That relationship is productive for both states. Oregon is eager to continue work with Washington, USDOE and Native American tribes to assure Hanford cleanup.

We commend Washington Ecology on the innovative approach to Hanford cleanup via this Permit. Cleanup of hazardous wastes at Hanford is a formidable problem. The Federal hazardous waste regulations did not foresee such a large, diverse and complex cleanup. It is critical that Ecology, US Department of Energy and US Environmental Protection Agency be flexible and creative with the Permit process. That is the only way the complex issues at Hanford can be resolved.

Our technical comments, primarily on vadose zone monitoring and leak detection, are attached. The comments also include editorial remarks, and a note about public access to this document. Several other issues concern us.

The Permit is difficult to read. Efforts should be made to make the document more "reader friendly." Summaries of attachments would support this effort. The document also needs clarification in several areas. Of grave concern to Oregon are:

- the Hanford Waste Vitrification Project (HWVP) construction schedule, and
- adequate funding for Tri-Party Agreement milestones.

BARBARA ROBERTS
Governor

625 Marion Street NE
Salem, OR 97310
(503) 378-4040
FAX (503) 373-7806
Toll-Free 1-800-221-8035

The Tri-Party Agreement calls for HWVP construction start by April 1992. A Subpart X must be issued before construction begins. Washington Ecology does not now have the authority to issue the Subpart X Permit. USEPA will not issue the Permit because they intend to delegate the authority to Washington. USEPA must give priority to the Subpart X authority transfer. They must resolve the permit issue to support the HWVP schedule.

Paragraph 139 of the Hanford Federal Facility Agreement and Consent Order requires DOE-RL, with the assistance of Ecology and EPA, to determine funding levels needed to support each fiscal year's work. USDOE Headquarters has not given Washington or Oregon timely Activity Data Sheets which show the actual level of spending for critical cleanup activities. USDOE must provide this information to allow meaningful states' input into the formulation of USDOE's budget.

Sincerely,

David A. Stewart-Smith, Administrator
Nuclear Safety & Energy Facilities Division

COMMENTS ON PART IV. P.1., Line 18, MIDWAY SUBSTATION AND COMMUNITY

Delete any reference to the Midway Substation And Community from the permit. The Midway Substation and Community is an electric substation and related support facility, independently owned and operated by the Bonneville Power Administration (BPA). BPA will retain all management, control, and financial responsibility for satisfying any remediation required at the Midway facility. BPA has reached agreement with the State of Washington Department of Ecology on the remediation activities to be taken and is proceeding with implementation in accordance with the schedule agreed upon, with one exception:

> **Change PART IV. P1.d. at Line 36 to read "240 days" rather than "120 days".** The additional time is to allow for the design and engineering of a new stormwater catchment system.

COMMENTS ON PART IV.P.2., Line 22, OTHER BPA LANDS

The Bonneville Power Administration (BPA) will assume responsibility (including financial) for the completion of an RFI work plan, within 365 days, for those facilities which it operates on the Hanford Site (specifically: Hanford Switch, Benton Switch, Ashe, White Bluffs). BPA will assume responsibility for contaminants, if any, identified or associated with its operation of these facilities, provided however, that corrective requirements involving contaminants that are not the result of BPA operations or actions will remain under the management control and responsibility of the permittee, USDOE, and will be addressed through the Hanford Federal Facility Agreement And Consent Order (FFACO). Schedules and provisions governing any necessary follow-on activities should be negotiated after completion of the RFI.

OREGON COMMENTS ON DRAFT TREATMENT, STORAGE, AND DISPOSAL PERMIT

HANFORD FACILITY

FEBRUARY 1992

OREGON DEPARTMENT OF ENERGY
COMMENTS ON DRAFT TREATMENT,
STORAGE AND DISPOSAL PERMIT

COMMENT:

We are concerned about funding for Hanford cleanup. USDOE must request the funds necessary to meet the milestones of the Tri-Party Agreement (and its revisions) on schedule. States must have timely access to activity data sheets for review and response. The data sheets must show the actual level of spending for critical cleanup activities. This should be stated in the Permit.

COMMENT:

The Permit Fact Sheet states that Ecology does not yet have authority to issue the Subpart X permit for the HWVP. EPA does not plan to issue a RCRA permit for the Site. While it is not certain if this will cause a delay in the construction start scheduled for April 1992, this problem should be resolved as quickly as possible. Construction of the HWVP must remain on schedule.

COMMENT:

There is a vadose monitoring well system at the single shell tank farms in the 200 Areas of the Hanford Reservation. Its purpose is to help determine if leaks are occurring and to track the movement of previous leaks. These wells have monitored radioactivity levels of leaks that have occurred since 1956. From these data, the movement and location of the waste fluids are inferred.

The unsaturated (above the water table) "dry-well" monitors used around the underground high-level storage tanks differ from more common ground water monitoring wells. They do not sample fluids in the soils around the tanks. They measure moisture content and radioactivity levels of nuclear waste that has leaked into the soil.

The 1990 Tiger Team Assessment found that:

> ...The current system for vadose (unsaturated) surveillance around the single-shell tanks (SSTs) consists of outdated drywell logging techniques that are limited in their effectiveness...

...Only recently has the tank farm surveillance group recognized that "the neutron probe is not effective in determining the moisture content of the vadose zone..." and "there is overwhelming evidence that the neutron probe design may not be correct for boreholes that have been constructed in the Tank Farm area" (TT 03769). Apparently, the neutron probe is still being used in external drywells as in situ moisture analysis, but for "investigative purposes" only. Borehole effects totally mask any in-situ measurements from the vadose zone. In fact, WHC Geosciences officially recommended the tool be discontinued....(I-GW-43).

...The prototype system is reported to be scheduled for SST use to provide baseline information during FY 1991; however, funding has not yet been allocated. Further efforts to improve the vadose zone logging program have been delayed by resource limitations...

...It was found that "for WHC to meet Federal and State environmental regulations and DOE orders, a viable vadose zone surveillance program must be implemented" (TT 03769)...

These issues raise concerns about ultimate leaked waste disposal:
-the outdated vadose monitoring system in the SST farms
-the lack of funding for a workable geophysical logging system
-the failure of USDOE to aggressively pursue a comprehensive site-wide vadose monitoring plan.

A comprehensive vadose monitoring system is needed for these reasons:

1. A monitoring network will show the actual locations, rather than estimations, of the plumes caused by leaks. USDOE said that the plumes are not closer than 115 feet above the water table. These statements are based on data from the outdated well-logging systems used in the single-shell tank farms. In fact, the locations and movement of the waste plumes from as many as 66 leaking tanks are not known.

Appropriate geophysical logging equipment is commercially available. Combined with a comprehensive site-wide vadose monitoring plan, the right equipment could locate leaked waste. USDOE may be correct in their assumptions about plume locations. They must, however, demonstrate this conclusively with the best available technology. If they are incorrect, it could mean there is movement of high-level radioactive and chemical wastes to the Columbia River.

Delay of the vadose zone monitoring plan will seriously impede many areas of cleanup, such as of volatile organics. Without a comprehensive data base and an acceptable sampling record, "Leave or Retrieve" decisions will be difficult or impossible for scientists and the public to accept.

2. A comprehensive site-wide vadose monitoring plan could help determine the degree of mobility that cesium, strontium, and other radionuclides have in Hanford soils. This would add credible data to the theory that cesium and strontium adsorb onto the sands and clays of the Hanford soils, and would not reach the river. Once the high-level waste reaches the ground water, the time of travel to the Columbia River could be less than 100 years. This is a major concern for Washington and Oregon.

A weakness of ground water model predictions is the lack of credible retardation coefficients. A site-wide vadose monitoring system would give valuable data about retardation of hazardous constituents in the soils. This is an opportunity to get meaningful data on nuclear and chemical wastes movement.

3. Good data on the vadose zone characterization are essential to gain acceptance of the engineered barrier and in-place stabilization concepts being developed by USDOE.

4. Site-wide vadose zone monitoring combined with site-wide ground water monitoring is necessary for comprehensive cleanup.

COMMENT:

An estimated three thousand wells were drilled at Hanford before 1989. Most of these wells were drilled with technology that is unacceptable by present environment standards. Long-range plans for proper abandonment of these wells should be addressed in the site-wide ground water plan and permit process. These wells can allow interaquifer communication and transfer of contaminants. Improper sealing and deterioration of well seals can allow faster movement of contaminants from the vadose zone to the water table. Long-range plans should rank environmentally-sensitive areas.

COMMENT:

The Facility-Wide Waste Analysis Plan must be submitted by May 31, 1992. There should be staffing requirements for the low-level and mixed waste laboratories. These requirements should ensure that the right expertise will be available for the types and quantities of analyses needed for compliance.

COMMENT:

There are three emergency response plans in effect for the Site from Westinghouse, USDOE and Pacific Northwest Laboratory. This is a difficult and cumbersome arrangement for quality assurance and effectiveness. Problems will arise if responsibilities on-site shift or a company leaves. There should be only one emergency response plan for the Site.

COMMENT:

The General Inspection Plan specifies that area inspections shall take place every six months or yearly, according to the schedule in II.0.2.a. of the Permit. The Permit also states that Ecology and EPA shall be notified in advance. USDOE and its contractors should expect that the regulators will continue to make random inspections. Ecology needs free access to areas on the Site for compliance oversight.

COMMENT:

Acronyms are used often after their initial introduction in the text. It would be helpful to place them in the definitions section for quick reference.

COMMENT:

Include a list of facilities covered by the Permit. Indicate their status, i.e., interim, closure, etc.

COMMENT:

Copies of the Attachments are currently available by request. Brief summaries of the Attachments, included in the main document, would help people select the Attachments they want. Individuals could also choose to receive only the summaries.

COMMENT:

Page 3, I.A.2: "...These units/areas are identified in attachment xx of the Permit." From the list of Attachments, it appears that 3 and 4 should replace "xx".

COMMENT:

Documents sent to Portland State University library for public comment were hard to find. Documents need to be clearly marked to alert library staff. You should direct the librarians to display documents in clear view. Title strips on the spine of the binders would also help people locate documents on the shelves.

PAUL
FYI JACK

Dean 9/16/91
No date
16c from Energy

Comment on Proposed RCRA Permit, Section IV, RCRA Corrective Action

Delete "North Slope", "351 Substation", "Central Waste Landfill" and "Hanford Site Waste Units" from Table IV.1, and remove corresponding paragraphs IV.P.3, IV.P.6 and IV.P.7. All three of these catagories are covered by the scope of the Hanford FFACO, and would therefore be covered by paragraph IV.A.1, "Integration with the FFACO". This comment is based on the following:

1. The north slope area has already been included in the FFACO by operable unit 100-IU-3. As listed in the FFACO, 100-IU-3 currently contains the USBR,2,4-D Burial Site and the entire Wahluke Slope Nike Missile Base. Per the FFACO change process, if other units are later identified within the north slope they would then be added to 100-IU-3, or possibly a new operable unit would be formed. Some of the specific actions noted in the permit could be considered for expedited response actions in accordance with the FFACO.

2. The 351 substation is located within the area of the 300-FF-3 operable unit. Therefore the yellow cake contamination should be added to the FFACO as an unplanned release and addressed in conjunction with 300-FF-3. If earlier action is deemed necessary, then an expedited response action in accordance with the FFACO would be appropriate.

3. The Central Waste Landfill is clearly designated in the FFACO as part of the 200-IU-3 operable unit. Therefore, all actions will be prioritized and planned as part of the FFACO.

4. All actions associated with the 244 units contained within the Hanford Site Waste Management Units Report (HSWMUR) are already appropriately addressed based on the following:

- Approximately 120 of these units are RCRA Treatment, Storage and Disposal units which are planned as part of Part II of the FFACO for permitting and/or closure.

- Approximately 40 are not Solid Waste Management Units (SWMU) and therefore do not come under the authority of either the FFACO or the RCRA permit. Six of them are product storage tanks(above ground). The remaining are facility structures that were not used to treat or dispose of solid waste.

• The remaining approximately 80 units are SWMUs that were used to treat or store solid waste, but do not qualify as TSD units. Any past releases (or spills) associated with these units have been identified within the operable units as unplanned release sites. Therefore there is no further action associated with these units at this time. If at a later date action is necessary, the unit will be picked up as part of the appropriate operable unit for conduct of the action.

Specific reference is made to the 600 area munitions burial ground located northwest of the Yakima barricade. This unit is contained within the FFACO as part of operable unit 100-IU-1.

At the time the FFACO was developed, it was clearly the intent of all parties associated with the development of the remedial/corrective action provisions that all such actions performed on DOE directly managed land would be carried out under the FFACO. We are concerned that section IV of the permit clearly contradicts that intent.

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STATE OF WASHINGTON

DEPARTMENT OF HEALTH

DIVISION OF RADIATION PROTECTION

Airdustrial Center, Bldg. 5 • P.O. Box 47827 • Olympia, Washington 98504-7827

November 1, 1993

Jim Shaffner
OB/LLLWM/NMSS
Mail Stop 5E4 OWFN
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

9411280153

Dear Mr. Shaffner:

Thank you for sending on time your assignments stemming from the closure cover and groundwater monitoring meetings we held jointly with you and with the US DOE, Washington DOE, US EPA, and the Yakima Indian Nation. Unfortunately, neither the September 15, 1993 report correlating US Ecology and US DOE groundwater data nor the September 30, 1993 report on local stratigraphy address the questions of the interagency review group.

The purpose of the September 15 report on groundwater data was to correlate the groundwater flow and drop in level across the US Ecology facility with the flow and groundwater elevations on the surrounding US DOE Hanford Reservation. This correlation is needed in order to support or reject the group's evaluation that the US Ecology wells placement and screening intervals are sufficient as they are now. The conclusions stated do not completely address this question.

The group decided that the unusually lengthy 40-foot screen intervals would be acceptable if the groundwater table at the US Ecology facility is dropping. In order to determine if the groundwater table at the site is dropping, and will continue to drop, a correlation should be made between the US Ecology site and the 200 West Area. For instance, by enlarging the area covered by the historical water level maps in your September 15 report to also include both the 200 West and 200 East Areas (as well as including the US Ecology site), a comparison to 200 West conditions can be made.

Historical water levels (i.e., 1940's, 1950's, etc.) indicate that artificial recharge in the 200 West Area has raised the water level by approximately 65 feet. Decommissioning of the U-Pond in the 200 West Area has caused a decline in the water table at the rate of approximately one foot per year. Both the large mounding effects and slow decline in water level are a result of the lower transmissivities associated with the Ringold Formation and can be compared to the larger transmissivities found in the Hanford Formation and generally associated with the 200 East Area. (The horizontal gradient is much flatter in the 200 East Area.)

If you can show that the water level below the US Ecology site is related to that of the 200 West Area, we can justify leaving the 40-foot screens as they are. Furthermore, by considering the gradient and movement of contamination from the 200 West Area, you can more formally justify the location of upgradient wells and monitor constituents found upgradient and compare with samples taken downgradient. Additional information to indicate whether we are monitoring for the correct constituents can come from source term data.

Taken altogether (source term data, historical water-level maps, water levels and water quality samples collected sitewide at Hanford and at US Ecology, vadose zone physical soil samples collected in the 200 Areas and at US Ecology), the information that is available can either justify decisions the group has made or require us to revise those decisions and make new ones. We recommend that you include more data and analysis in a revised report in order to justify the decisions of the group; namely, that the screens in the wells are not overly long. This information should also further support that the locations of upgradient and downgradient wells are appropriate.

Other specific comments on this September 15 groundwater correlation report are made on the enclosed mark-up of your report.

The purpose of the September 30 report was to compare the local soil characteristics and stratigraphy of the US Ecology facility with the soil characteristics and stratigraphy of the Hanford facility as well as to review sample logs to see if there is evidence of caliche in site wells and to verify consistency of caliche with regional stratigraphic data.

In this report the comparison of US Ecology facility soils and stratigraphy with that of the Hanford facility is extremely limited. Your extension to December 31, 1993 to report on soil chemistry, porosity, bulk density information, and Kd values has been noted. We expect that report to fill in the information gaps concerning soil characteristics comparisons between the US Ecology facility and the Hanford facility.

We would like you to resubmit your report on stratigraphy. The current report, without adequate referencing to documents or well numbers, very briefly reviews US Ecology facility well cores descriptions of wells installed in 1985 as well as vadose zone wells VW100, VW101, and VW102. It also very briefly gives stratigraphic descriptions from one published report. These descriptions are followed up by short comparison and summary paragraphs which say very little and have very little support. Also, a "BWIP" report is mentioned but that report is not referenced and does not seem to be involved in any of the previous discussion.

The limited discussion given in the stratigraphy report on caliche is also inadequate and should be resubmitted. The review of evidence of caliche was to assuage or substantiate Bob Cook's hypothesis (Mr. Cook had been attending these meetings for the Yakima Indian Nation) that a caliche layer could pond water and cause a direct highway through the otherwise dry vadose zone for wastes from the Hanford facility into the vadose substrate of the US Ecology facility, bypassing the saturated zone. However, the report gives no comparison with the amount, layering, and completeness of caliche in nearby parts of the Hanford facility nor does the report compare the US Ecology facility with far areas of the Hanford facility where caliche is a noticeable part of stratigraphic units. (These stratigraphic units do not extend into the US Ecology area.)

The descriptions of what is found in the US Ecology well cores is also limited. For instance, the review of MW-8 is that the "boring log... mentions calcium carbonate more frequently [than MW-5]," but the report goes on to only describe two occurrences of calcium carbonate. In the first partial paragraph of page 4, the report says, "if caliche were a water bearing zone, groundwater should have been encountered during drilling." No one expects caliche to be a water bearing zone, but a layer upon which a perched water table could have been formed or may be formed, thus providing an avenue for transport of contaminants. It is this question that was to be evaluated.

A mark-up of the September 30 report is enclosed.

These reports, and others we receive in the future, should be less informal and closer to a publishable format. This information goes into our regulatory files and is a vital part of the record for the technical decisions made. References should be noted and supplied beyond just the author and year, and it should be made clear when the same or different references are being referred too. The sources of data, concepts, and theories should be referenced. Conclusions stemming from the data should be clearly stated as being conclusions stemming from the material presented and should actually come from material that is presented. Additional information to support conclusions should not have to be inferred but should be described or referenced in the report. Data and graphs should be labelled with units and axis' identified. Pages should be numbered.

The Washington DOE has reviewed this letter and participated in its writing.

If you have any questions, please feel free to contact me at (206) 753-3459.

Sincerely,

Gary Robertson, Head
Waste Management Section

GR/MMD:krf

Enclosures

cc: Curt Black
Dan Duncan
Jerry Begley
Bob Cook
Chuck Cline
Mike Elsen
Randall Tulee
Randall Krekel
Bob Cordts

WA 8967
10-25-93

OCT 27 1993 17q

FEDERAL FACILITIES SECTION

DEPARTMENT OF HEALTH
Environmental Health Programs
Division of Radiation Protection

October 25, 1993

TO:		FAX:	PHONE:
	US DOE - Randy Krekel	(509) 376-0306	376-4264
	YIN - Randall Tulee	(509) 943-8555	946-0101
	WDOH - Jerry Begley/Bob Cordts	(206) 407-7152	407-7103/7142
	EPA - Curt Black	(206) 553-8509	553-1262
	WDOH - Maxine Dunkelman	(206) 753-1496	753-3351
	USE - Jim Shaffner	(916) 624-7630	624-9316

FROM: Gary Robertson, DOH (206/753-3459)

SUBJECT: OCTOBER 22 USE CLOSURE AND GROUNDWATER MONITORING MEETING NOTES

Handouts:

1. Agenda, including list of assignments from July 16 and 29 meetings, and questions from Randall Tulee, Yakima Indian Nation.

2. List of attendees.

3. US Ecology's June 29, 1990 report generated for Condition 58 of their license. Contains information as to what waste was buried in the trenches, including the chemical waste trench.

4. US Ecology's September 15, 1993 letter, submitting a report by Laurie Irwin correlating US Ecology and DOE groundwater data.

5. US Ecology's September 30, 1993 letter, submitting a report by Laurie Irwin comparing the local stratigraphy with the regional stratigraphy, and a summary by Barry Bede describing recent discussions with individuals about what they recall about the contents of the chemical trench.

Described briefly below are the issues discussed. Outstanding issues and assignments are flagged with leading asterisks (*****).

Gary Robertson summarized the October 21 meeting with WDOE and EPA concerning the US Ecology (USE) facility's involvement in the RCRA permitting process at Hanford. On November 15, the permit will go out for public comment. SWMU investigation concerns USE's trenches 1-11a. The MOU between EPA, WDOE, and WDOH is almost completed. Next week the group meets again and will finalize the MOU. USE will like to have as much time as possible to review the MOU before the RCRA permit goes out for public comment.

*****Jerry Begley, WDOE, will write to US DOE (cc's to USE and WDOH), formally asking questions related to US DOE's plans for the 900 acres that had been leased to the state but were just taken back by US DOE. The group was concerned about the distance from USE's trenches and covers to trenches planned by DOE, implications to the buffer zone, and direction of runoff from both facilities.

WDOH was able to contact three of the four sources of waste placed in the chemical waste trench. WDOH will try again to contact Phizer of Portland, Oregon.

WDOH wants USE to test for dangerous waste constituents in downgradient well #10. USE tested the upgradient well #13 at the end of September. The results are not back yet.

There was much discussion on the implications of putting on a final cover to the need for remedial action and investigations: how would such action affect the RFI requirements? How far laterally would the RFI extend?

There was also discussion on the concentration limits allowed for hazardous constituents in the vadose zone.

*****Gary Robertson of WDOH will ask Dan Duncan of EPA if MTCA applies.

*****Doug Hildebrand, U.S. DOE, suggested USE contact Larry Cadwell or Lee Rodgers of U.S. DOE for information on biobarriers.

****USE's report correlating the groundwater levels in wells on the USE site to wells within two miles on the Hanford facility was handed out for the group's review and comment. USE found that the elevation in one of U.S. DOE's wells seemed to be mis-recorded. U.S. DOE will look into that possibility. Members were asked to complete their evaluations and make comments to Maxine Dunkelman by October 29.

Once more, the group considered the groundwater wells in place at the USE facility sufficient for now, including their use of 40-foot screens (due to lowering of the groundwater table over time). The well seals will be corrected by USE if a problem is detected.

DOH stated that the well log data provided by USE does not indicate a caliche layer and would not be required in their pathway analysis. However, if further investigations indicate the existence of such a layer, further studies would be required.

cc: Mike Elsen, WDOH
Dan Duncan, EPA
Chuck Cline, WDOE

RAE-9206/2-1

REVIEW OF U.S. ECOLOGY INC.'S DRAFT SITE STABILIZATION AND CLOSURE PLAN FOR LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY; RICHLAND, WASHINGTON

April 1993

Prepared for

WASHINGTON DEPARTMENT OF HEALTH
Division of Radiation Protection
Olympia, Washington 98504

Rogers & Associates Engineering Corporation

R
A
E

93-05-032LW

Rogers & Associates Engineering Corporation

Post Office Box 330
Salt Lake City, Utah 84110-0330
(801) 263-1600

April 30, 1993

Mr. Leo Wainhouse
Washington Department of Health
Division of Radiation Protection
Airdustrial Center, Building 5
Olympia, WA 98504

C9206/2

Dear Mr. Wainhouse:

9116296-5912

Enclosed are ten bound and one unbound copies of our review of U.S. Ecology's Hanford LLW disposal facility draft Closure Plan. We have incorporated comments you and the DRP staff made to our draft review. Additionally, we have revised the interrogatories to include reference to the sections in the review where the various topics are discussed.

DRP had requested that we include interrogatories in the review in the appropriate section. However, this was complicated by the fact that some interrogatories addressed topics from more than one section. Therefore, in the interest of time, Mr. Robertson directed us not to include the interrogatories in the sections.

As noted in the Introduction of the Review document, RAE and EIM reviewed and evaluated the draft Closure Plan using a rigorous interpretation of the regulatory requirements: If a regulatory requirement or license condition was judged to apply to the draft Closure Plan, we examined the draft Closure Plan to determine whether the necessary information was provided. If it was lacking or the justification was insufficient, we concluded that the requirement or condition had not been met. Many of these conclusions should probably have the benefit of the Department's consideration -- the Department may conclude that some requirements do not fully apply to the USE facility. We expect you will provide direction to USE in these matters.

We await your determination of the date when we will again meet in Olympia to present these documents to USE. Upon receiving this information, we will make the necessary arrangements to support the presentation.

We will gladly respond to any questions or comments that may arise from your or others' reviews of these documents.

With kind regards,

Robert D. Baird,
Vice President

RAE-9206/2-1

REVIEW OF U.S. ECOLOGY INC.'s DRAFT SITE STABILIZATION AND CLOSURE PLAN FOR LOW-LEVEL RADIOACTIVE WASTE MANAGEMENT FACILITY; RICHLAND, WASHINGTON

by

R.D. Baird
A.L. Dressen
V.C. Rogers
N. Chau
H. Delaney

prepared for

Washington Department of Health
Division of Radiation Protection
Olympia, Washington 98504

April 1993

Rogers & Associates Engineering Corporation
P.O. Box 330
Salt Lake City, Utah 84110-0330

and

Environmental Issues Management, Inc.
1147 21st Ave East
Seattle, WA 98112

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INTRODUCTION

Under contract to the Washington Department of Health (the Department), Rogers and Associates Engineering Corporation, together with Environmental Issues Management Inc., has reviewed and evaluated U.S. Ecology's (USE) draft stabilization and Closure Plan for Low-Level Radioactive Waste Management Facility; Richland, Washington (dated October 1990) referred to in this document as the draft Closure Plan. The review and evaluation also addressed supplemental submittals provided by USE on September 16, 1992.

This review and evaluation has followed a rigorous interpretation of the regulatory requirements and license conditions considered applicable to the USE draft Closure Plan. If the regulation or license condition stated a requirement, confirmation was sought from the draft Closure Plan that the requirement is met. Clearly, some requirements can be satisfied with relatively simple information or justification and others the Department may judge not to be fully applicable to the USE draft Closure Plan.

Any deficiencies when compared to the letter of regulatory requirements or license conditions were identified and associated interrogatories prepared. The Department will determine those requirements, if any, where latitude is justified in the ease of the USE draft Closure Plan.

The review and evaluation involved the following activities:

- Identify regulatory requirements and license conditions related to facility closure.
- Review document completeness to verify that all required topics are addressed in the draft Closure Plan.
- Prepare requests for additional information.
- Review technically information presented in the draft Closure Plan and supplemental submittals.

- Compare information presented in the draft Closure Plan and supplemental submittals to that required by applicable regulations and license conditions.

- Evaluate adequacy of draft Closure Plan and supplemental submittals.

- Prepare interrogatories to address deficiencies of the draft Closure Plan and supplementary submittals.

This document draws together the results of most of activities listed above. Interrogatories that resulted from the review are presented in a companion document and are correlated to the sections of this document.

The requirements of regulations that are applicable to the draft Closure Plan are reiterated in this document in the same order as they appear in WAC 246-250. To provide an additional perspective, license conditions related to the draft Closure Plan are also included. For each topic, the information presented in the draft Closure Plan is summarized and its adequacy reviewed in light of applicable regulatory requirements.

1. POST-CLOSURE OBSERVATION PERIOD

Regulatory Requirement

The licensee shall observe, monitor, and carry out necessary maintenance and repairs at the disposal site until the site closure is complete and the license is transferred by the department in accordance with WAC 246-250-140. Responsibility for the disposal site must be maintained by the licensee for five years. A shorter or longer period for post-closure observation and maintenance may be established and approved as part of the site draft Closure Plan, based on site-specific conditions. (WAC 246-250-130)

Summary of Information Provided

The licensee's draft Closure Plan proposes a closure period of up to two years, followed by a stabilization period of two years. At that time, the licensee anticipates transfer of the site to the custodial agency.

Review of Adequacy

The licensee has not provided justification for observing the closed facility for only two years instead of the required five years after the completion of closure. The licensee has deferred providing that justification until design criteria have been defined.

will be addressed in final plan
(revised)

2. GENERAL REQUIREMENT

Regulatory Requirement

Land disposal facilities shall be ... closed, and controlled after closure so that reasonable assurance exists that exposures to individuals are within the requirements established in the performance objectives in WAC 146-250-170 through -200. (WAC 246-250-160)

Summary of Information Provided

Plans for closure and control after closure (as they relate to satisfying performance objectives and justifying the roles they play in providing assurance that exposure to individuals will be within limits set in 250-170 through 250-200) are summarized in Sections 3 through 6.

Review of Adequacy

The adequacy of plans for closure and control after closure (as they relate to the satisfaction of performance objectives and justification of the roles they play in providing assurance that exposure to individuals will be within limits set in 250-170 through 250-200) is reviewed in Sections 3 through 6.

3. PROTECTION OF THE GENERAL POPULATION FROM RELEASES OF RADIOACTIVITY

Regulatory Requirement

Concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals shall not result in an annual dose exceeding an equivalent of 25 millirems (0.25 mSv) to the whole body, 75 millirems (0.75 mSv) to the thyroid, and 25 millirems (0.25 mSv)to any other organ of any member of the public. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable. (WAC 246-250-170)

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:... Demonstrate by measurement and model during operations and after site closure that concentrations of radioactive material which may be released to the general environment in groundwater, surface water, air, soil, plants, or animals will not result in any member of the public receiving an annual dose exceeding an equivalent to 25 millirems (0.25 mSv) to the whole body, 75 millirems (0.75 mSv) to the thyroid, and 25 millirems (0.25 mSv) to any other organ of any member of the public.... (66E)

Summary of Information Provided

The licensee's closure plan projects doses from two scenarios involving the ingestion of contaminated groundwater: drinking water and full gardening. The calculated doses do not exceed the regulatory requirements and licensing conditions. The calculated dose to the critical organ from the full gardening scenario (24 mrem/year) comes closest to the regulatory limit of 25 mrem/year.

The computer codes TRANSS, MINTEQ, and DITTY were utilized in modeling the facility and are described briefly. Modeling and release mechanisms assumptions are also presented.

The draft Closure Plan indicates that the concentrations of gross alpha and beta emitters, C-14, isotopic plutonium, uranium, and gamma emitters (measured at the five main monitoring wells) are not significantly greater than the concentrations in groundwater located off the Hanford Reservation. However, the tritium concentration in groundwater has been increasing (at unstated locations) due to the encroachment of a tritium plume. Even though the tritium concentrations measured exceed those typical of background locations, the concentration of tritium under the disposal facility is not appreciably greater than that found in the vicinity of the Hanford Reservation. No potential doses are estimated in the draft Closure Plan.

Modeled or measured releases to the surface water pathway (directly or via groundwater contributions) or resulting projected doses are not addressed in the draft Closure Plan, nor is justification for this absence presented.

Similarly, the draft Closure Plan does not model releases to the atmospheric pathway or resulting projected doses. The justification for the absence is the assertion that the cover will be sufficient to eliminate emissions of radioactive material into the atmosphere. The draft Closure Plan indicates that

- The concentrations, measured at the nine fixed environmental air monitoring stations, do not exceed the detection limits of the sampling system.
- No significant difference exists between the radioactive air concentrations in the vicinity of the facility and the Hanford Site average background concentrations. No potential doses are estimated.

Releases to the soil or resulting projected doses are not modelled in the draft Closure Plan. The justification for the absence is the assertion that the cover will be sufficiently thick to deter indigenous plants and animals from contacting the waste. The draft Closure Plan indicates that soil contamination is measured at the fixed environmental air monitoring stations and at the northeast and northwest corners of the site. Samples are analyzed for

gross beta, total uranium, isotopic plutonium, and gamma isotopic concentrations. However, no measured concentrations or doses are presented.

The draft Closure Plan models releases to plants and resulting ingestion doses for plants irrigated with contaminated groundwater. Direct releases to plants via root system transport are not modeled. The justification for the absence of facility surface plant releases is the assertion that the cover will be sufficiently thick to deter indigenous plants from contacting the waste. Specific projected doses from the ingestion of contaminated plant life are included in overall summary doses but not specifically provided. The draft Closure Plan indicates that plant contamination is measured at the fixed environmental air monitoring stations and at the northeast and northwest corners of the site. Samples are analyzed for gross beta, total uranium, isotopic plutonium, and gamma isotopic concentrations. Additional vegetation samples are collected annually from filled and capped trenches and analyzed for tritium, as well as all the parameters listed above. Tritium has been detected in vegetation at concentrations that are elevated in comparison to the concentrations in plants found in background locations. However, no specific concentrations or doses are presented.

Releases to indigenous animals or resulting projected doses are not modelled in the draft Closure Plan. The justification for the absence is the assertion that the cover will be sufficiently thick to deter animals from contacting the waste. Measured releases to animals or resulting doses are not addressed in the draft Closure Plan, nor is justification for the absence presented.

The draft Closure Plan justifies compliance with regulatory limits by presenting calculated doses from the groundwater pathway. Doses from two scenarios involving the ingestion of contaminated groundwater are presented: drinking water and full gardening. The calculated doses do not exceed the regulatory requirements and licensing conditions. The calculated dose to the critical organ from the full gardening scenario (24 mrem/yr) comes closest to the regulatory limit of 25 mrem/yr.

ALARA considerations are not explicitly addressed in the draft Closure Plan. However, consideration of the ALARA concept is demonstrated by the increase in the primary cover depth from the original 3 feet of soil for the older trenches to 8 feet. Ten additional feet will also be added during site closure and stabilization.

Review of Adequacy

The input parameters, mathematical models, uncertainties and limitations of the models, and conceptual models used for contaminant transport analyses should be provided in sufficient detail as to enable independent evaluation of the potential releases from the disposal facility. The licensee does present and support transport models for groundwater migration of contaminants. However, scenarios modeling releases of contaminants through surface water, atmospheric, soil, plants, and animals are not addressed in the draft Closure Plan. The licensee justifies this exclusion because of the cover thickness. However, scenarios involving a compromise in the cover integrity such as intrusion activities, cover erosion, and accidents occurring during the emplacement of the cover are not addressed. The basis for this exclusion should be stated and justified. The draft Closure Plan presents very limited information about values of input parameters used. Additionally, the data that are presented are not in an easy-to-use format.

The description of the mathematical model utilized in projecting groundwater transport does not address

- Daughter in-growth.
- Non-uniform aquifer contamination near the facility.
- The effects of chelating or other chemical agents on the mobility of the contaminants.
- The effects of erosion, subsidence, and ponding on the water infiltration rate. Additionally, justification of the water infiltration rate, release mechanism (adsorption-controlled and solubility-controlled), aquifer porosity, and other assumptions is insufficient. The bases, sensitivities, and effects of other choices should be included with each assumption documented in the draft Closure Plan.

The projected doses to an offsite individual reported in the draft Closure Plan are very close to the allowable limits (critical organ from the full gardening scenario). If the issues addressed above are considered in the analysis, the regulatory limits may not be satisfied. Additionally, the reported doses appear to be calculated from contaminated groundwater uptake only. The basis for exclusion of the other pathways should be more clearly defined. Alternatively, effects of other pathways should be evaluated and reported.

4. PROTECTION OF INDIVIDUALS FROM INADVERTENT INTRUSION

Regulatory Requirement

Design, operation, and closure of the land disposal facility shall ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed. (WAC 246-250-180)

License Condition

..The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Provide a passive site security system (e.g., a fence) that requires minimum maintenance.... (66L)

Summary of Information Provided

Three design features that contribute to protecting inadvertent intruders are described in the draft Closure Plan. These are:

- Location on a large controlled-access federal reservation.
- Facility security system.
- Earthen cover on disposal units.

The licensee's proposed draft Closure Plan identifies the site location on DOE's Hanford Reservation as a contributor to intruder protection. It is known that the facility is owned by the federal government and leased to Washington State for a period of at least 99 years (which presently ends in 2063). This government ownership ensures institutional restrictions of future uses of the land that could otherwise lead to intrusion into the waste.

In addition, the facility is located near the center of the 573-mi^2 (1,500-km^2) Hanford Reservation, much of which is expected to remain under institutional control for longer than the USE facility operating life. Thus, a major basis for evaluations of intruder protection is the assumption that the inadvertent intruder does not have access to the waste disposal site because of the continued existence of the Hanford Reservation controlled boundary.

Security at the USE facility will involve the use of a chain link fence topped with three strands of barbed wire. This fence will be maintained throughout the institutional control period (i.e., 100 years following facility closure). This fence system is intended to be maintained even after conclusion of the institutional control period.

At least 16 ft 6 in. (5 m) of earthen cover material over the top of all waste will be provided at the closed and stabilized USE facility.

Review of Adequacy

As required by provisions of WAC 246-250-330(1)(b), the cover thickness of 16 ft 6 in. (5 m) is provided above Class C waste. This satisfies the requirement for inadvertent intruder protection.

Scenarios modeling exposures to inadvertent intruders are not addressed in the draft Closure Plan apparently based on the assumption that the inadvertant intruder does not have access to the site because of its location on the Hanford Reservation. However, the facility location on the Hanford Reservation is essentially an institutional control, which can be viewed as an ongoing active measure. Reliance on ongoing active measures must be avoided, according to provisions of WAC 246-250-060(4). Maintenance and control of the Hanford Reservation boundary that occurs after the institutional control period may be considered more than simple custodial maintenance and may be beyond what is allowed for evaluating the adequacy of facility design.

Therefore, the licensee should include the assumptions, methodology, and data used in evaluating the potential for inadvertent intrusion. Since potentially significant doses can occur from intrusion activities to both the intruder and offsite individuals, the effects should

be addressed. Exposures to indoor radon from an onsite dwelling, contaminated water from an onsite well, and direct gamma exposure from bringing contaminant to the surface during construction of the well and house can potentially result in high doses to the intruder. At a minimum, justification for excluding this analysis should be presented.

5. PROTECTION OF INDIVIDUALS DURING CLOSURE OPERATIONS

Regulatory Requirement

After the effective date of these regulations, operations at the land disposal facility shall be conducted in compliance with the standards for radiation protection set out in chapter 246-221 WAC, except for releases of radioactivity in effluents from the land disposal facility, which shall be governed by WAC 246-250-170. Every reasonable effort should be made to maintain radiation exposures as low as is reasonably achievable. (WAC 246-250-190)

Summary of Information Provided

The draft Closure Plan does not address modeled exposures to workers during normal and abnormal closure activities. The justification for the absence is also not presented. The licensee states that surface gamma exposures are essentially zero once the final cover is in place.

The draft Closure Plan does not address proposed measures to keep worker exposures ALARA during normal and abnormal closure activities. The justification for the absence is not presented.

Review of Adequacy

Scenarios modeling occupational exposures during closure operations are not addressed in the draft Closure Plan. The licensee specifies a summary of the worker exposures measured during operations and projects that, once the final cover is in place, no occupational doses will be incurred. However, projected exposures from the emplacement of the cover are not given. If there is sufficient basis for this exclusion, it should be stated in the draft Closure Plan. Otherwise, the analyses should be presented.

Additionally, scenarios modeling exposures due to accidents that could occur during normal and abnormal closure and post-closure activities are not addressed in the licensee's closure plan. At a minimum, the licensee should:

- Identify and discuss the principal accident or unusual operational scenarios by which radioactivity may be released and/or result in human exposures.
- For each scenario, the draft Closure Plan should provide estimates of radioactivity releases and event frequencies that are reasonable, yet conservative.
- Information that enables quantification of the source term for principal mechanisms by which radioactivity, once released, may be transferred from the disposal facility.

The information provided should be sufficient to enable an independent staff analysis of projected radiological impacts. Accordingly, the detailed information utilized in the analysis should be presented.

In the absence of the information described above, insufficient justification exists to conclude that operations during closure will comply with requirements of WAC 246-250-190 or that every reasonable effort has been made to maintain radiation exposures as low as reasonable achievable.

6. STABILITY OF THE DISPOSAL SITE AFTER CLOSURE

Regulatory Requirement

The disposal facility shall be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site and to eliminate, to the extent practicable, the need for ongoing active maintenance of the disposal site following closure so that only surveillance monitoring, or minor custodial care is required. (WAC 246-250-200)

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Stabilize the site in a manner to minimize environmental monitoring requirements for the long-term custodial phase, and develop a monitoring program based on the stabilization plan.... (66M)

Summary of Information Provided

Stability of the site after its closure depends upon the natural site characteristics and design of the disposal unit and cover system. These two influences on site stability are discussed below.

Site Characteristics -- The primary site characteristics that contribute to long-term stability are the semi-arid climate at the Hanford Site and the relative geologic stability of the Columbia Basin. The amount of rainfall is low, most of which occurs in the winter. Seismic activity and volcanism are of either low probability or are not expected to adversely affect the facility. The facility is beyond areas of flooding of nearby surface water bodies, although this conclusion is subject to review upon receipt of data on the probable maximum flood of Cold Creek.

- Meteorology and Climatology -- The amount of rainfall at the Hanford Site is low, averaging 6.26 in. (16 cm) of water annually, most of which occurs in the winter; yearly normal snowfall is about 14 in. (36 cm). The 100-year, 24-hour storm event will produce 1.99 in. (5.1 cm) of precipitation (this event was used in the drainage calculations). Water balance calculations indicate that precipitation is exceeded by evapotranspiration during nine months of the year; infiltration occurs only between November and January, when precipitation exceeds evapotranspiration. Potential evapotranspiration is between 28 and 33 in. (71 and 84 cm) per year, with the annual potential evapotranspiration rate at about 29 in. (75 cm). The relationship between the excess of evapotranspiration over precipitation is not quantified in the draft Closure Plan.

- Seismicity -- Seismic activity such as fault rupture, reservoir induced seismicity, subsidence and liquefaction are of either low probability or not likely to adversely affect waste disposal. Seismic activity in the Columbia Basin is generally short-duration and low-magnitude (less than 3.5 Richter scale) earthquake swarms. Conservative studies for nuclear reactors on the Hanford Site estimate that the maximum credible earthquake for the next 50 years (Richter magnitude 6.7) is associated with the northwest end of the Rattlesnake-Wallula zone of deformation. The maximum earthquake not associated with a fault structure on the Hanford Site is projected to be Richter magnitude 5.75.

- Volcanism -- The potential for renewal of basaltic volcanism in the Pasco Basin is said to be extremely low. With the exception of ash fall events, the effects of volcanic activity associated with the Cascade Range are not expected to affect waste disposal.

- Flooding -- Data indicate that the facility will not be affected by 100-year flooding of the Columbia and Yakima Rivers or Cold Creek, a small ephemeral stream that is the closest surface water feature to the facility. Review of other available published data indicates that the site will not be affected by the Probable Maximum Flood of the Columbia River or a 50 percent breach of the Grand Coulee Dam. Data have not been provided on the effects of the Cold Creek Probable Maximum Flood on the site.

- Rainfall Run-On -- The facility has a general slope from north to south of approximately 1 percent, and is subject to potential localized run-on only from the east, subject to review of a legible topographic map to verify site vicinity topography and drainage.

- Rainfall Runoff -- The facility has a general slope from north to south of approximately 1 percent, and small drainage areas flow away from the facility in the west, south, and northwest. A few areas offsite are topographically low and tend to allow rainfall to pool. These low areas are to be filled with site soil and compacted. This conclusion is subject to review of a legible topographic map to verify site vicinity topography and drainage.

- Erosion/Deposition -- Inspections of gravel layers in place on the trench caps for several years indicate a pattern of deposition rather than erosion. Prevailing winds are from the northwest. In an average year, there are about 26 days in which peak wind gusts exceed 40 mph (64 km/hr) and 5 days with gusts equal or exceed 50 mph (80 km/hr). High winds are generally associated with afternoon drainage winds and with thunderstorms;. High winds associated with thunderstorms do not display a directional preference. Movement of soil by wind has been monitored at the site since July 1986.

Design Features -- Design features influence stability through their effects on erosion, subsidence, liquefaction, and slope stability. These design features include backfill of voids in disposal units, the cover system (as characterized by materials and slopes), and the surface water drainage system (as also characterized by materials and slopes). These are discussed below.

- Erosion -- The disposal unit cover system consists of layers of earthen materials. The free surface of the cover system consists of 4 in. (10 cm) of gravel mulch. Indian Rice grass is also provided and will naturally propagate and sustain itself. Both the mulch and grass are provided to minimize wind and water erosion.

  The slope of the final cover system immediately above the waste is stated to be a minimum of 1 percent. The side slopes of the cover system (on the edges of the cover system, not above the waste) are specified to have a slope of 1:4 (vertical to horizontal). The side slopes of the drainage channels on the cover system are stated to be a minimum 2 percent, while the longitudinal slope is specified as a minimum of 1 percent. No maximum slopes are stated.

  Analyses of the ability of the cover system gravel layer and Indian Rice grass in the cover system to control water erosion are presented in Attachment N of the draft Closure Plan and are based on the Universal Soil Loss Equation. The basis for the drainage design and for analyses of its ability to resist erosion is a postulated 100-year, 24-hour rainfall event. Analyses of the ability to resist wind erosion are based on winds of the worst average month, assuming these winds prevail year round. No credit is taken in the analyses for existence of the gravel mulch or vegetation layer.

  Analyses conclude that no significant water or wind erosion will result under these conditions. Wind erosion is estimated by USE to be 0.1 in. (0.25 cm) per year if the gravel mulch on the cap were not in place.

- Subsidence -- The design features that influence subsidence include waste form, waste container degradation, backfill of voids, and short- and long-term consolidation of foundation and cover soil.

  The draft Closure Plan describes the backfilling operation as the placement of the interim cover above the waste in one or more lifts of native soil excavated from the trenches. No compaction specification is apparent.

  Prior to placement of the final cover, all (interim) closed trenches will be surcharged with 10 to 15 ft (3.3 to 4.6 m) of site soil for at least two months. The intent of this surcharge is to reduce voids that may have formed during the operational life of the trench and thereby, to minimize subsidence after closure.

  Detailed information on foundation soil characteristics is not apparent in the draft Closure Plan. No information about the potential for degradation of waste form or waste containers is presented. Minimal description or specification of cover materials exists in the draft Closure Plan. The basis for subsidence analyses is not presented. No analyses of the potential for static or dynamic settlement (and resulting subsidence) are presented.

- Liquefaction -- The potential for liquefaction depends upon soil characteristics, presence of water, and seismic or mechanical vibrations. Supplemental information submitted by USE to the Washington Department of Health on September 16, 1992 (Sauer to Robertson) indicates the facility to be located in an area of relatively low seismicity and semi-arid desert conditions, with the water table hundreds of feet below the elevation of the disposal facility. Based on this information, USE states the potential for liquefaction to be minimal.

- Slope Stability -- Side slopes on the final cover are indicated to be no steeper than 1:4 (vertical to horizontal). Cover material characteristics are not provided. No mention is made of slope stability calculations.

To verify the stability of the disposal trenches, the licensee has proposed to conduct trench cap surveys and surface inspections during the closure, stabilization, and custodial care periods. These include a gamma survey over trench caps and walking inspections for physical or radiological abnormalities. Evidence of subsidence, settlement, cracking, animal burrows and erosion will be identified and corrective actions taken, as appropriate.

Review of Adequacy

Site Characteristics -- The characteristics of the natural site are conducive to the expectation of stability long after facility closure and stabilization. These characteristics include meteorology, climatology, seismicity, vulcanism, flooding, run-on, runoff, erosion, and deposition.

Design Features -- Analyses of design features are generally superficial and do not provide the required assurance of long-term stability.

- Erosion -- The assumed conditions for design and analysis are not conservative nor consistent with regulatory guidance. The duration and maximum discharge of the design rainfall event must be selected considering site-specific conditions, i.e., size of the area to be drained, slopes, distances, and time to concentration. Based on information provided in the draft Closure Plan, it is not possible to conclude that these calculations have been performed or that the design basis rainfall event is the appropriate case for drainage system design. If, for example, the Probable Maximum Precipitation event were used as the design basis, the duration would likely be on the order of minutes and the required discharge rate would likely be much greater. The basis for design against wind erosion is similarly of questionable adequacy.

  The principal design criteria for erosion protection should at least identify

  - Surface water and wind velocities used for normal operating conditions and

  - Abnormal surface water and wind velocities and water levels used for long-term stability considerations.

  The draft Closure Plan does not identify whether the stated conditions for design are normal or abnormal conditions. The description of the basis as the 100-year, 24-hour rainfall event and winds of the worst average month suggests these conditions to be normal conditions. A thorough development of the bases for design against water and wind erosion should be presented and justified.

  Because of the potential inadequacy of the design basis for erosion protection, the adequacy of erosion protection is uncertain.

- Subsidence -- No estimates of subsidence are presented in the draft Closure Plan. No basis is presented or justified for determining the magnitude of acceptable subsidence and/or differential settlement. Without such estimates and confidence that excessive subsidence will not occur, local

ponding of precipitation and runoff is possible above the disposal unit. Thus, analyses and conclusions about the rate at which water might infiltrate into the disposal unit are unfounded.

The following deficiencies make conclusions about the potential for subsidence impossible:

- Lack of detailed information on information about waste form and waste container degradation.
- Lack of detailed information about void backfilling procedures and backfill material to be used.
- Lack of material and construction specifications for interim or final cover.
- Lack of static and dynamic settlement calculations and analyses.
- Lack of justification for the adequacy of surcharging plans (in terms of the extent of surcharge material to be used and the duration of surcharge).

- Liquefaction -- The high relative density of the Hanford Formation materials and the large depth to groundwater provides suitable soils for supporting heavy foundation loads and eliminate the possibility of liquefaction. Thus, in general, the conclusion is reasonable that the potential for liquefaction is minimal. However, without information about cover material characteristics, compaction requirements, and the maximum degree of saturation in cover materials, no firm conclusion about the potential for liquefaction can be made.

- Slope Stability -- The specified slope of 1:4 (vertical to horizontal) is steeper than that recommended by the NRC for long-term stability of slopes for disposal of uranium mill tailings. In that case, the NRC recommends a maximum slope of 1:5 (vertical to horizontal) under general conditions. Justification demonstrating the stability of the steeper proposed slopes should be provided. Since such justification is not provided in the draft Closure Plan, no conclusion about slope stability is possible.

As described above, questions remain about the stability of principal design features. Thus, the extent to which ongoing active maintenance following facility closure will be required is not known. Therefore, the regulatory requirement of achieving long-term stability without reliance on ongoing active maintenance is not satisfied by information presented in the draft Closure Plan.

7. DISPOSAL SITE SUITABILITY REQUIREMENTS FOR LAND DISPOSAL

Regulatory Requirement

An existing disposal site may be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of this chapter or significantly mask the environmental monitoring program, provided an extensive environmental monitoring program exists which is designed to differentiate, to the maximum extent practicable, between contributions from the disposal site and other nearby facilities. (WAC 246-250-300(1)(j))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Evaluate present and proposed activities on adjoining areas to determine their impact on the long-term performance of the site, and take reasonable action to identify and minimize the effects.... (66P)

Summary of Information Provided

The licensee has provided a description of nearby man-made features that could impact upon the ability of the closed disposal facility to meet the performance objectives. The disposal facility is located within a federal reservation in an area that is expected to remain under federal ownership and institutional control for the foreseeable future. The Hanford Reservation provides a large buffer around the USE disposal facility (i.e., more than 10 kilometers from the facility to the nearest Hanford boundary), minimizing the potential for future population growth and development to affect compliance with the performance objectives. There are no permanent residents on the reservation. In addition, the presence of wilderness study areas to the north and west, and the Columbia and Yakima Rivers to the

east and south of the federal reservation further preclude population growth and development near the facility.

The licensee's proposed draft Closure Plan does not discuss the relationship of the facility and the proposed post-operational environmental monitoring program to nearby facilities or activities, although it is known that the latter includes DOE facilities that are a source of both airborne and groundwater radioactive releases. The extent to which activities in surrounding areas might mask releases from the USE disposal facility is not addressed in the draft Closure Plan.

The licensee has proposed an environmental monitoring program that includes background monitoring stations to distinguish any releases from the USE facility from those arising from nearby facilities or activities. The proposed background air monitoring station is located near the administrative building. The section on meteorology indicates that the wind direction is predominantly from the northwest, although the secondary wind direction is from the southwest during the spring and fall and other wind directions occur during the year.

The licensee has proposed to continue the air monitoring only through the second year of the post-operational period, since the disposal units will be capped by then. Soil and vegetation monitoring at the air monitoring stations will be continued to provide an indication of airborne releases. These samplings will be done on an annual basis.

The licensee has proposed to conduct soil and vegetation sampling from the same locations as air monitoring. The locations are designed to provide background information upgradient of the site. Vegetation sampling will also be performed on trench caps for the three trenches containing the most tritium to address the potential for gaseous diffusion of tritium through the trench caps. It is not clear whether soil or soil gas sampling will also occur on the trench caps.

Groundwater monitoring is currently performed in five wells, one of which is upgradient on the southwest side of the facility and the others are downgradient to the east and northeast of the disposal area. The wells range from 350 to 360 ft (107 to 110 m) deep and are screened through the upper 35 to 40 ft (11 to 12 m) of the unconfined aquifer. One

well, MW-13, is located upgradient of the site and the remaining four wells, MW-3, MW-5, MW-8, and MW-10 are located downgradient of current trenches at the facility.

Wells MW-3, MW-8, MW-10, and MW-13 were cased with permanent, 8-in. (20-cm) diameter steel casing to a total depth of 350 ft (107 m) in MW-3, MW-8, and MW-13, and to a depth of 360 ft (110 m) in MW-10. The casings were then pulled up 41 ft (13 m) to expose the well screen assembly in the water-bearing layer. At the completion of the screen installation, the annular space between the permanent 8-in. (20-cm) casing and a temporary 12-in. (30-cm) casing was filled to the ground surface with a cement-bentonite grout and the 12-in. (30-cm) casing was removed. An 8-in. (20 cm) diameter steel cap was placed on each well. Well MW-5 was constructed using a 6-in. (15-cm) diameter PVC flush-threaded pipe as the permanent well casing. When temporary casing installation was completed, 350 ft (107 m) of PVC pipe, including 40 ft (12 m) of flush-threaded stainless steel screen was installed. The annular space around the PVC pipe was filled with a sand pack at the well screen, followed by removal of the temporary casing and placement of a bentonite seal and cement-bentonite grout up to the ground surface.

The licensee proposes to install six additional monitoring wells prior to site closure. One will be an additional upgradient well, while the others will provide additional downgradient monitoring.

Direct radiation monitoring is performed at 11 locations around the facility boundary. The distribution of the monitoring locations around the facility, in combination with quarterly trench cap radiation surveys, is intended to provide discrimination between direct radiation due to nearby DOE facilities and that from the USE facility.

Review of Adequacy

The draft Closure Plan presents a description of nearby facilities or activities that could adversely impact the ability of the site to meet performance objectives. It does not address the extent to which nearby facilities or activities could significantly mask the environmental monitoring program or impact the ability to meet the performance objectives. Additional justification is also required to show that the environmental monitoring program

will distinguish between contributions from the disposal site and those of nearby facilities of activities. Specific concerns are described below.

The location of the background air monitoring station may not be upgradient for a portion of the year. For purposes of distinguishing any releases from the USE facility from those from nearby DOE facilities (e.g., the 200-West Area), the two air monitoring stations on the west side of the facility, rather than the station identified in the draft Closure Plan, would tend to serve as the background locations. Moreover, the station near the administrative building would be downgradient of the disposal area during some portions of the year. Thus, correct interpretation of the air monitoring results from each of these stations requires that information on wind direction on the corresponding days is also needed. This is essential to determine whether any increased levels that are detected originate from the USE facility or from other nearby facilities or activities.

The licensee has proposed to continue the air monitoring only through the second year of the post-operational period and soil and vegetation monitoring at the air monitoring stations will be continued to provide an indication of airborne releases. However, because soil and vegetation samplings will be performed on an annual basis, it might be difficult to ascertain the source of any elevated levels that are detected. Consideration should be given to conducting a formal evaluation at the end of the second year for the potential need for continuing the air monitoring for a somewhat longer period, primarily for the purpose of determining that the source of any increased levels is not the USE facility.

The licensee has proposed to conduct soil and vegetation sampling from the same locations as air monitoring to provide background information. As with the air monitoring stations, the two locations west of the facility may be the actual background locations most of the year. Moreover, the location near the administration building may actually be downgradient of the disposal areas for some portion of the year and may be inadequate for indicating background conditions.

Although vegetation samples will be taken from trench caps for the three trenches containing the most tritium, it is not clear whether soil or soil gas sampling will also occur on those trench caps. Because of high evapotranspiration rates, net upward movement of certain gaseous radionuclides might result through trench caps. This indicates a potential

need for soil or soil gas sampling on closed trenches to supplement the vegetation sampling, particularly during periods of vegetative dormancy.

One of the proposed six new monitoring wells to be installed will be an additional upgradient well, while the others will provide additional downgradient monitoring. The locations of the existing and proposed downgradient wells appear appropriate, given that the groundwater contours for the site indicate a general southwest to northeast direction of groundwater flow across the site.

However, it is difficult to determine from the maps provided by the licensee whether the background monitoring wells are suitably placed. The text of the draft Closure Plan indicates that a tritium plume is encroaching upon the USE facility from the southwest. However, the proposed monitoring wells are to the west of the facility, rather than the southwest corner. Because the figure provided in Attachment 3.8i of the supplemental information does not depict the location of the USE facility, it is difficult to determine the relationship between the tritium plume and the USE facility and, hence, the suitability of the background well locations.

Direct radiation monitoring at 11 locations around the facility boundary is sufficient to provide discrimination between direct radiation due to nearby DOE facilities and that from the USE facility.

Inadequate justification is provided that the performance objectives will be met. Because of outstanding questions about the relationships between the USE facility and nearby facilities and appropriateness of elements of the environmental monitoring program, no conclusion about compliance with the regulatory requirement is justified.

8. DISPOSAL SITE DESIGN FOR LAND DISPOSAL

8.1 ACTIVE MAINTENANCE

Regulatory Requirement

Site design features shall be directed toward long-term isolation and avoidance of the need for continuing active maintenance after site closure. (WAC 246-250-320(a))

License Condition

The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Render the site suitable for surface activities without resort to custodial care exceeding vegetation control, minor maintenance, and environmental monitoring. No ongoing maintenance shall be necessary. Final conditions at the site must be acceptable to the government custodian and compatible with its plan for the site.... (66F)

Summary of Information Provided

The draft Closure Plan describes observation of the closed disposal units for two years following disposal facility closure. During this time, all maintenance activities required to assure that the disposal units perform as required will be carried out. In the event that no significant maintenance is required during this two-year period, it will also provide a slight basis for inferring continued stability and isolation of the waste.

See the discussions provided in Sections 3, 4, and 6.

Review of Adequacy

Disposal site design features are designed with the intent of long-term waste isolation but the basis for the designs and justifications must be strengthened. The natural site is expected to be stable in the long-term. However, as described in Section 6, no conclusion is possible about the stability of the disposal units. Therefore, no conclusion is possible about the need for ongoing active maintenance. As described in Section 3, the potential for releases from the disposal unit appears to be small, but requires additional analysis.

Without confirmation that disposal units will be stable (i.e., not subject to subsidence, liquefaction, and erosion), it is not possible to conclude that ongoing active maintenance will be avoided following facility closure.

8.2 COMPATIBILITY BETWEEN DESIGN AND CLOSURE

Regulatory Requirement

The disposal site design and operation shall be compatible with the disposal site closure and stabilization plan and lead to disposal site closure that provides reasonable assurance that the performance objectives will be met. (WAC 246-250-320(b))

Summary of Information Provided

The layout drawing showing disposal unit locations (WN-TOP-20-5-000) indicates that new disposal units will be constructed close to adjacent existing disposal units. However, no dimensions are provided that would allow one to consider whether construction or waste placement activities might interfere with or impact an adjacent closed and stabilized disposal units.

The draft Closure Plan provides little information about the operating and construction sequences, so far as the placement of waste and construction of the interim cover is concerned. It is clear that the interim cover system will be placed after a particular disposal unit is filled and that one disposal unit will be essentially filled before another is opened. It is also clear that the final cover is constructed after all disposal units have been provided with their interim covers.

The overall order in which disposal units will be developed is provided in the draft Closure Plan. However, the exact operating and construction sequences for activity within or associated with a given disposal unit are not provided.

Analyses of disposal facility performance assume no interference of disposal operations with closed and stabilized disposal units.

Review of Adequacy

Without a more complete description of sequences of activities associated with waste emplacement, backfill of voids, interim cover construction, disposal unit surveillance and monitoring, and final cover construction, no conclusion about the potential for operational impacts on disposal units already closed and stabilized is possible. Without assurance that closed and stabilized disposal units remain undisturbed throughout the disposal facility operating life and the closure period, some important assumptions of the performance assessments about disposal unit stability cannot be validated. Therefore, no conclusion about the extent to which performance objectives are satisfied can be drawn.

8.3 COMPLEMENT TO SITE CHARACTERISTICS

Regulatory Requirement

The disposal site shall be designed to complement and improve, where appropriate, the ability of the disposal site's natural characteristics to assure that the performance objective will be met. (WAC 246-250-320(c))

Summary of Information Provided

Although the primary reliance is placed on the site itself to isolate radioactive wastes, the facility design features will provide additional barriers to radionuclide release to the environment. These design features will enhance the isolation provided by site characteristics and be compatible with them.

Site Characteristics -- Site characteristics that were considered include groundwater depth, water infiltration, climatic conditions, wind erosion/deposition potential, geologic stability, and flood potential. The natural site features that contribute to waste isolation include a relatively thick unsaturated zone and a low infiltration rate and low soil moisture content resulting from low precipitation and high evapotranspiration rates. In addition, the facility is beyond areas of flooding of nearby surface water bodies. However, this conclusion is subject to review upon receipt of data on the Probable Maximum Flood of Cold Creek. Seismic activity is not expected to adversely affect the facility.

- Depth to Groundwater -- Groundwater beneath the site is at a depth of approximately 325 ft (99 m) below the surface. The deepest trench to date is approximately 45 ft (14 m), with a slit trench down to 53 ft (16 m). Future trenches will be constructed to a uniform depth of 45 ft (14 m) below grade. Seasonal fluctuations in the groundwater table would amount to only a few additional feet at most. If artificial discharges from DOE operations are discontinued, a 35- to 40-ft (11- to 12-m) drop in the water table is anticipated.

- Water Infiltration -- The low soil moisture content, low precipitation (averaging 6.26 in. or 16 cm of water annually), and high potential

evapotranspiration rate (approximately 29 in. or 75 cm annually) will limit potential infiltration through the final closure cap and the unsaturated sediments. Observations indicate that precipitation is exceeded by evapotranspiration during nine months of the year. Infiltration occurs only between November and January, when precipitation exceeds evapotranspiration. Site specific data from monitoring wells at the facility show a soil moisture content below 30 to 40 ft (9 to 12 m) of approximately 2 percent.

Natural recharge in the unsaturated zone is estimated to be about 0.2 in. (0.5 cm) per year, based on current site conditions, soil moisture contents measured at the 200-East Area, and site soil characteristic curves. The primary source of recharge is assumed to be direct infiltration of precipitation. Calculations based on the current water table position and this rate of recharge resulted in an estimated travel time through the vadose zone to the water table of about 1,060 years. A potential 35- to 40-ft (11- to 12-m) drop in the water table, anticipated for post-Hanford conditions combined with the low rate of recharge, is estimated to add an additional 350 to 400 years of travel time to the water table.

Site characteristics for meteorology and climatology, flooding, rainfall run-on, rainfall runoff, wind erosion, and seismicity that contribute to satisfying this requirement are described in Section 6.

Design Features -- The design features that contribute to complementing and improving the capabilities of the natural site to isolate the waste include the disposal unit covers, surface and subsurface water drainage system, above-grade final cover, and gravel mulch and vegetation established in covers following facility closure.

- Disposal Unit Covers -- The multiple-layer covers placed over the disposal units consist of a vegetation layer, gravel mulch, native soil, synthetic liner, low-permeability bentonite geocomposite liner, native soil, gravel layer, and native soil, as shown in Figure 3-1 of the draft Closure Plan. The functions of several of the layers are qualitatively described. No descriptions are provided of analyses that may have been performed to demonstrate that the cover performs better in terms of water infiltration rates than undisturbed native soil.

- Surface and Subsurface Water Drainage System -- Drainage ditches are provided to direct runoff from closed and stabilized disposal units away from the disposed waste and toward offsite areas. A diversion ditch is provided outside the east boundary of the facility in order to intercept any run-on that may appear at the disposal facility and channel it away from the disposal site. No analyses demonstrating that the ditches are sized to conduct water at an adequate rate are presented.

The interim and final covers are graded to encourage runoff. Their slopes are greater than natural slopes of the general vicinity. However, no final grading plan is presented and material characteristics of cover soils and gravels are not compared to those of undisturbed soils of the general vicinity. No information about cover slopes in the long-term is provided.

Gravel drains are installed above the impermeable liner of the final cover to channel any percolating liquid away from the disposed waste. No analyses are presented demonstrating that the drains are sized to conduct percolating water at an adequate rate. Information is not provided about the discharge of any water that enters these drains.

- Above-Grade Final Cover -- The elevation of the final cover is well above the elevation of the surrounding vicinity. This elevation is provided, in part, to limit the potential for runon of water from offsite areas. Although the site is shown to be beyond the extent of potential flood water from surface water bodies in the vicinity, no calculations or analyses are provided to quantify the potential depth of run-on at the site or to demonstrate that the cover is sufficiently high to prevent run-on.

- Vegetation Established in Final Cover -- The gravel mulch and vegetation provided at the free surface of the final cover are intended to stabilize the surface against water and wind erosion under normal conditions.

Review of Adequacy

The design of the interim and final covers, including the low-permeability liner and bentonite geocomposite liner, appears to be superior to natural soil in limiting infiltration. However, no analyses of water movement in the covers which show the expected dynamic behavior are presented.

The design of surface drainage ditches and subsurface drains may be sufficient to conduct water at an adequate rate. However, no analyses are presented to support such a conclusion. As noted in Section 6, the basis for the design (100-year, 24-hour precipitation event) may not be the appropriate condition for design at the site.

Because the potential for subsidence is not addressed (as described in Section 6), the long-term slope of the final cover cannot be assured. Therefore, the effect of final grading of the cover may be of limited effect in encouraging runoff as intended.

The above-grade cover may be adequate to prevent run-on. However, no analyses are provided in the draft Closure Plan of run-on that may result under design conditions (such as Probable Maximum Flood or runoff from the Probable Maximum Precipitation event) to justify the design.

The gravel mulch and vegetation provided in the final cover appear to be superior to undisturbed soil in protecting against erosion. However, since no comparison is made of the protective influence of the gravel mulch and vegetation of the final cover with undisturbed conditions, no conclusion on the extent to which facility design complements natural site characteristics is possible.

Additional information is required to provide assurance that the design features complement and improve the ability of the natural site to meet performance objectives.

8.4 COVER DESIGN

Regulatory Requirement

Covers shall be designed to minimize to the extent practicable water infiltration, to direct percolating or surface water away from the disposed waste, and to resist degradation by surface geologic processes and biotic activity. (WAC 246-250-320(d))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Eliminate the potential for erosion or loss of site or trench integrity due to factors such as groundwater, surface water, wind, subsidence, and frost action. All slopes shall be sufficiently gently to prevent slumping or gullying. The surface shall be stabilized to minimize erosion, settling, or slumping of caps.... (66H)

Summary of Information Provided

Site characteristics for meteorology and climatology, rainfall run-on, rainfall runoff, flooding, wind erosion potential, and seismicity that contribute to compliance with this requirement are described in Section 6. In addition, the thickness of the unsaturated zone at the site is approximately 320 to 330 ft (98 to 101 m). Sediments in the unsaturated zone are composed primarily of unconsolidated, permeable fine- to medium-grained sands and silty sands of the glaciofluvial Hanford formation and well-graded sandy gravels of the upper portion of the underlying middle member of the Ringold Formation. The Hanford formation contains local gravels and is interlayered with less-permeable silt horizons. The water table occurs approximately 15 to 20 ft (4.6 to 6.1 m) below the Hanford/Ringold Formation contact.

The low precipitation and high potential evapotranspiration rate will limit potential infiltration through the final closure cap and the underlying unsaturated sediments. The facility is beyond areas of frequent flooding of nearby surface water facilities. However, this conclusion is subject to review upon receipt of data on the Probable Maximum Flood of Cold Creek. Seismic activity is not expected to adversely affect the facility.

Each disposal unit is provided with two covers. The interim cover, consisting of several feet of native soil, is placed to bring the elevation up to existing grade at each disposal unit and 6 in. (15 cm) of gravel is added for surface stabilization. Additional site soils are placed so that no more than 10 ft (3.3 m) of native soil are above the gravel layer.

When all disposal units have been provided with interim covers and disposal operations have ceased, the final cover is constructed. The final cover is constructed over the interim cover which is first graded as necessary to obtain the minimum slope of 2 percent. After the top layer of the interim cover is graded, a bentonite geocomposite liner and an impermeable membrane liner are placed as a moisture barrier. Next, at least 4 feet (1.3 m) of additional native soil is provided. A gravel mulch of 4 in. (10 cm) thickness is provided to stabilize the surface against water and wind erosion. Vegetation consisting of Indian Rice grass is recommended in the draft Closure Plan. The finished slope of the final cover system is 1 percent over the entire surface of the cover. The subsurface drainage channel has a minimum cross-slope grade of 2 percent. The longitudinal slope of the subsurface drainage channel is not less than 1 percent.

Subsurface drains are placed between disposal units above the bentonite geocomposite and impermeable membrane liners. The trough of each subsurface drainage channel is intended to intercept percolating water and conduct it away from the disposed waste.

The proposed draft Closure Plan calls for revegetation of disposal trench caps with Indian Rice grass to minimize water infiltration and help prevent erosion. The cover design does not include features that would preclude deep-rooted vegetation or burrowing animals that could intrude into the disposed waste and either bring radionuclides to the surface or create pathways for water to enter the disposal unit. Typical root depths of either the proposed revegetation species or other competing species that may colonize the closed trenches are not addressed in the draft Closure Plan.

No information is presented regarding the following:

- The design criteria upon which the designs of various components of the cover are based.
- Material and construction specifications.
- Quantitative analyses of water infiltration under design conditions.
- Static and dynamic settlement analyses.
- Slope stability analyses.
- Filter design for transitions from material of one sized distribution to another.

Review of Adequacy

To comply with this requirement, the design goal should be minimization of infiltration into the disposal unit over the long term and stabilization of the cover to minimize wind and water erosion and to enhance seismic stability. The natural site features that were considered include the semi-arid climate, meteorological and climatological conditions, site stratigraphy, topographic features and drainage characteristics, wind erosion/deposition potential, and the relative geologic stability of the Columbia Basin. The effects of these natural characteristics are described in Section 6.

The depths to which root and animal burrow might penetrate are not stated in the draft Closure Plan. Because such penetration might provide pathways for contaminant transport or water infiltration into the disposed waste, the adequacy of the cover design cannot be fully evaluated, based on information presented in the draft Closure Plan.

Because the final cover includes the bentonite geocomposite and impermeable membrane liners, infiltration into the disposed waste is expected to be small. The bentonite has the ability to swell in the presence of water so that any cracks resulting from dry conditions can be expected to seal and heal itself when water appears. The draft Closure Plan specifies that the bentonite layer will be only 0.25 in. (61 mm) thick. The licensee expects the bentonite layer to remain an effective barrier to water infiltration over long periods of time despite the dry conditions that prevail at the site. However, no analyses are provided to support such an expectation and no affirmative conclusion can be drawn. No justification for the stability of this layer over long periods of time is presented in the draft Closure Plan. Differential settlement in the cover of virtually any noticeable magnitude would cause damage to the bentonite layer that might render it ineffective or reduce its effectiveness. No information is provided that would justify this thickness as adequate in its role as a moisture barrier.

The impermeable membrane liner is provided to assist in preventing percolating water from coming in contact with disposed waste. No information is provided demonstrating the service life of this component. Therefore, in the long term, the effectiveness of this component should be significantly discounted. Furthermore, focusing on the short term, no information is provided on measures that would be taken to assure that the liner would not be damaged during its installation and cover construction to the extent that it would be rendered ineffective.

The depth of cover soils of at least 18 ft (5.5 m) over the waste represents a large capacity to store water that may percolate into the cover. Because of the semi-arid desert conditions, evapotranspiration significantly exceeds the precipitation under normal conditions. Thus, it is likely that the water storage capacity of the cover system is sufficient to hold the water during times of wet weather until dryer weather returns and the water in the cover can dissipate through evapotranspiration. However, no analyses are provided to

give assurance that the water storage capacity of the cover system is adequate to prevent water infiltration into the disposed waste.

The subsurface drains are provided to conduct percolating water away from disposed waste. However, no design calculations or analyses are provided that could be used as a basis for concluding that these features are adequately designed and will conduct water at a rate which is sufficient to limit continued infiltration into the disposal unit.

No information is provided that would assure that subsurface drains will not be clogged after the geotextile in which the gravel is placed is assumed to degrade. Clogging might occur either by smaller particles from overlying materials which migrate into the drain or by fragments of the geotextile which might accumulate locally in the drain.

No information is provided to justify internal stability of the various layers of the covers. In particular, fine particles of the native soil that overlies the 6 in. (15 cm) of gravel may migrate into the gravel layer. This would have the effects of causing subsidence and clogging the gravel layer, rendering it less effective as a drainage layer. Information is necessary to assure internal stability of the various layers of the cover.

The native materials intended to be used in the covers are inherently stable against geologic processes at the site, as evidenced by their past persistence at the site. However, no specifications for the soil are presented in the draft Closure Plan. Thus, materials which are potentially subject to weathering may be excavated and placed in conditions which would cause degradation that could not occur in its undisturbed condition.

The following information, among others, should be provided:

- The design criteria upon which the various components of the cover are based.
- Material and construction specifications. (descriptive)
- Quantitative analyses of water infiltration under design conditions.
- Static and dynamic settlement analyses. seismic event
- Slope stability analyses.

- Filter design for transitions from material of one sized distribution to another.

Because of the lack of detailed information, design bases, and justified designs, no conclusion is possible regarding the adequacy of cover design to minimize water infiltration, to direct percolating or surface water away from disposed waste, or to resist surface geologic processes and biotic activity.

8.5 SURFACE DRAINAGE

Regulatory Requirement

Surface features shall direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance in the future. (WAC 246-250-320(1)(e))

Summary of Information Provided

Site features considered in the site integrity analysis included flood conditions, wind erosion, and groundwater depth. Site rainfall run-on and runoff characteristics, wind erosion, and site flooding potential are described in Section 6. Groundwater depth is addressed in Section 8.4. The facility is beyond the area of flooding of nearby surface water bodies. However, this conclusion is subject to review of data on the Probable Maximum Flood of Cold Creek. The water table is relatively deep and will not rise to contact the waste.

The interim and final covers are provided, in part, to direct surface water away from disposed waste. For a review of this role of the covers, refer to Section 8.4.

Drainage ditches are provided to direct runoff from closed and stabilized disposal units away from the disposed waste and toward offsite areas. A diversion ditch is provided outside

the east boundary of the facility to intercept any run-on that may appear at the disposal facility and direct it away from the disposal site. No analyses are presented demonstrating that the ditches are sized to conduct water at an adequate rate or designed to remain functional under erosive influences that might exist.

The interim and final covers are graded to encourage runoff. However, no final grading plan is presented and no information about cover slopes in the long-term is provided.

Review of Adequacy

The design of surface drainage ditches and subsurface drains may be sufficient to conduct water at an adequate rate. However, no analyses are presented to support such a conclusion. As noted in Section 6, the basis for the design (100-year, 24-hour precipitation event) may not be an adequate condition upon which to base the design.

No information is presented that demonstrates the drainage features to be designed to resist the erosive effects of flowing water, especially under conditions that should be considered as the design basis, namely, the Probable Maximum Precipitation event. Without such a justification, the need for ongoing active maintenance cannot be known and no conclusion can be drawn regarding adequacy of drainage feature designs.

8.6 CONTACT WITH WATER

Regulatory Requirement

The disposal site shall be designed to minimize to the extent practicable the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal. (WAC 246-250-320(f))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Demonstrate that all trench elevations are above water table levels, taking into account the complete history of seasonable fluctuations.... (66G)

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Eliminate the need for active water management measures, such as a sump or trench pumping and treatment of water to assure that wastes are not leached by standing water in the trenches.... (66O)

Summary of Information Provided

The interim and final covers are provided, in part, to limit the potential for contact between water and disposed waste. For a review of this role of the covers, refer to Section 8.4. Additionally, surface and subsurface drainage features are also provided for this purpose. These are described in Section 8.5.

No information is provided about systems provided to conduct water away from the disposed waste, should water pass through the impermeable membrane and bentonite geocomposite liners. Some information is presented in the draft Closure Plan to demonstrate that percolating water will not come in contact with the disposed waste under normal conditions.

This regulation and the two related license conditions require that the contact of water with waste must be minimized to the extent possible. The natural site features considered in assessing the potential for contact with water include climatic conditions, groundwater depth, water infiltration, and facility drainage characteristics. These characteristics are described in Section 6 and 8.3.

The low precipitation and high potential evapotranspiration rate will limit potential infiltration through the final closure cap and the underlying unsaturated sediments. The water table is relatively deep and will not rise to contact the waste. The facility is beyond the area of flooding of nearby surface water bodies, although this conclusion is subject to review upon receipt of data on the probable maximum flood of Cold Creek.

Review of Adequacy

Although the potential for percolating water to come in contact with disposed waste is likely to be small, prudent design should provide for the possibility. No information exists in the draft Closure Plan about features provided to conduct water away from the disposed waste, should it pass through the impermeable membrane and bentonite geocomposite liners and come in contact with disposed waste. Moreover, as stated in Section 8.4, insufficient information is presented in the draft Closure Plan to provide assurance that water will not come in contact with the disposed waste under design basis conditions.

Additional design information and analyses are required to assess the adequacy of the interim cover, final cover, surface water drainage systems, subsurface water drainage system, and drainage system in minimizing the potential for contact between percolating or standing water with waste after disposal.

9. DISPOSAL SITE CLOSURE

9.1 VOID SPACES

Regulatory Requirement

Void spaces between waste packages shall be filled with earth or other material to reduce future subsidence within the fill. (WAC 246-250-330(e))

Summary of Information Provided

The draft Closure Plan states that void spaces between disposed waste containers will be backfilled periodically after the waste containers are placed in the disposal facility. Backfill material is said to be placed periodically on the waste as required for shielding and to fill void spaces. Backfill is said to be placed in one or more lifts. The "...backfill material generally sifts down between waste containers in the top layers of waste to reduce the amount of void space." Surcharging each disposal unit after waste container placement is also said to have a positive effect on reducing void spaces in the disposal unit. Very little specific information is presented about the configuration of waste containers in the disposal unit, the characteristics of the backfill material, or the procedures used to assure that void spaces are properly filled.

On the basis of past observations of subsidence in Trenches 1 through 7, the licensee concludes that subsidence has been and will continue to be minimal following interim closure. No additional information or justification is provided to support the assertion that future subsidence will be within acceptable limits.

Review of Adequacy

Site soil is stated to be used as backfill material. Site soil is inferred to consist of silty sands and gravel. Because of the gravel content in backfill material, bridging between waste containers that might limit flow of backfill into void spaces, even in the upper layers of containers may be possible. No compaction specification is stated for the backfill material in voids or cover. Although the backfill material is said to be placed in one or two lifts, no constraints are stated for the thickness of such lifts. Therefore, backfill material in voids and in the cover may settle as the material consolidates. Thus, any assertion that future subsidence will be reduced because void spaces are filled, as required by the regulation, would be unfounded, at least on the sole basis of information presented in the draft Closure Plan.

Short term observations of subsidence are cited as justification that future subsidence will not occur. However, subsidence may proceed very slowly and require decades to become apparent due to the slow degradation of waste containers, foundations material, and settlement of backfill material into voids spaces that were not filled during operations. Excessive subsidence may result if large quantities of water are present in the cover system or within the disposal unit, such as might occur under severe precipitation and/or infiltration conditions. Furthermore, the onset of subsidence may be deferred for many years or decades, because of the semi-arid conditions that prevail at the disposal site. Therefore, the value of these short term observations as justification that future subsidence will not occur is inadequate.

Based on statements in the draft Closure Plan, notably, "...backfill material generally sifts down between waste containers in the top layers of waste to reduce the amount of void space," three deficiencies are suggested:

- Since the backfill "generally" sifts down, one must conclude that backfill sometimes does not sift down. Therefore, the question arises as to the intent to which voids in the disposal unit will be filled with earth or other material.

- The draft Closure Plan contends that "...backfill material sifts down between waste containers in the top layers of waste.. ." No assertion is made regarding the extent to which voids are filled in the lower layers of

waste. Therefore, it is impossible to conclude that voids in the disposal unit are filled with earth or other material as required by the regulation.

- The extent to which void spaces are filled is neither stated, inferred, nor apparent.

Because of these deficiencies in the descriptions of measures taken at the facility to fill the void spaces in the disposal unit, no conclusion can be made about the extent to which voids will be filled with earth or other material. As a result, no conclusion is possible about the potential for future subsidence.

9.2 SURFACE RADIATION DOSES

Regulatory Requirement

Waste shall be placed and covered in a manner that limits the radiation dose rate at the surface of the cover to levels that at a minimum will permit the licensee to comply with all provisions of WAC 246-221 at the time the license is transferred pursuant to WAC 246-250-140. (WAC 246-250-330(f))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Direct gamma radiation from buried wastes shall be essentially background at any accessible above-ground location, as determined by evaluation of environmental data from the licensee, U.S. Department of Energy, and its contractors.... (66D)

Summary of Information Provided

In the proposed draft Closure Plan (Attachment L, Section 3.1.1), the licensee indicates that shielding analyses have been performed to show that the trench covers will be sufficiently thick to reduce the external dose rates over the wastes to background levels. However, the shielding analyses or results of surveys have not been provided in the draft Closure Plan.

The licensee's proposed draft Closure Plan calls for radiological surveys to be conducted on trench caps during the closure, stabilization, and custodial care periods. Walking surveys will be conducted along a grid system using an exposure rate meter to determine direct gamma radiation levels. These will be compared against a baseline value derived from existing environmental monitoring data.

Determination of background levels at the facility is impractical at this time because of nuclear activities both onsite and offsite. The draft Closure Plan does not make clear which data will be used to establish the baseline values. The draft Closure Plan states that environmental dosimeter measurements for perimeter stations published in the Hanford Site Environmental Report will be used. However, in response to a question about the location of these stations, the licensee described the stations located around the active disposal area of the USE facility.

No information is provided in the draft Closure Plan about the placement of waste containers in disposal units that could be used to calculate the dose rates at the disposal unit stabilized surface, following closure.

Review of Adequacy

Although it is likely that the disposal unit covers that will be provided are adequate to limit radiation exposure at the stabilized surface to acceptable levels, the information necessary to draw such a conclusion has not been presented in the draft Closure Plan. It does not present the details of calculations or measurements USE has performed to justify that radiation exposure rates at the stabilized surface of the closed disposal units will be

within allowable limits. Design, operational, and construction information that is required to perform such calculations independently are also not presented. Lacking such information, no conclusion is possible about the extent to which the requirements of WAC 246-221 will be satisfied.

9.3 MARKERS AND SURVEYS

Regulatory Requirement

The boundaries and locations of each disposal unit shall be accurately located and mapped by means of a land survey. Near-surface disposal units shall be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, shall be established on the site to facilitate surveys. The USGS or NGS control stations shall provide horizontal and vertical controls as checked against USGS or NGS record files. (WAC 246-250-330(g))

License Condition

The licensee shall, within 90 days of filling each disposal unit closed after the effective date of this license, erect interim disposal unit monuments upon which the following information shall be displayed in a legible manner:

A. Total activity of radioactive material, in curies, excluding source and special nuclear materials; total amount of source materials in kilograms; and total amount of special nuclear material in grams.

B. Trench number or disposal unit designation.

C. Date of opening and closing disposal unit.

D. Volume of waste in the disposal unit.

E. Coordinates of the disposal unit.

The erection of interim monuments may be omitted if permanent monuments, required by Condition 65, are scheduled to be erected within six months of completion of the disposal unit. (59)

License Condition

All trenches or disposal units shall be conspicuously marked with permanent, stable monuments at each end, consistent with the approved site draft Closure Plan required by Condition 66. Permanent monuments shall be designed to stand erect, well above the grade of the final trench cover, and in a manner which will not allow them to be covered or obscured by drifting sand during the institutional control period. Inscriptions shall be made so as to endure and remain legible well beyond the institutional control period. The permanent monuments shall be inscribed with the following information:

A. Total activity of radioactive material, in curies, excluding source and special nuclear materials; total amount of source materials in kilograms; and total amount of special nuclear material in grams, in the trench.

B. Trench number or other means of identifying the disposal unit.

C. Date of opening and closing the disposal unit.

D. Volume of waste in the disposal unit.

E. Coordinates of the stable and unstable disposal units, including disposal unit depth and depth of cover at closure.

This same information shall be reported to the Department of Health and the Department of Ecology within 30 days of closure of each trench or disposal unit. (65)

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:... Demonstrate that permanent trench markers are in place, stable, and keyed to benchmarks. Identifying information shall be clearly and permanently marked as required by Condition 65 of this license.... (66I)

Summary of Information Provided

No directly stated information is provided about the means by which the boundaries and locations of each disposal unit will be located and mapped. The inference is made from discussions about the survey records that will be maintained and transferred that this is accomplished by land survey.

The draft Closure Plan states that markers will be placed so that the disposal area can easily be defined, but no clear description is given about how many markers will be used and where they will be placed. The draft Closure Plan states that the corners of "disposal areas" will be marked with monuments but no indication is given that disposal units will be so marked. The composition of the boundary markers is described in reasonable detail.

Reference is made to "federal [land survey] control systems" that are used, presumably to assure proper control in land survey at the site. However, no statement is given that three permanent survey control points (referenced to USGS or NGS control stations) have been or will be established on the site to facilitate surveys.

There is no evidence that the control stations used for land survey control were established by USGS or NGS or that they provide the required horizontal and vertical controls which have been checked against USGS or NGS record files.

Review of Adequacy

Of the four requirements stated in WAC 246-250-330(g), only that dealing with placement of markers or monuments is addressed somewhat clearly. However, even in this case, additional information would be useful.

Inference is made that markers are located using land survey methods. Inference is also made that adequate "federal [land survey] control systems" are used to control land survey at the site, but the required controls are not explicitly stated. No indication is given that the quality of vertical and horizontal controls used at the site has been assured through checking against USGS or NGS records. Because of the lack of information in the draft Closure Plan, no conclusion that regulatory requirements are assured of being satisfied is justified on the basis of information contained in the draft Closure Plan.

9.4 BUFFER ZONE

Regulatory Requirement

A buffer zone of land shall be maintained between any buried waste and the disposal site boundary and beneath the disposed waste. The buffer zone shall be of adequate dimensions to carry out environmental monitoring activities specified in WAC 246-250-340(4) and take mitigate measures if needed. (WAC 246-250-330(h))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Maintain a buffer zone to provide space to stabilize slopes, incorporate off-site surface water management features, assure that any future excavation on adjoining areas shall be evaluated as to its potential to compromise trench or site integrity, and provide working space for unexpected mitigating measures, if

needed, in the future. The buffer zone may be within the sub leasehold or on adjacent land, provided written agreements are secured with persons owning or controlling adjacent lands, which shall allow the licensee or custodial agency the required access and actions.... (66K)

Summary of Information Provided

The east setback distance between disposal units and the leasehold boundary is specified to be no less than 50 ft (15.m) while the setback distance between disposal units and the north, south, and west boundaries of the leasehold is specified as at least 100 ft (31 m). This reserved area is inferred to be the buffer zone. Referring to Figure 3.8-2, no buffer zone is indicated and only one monitoring well is found to be apparently located in this reserved land area. No intended use is stated for the buffer zone.

The draft Closure Plan asserts that the surrounding DOE land could be used is necessary for remediation beyond the buffer zone, again with no direct definition of what constitutes the buffer zone. Supplemental information provided by the licensee states that only land on the leasehold would be used for mitigative measures, if needed.

No statement is made regarding the buffer zone below the disposed waste.

The draft Closure Plan provides no information about the dimensions and characteristics of the buffer zone necessary to conduct the environmental monitoring activities specified in WAC 246-250(4) or to implement mitigative measures if needed.

Review of Adequacy

The buffer zone is defined only through inference. No information is provided about the existence of a buffer zone under disposed waste. The draft Closure Plan provides no justification that the buffer zone is of adequate dimension and character to facilitate the conduct of environmental monitoring activities specified in WAC 246-250(4) or the implementation of mitigative measures if needed. The requirements of the regulations are not clearly satisfied by information included in the draft Closure Plan.

9.5 CLOSURE AND STABILIZATION DURING OPERATIONS

Regulatory Requirement

Closure and stabilization measures as set forth in the approved site draft Closure Plan shall be carried out as each disposal unit is filled and covered. (WAC 246-250-330(1)(i))

License Condition

The licensee shall conduct closure and stabilization operations in accordance with...the Facility Closure and Stabilization Plan required by Condition 66 as each trench is filled and covered. (55)

License Condition

...The licensee shall design and construct interim disposal unit caps in accordance with the specifications contained in the Facility Standards Manual. Interim disposal unit caps shall be established within one year of completion of a disposal unit or as described in the Comprehensive Facility Utilization Plan approved by the department. (56)

Summary of Information Provided

The discussions provided in Sections 1, 8.4 and 9.1 address the closure and stabilization plans for the disposal facility. As the waste containers are placed, voids are filled through placement of backfill material in one or two lifts and allowing the material to sift down between the waste containers. The interim cover is placed on completely filled disposal units. The final cover is constructed after all disposal units are completed and after disposal operations cease.

Review of Adequacy

The requirement of closing and stabilizing waste disposal units as they are filled is generally satisfied, subject to the reservations cited in Sections 1, 6, 8.4, and 9.1.

9.6 EFFECT OF OPERATIONS ON CLOSURE MEASURES

Regulatory Requirement

Active waste disposal operations shall not have an adverse effect on completed closure and stabilization measures. (WAC 246-250-330(j))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Bury all waste in accordance with the requirements of the license... (66A)

Summary of Information Provided

The discussion presented in Section 8.2 adequately describe the information presented on the topic of this section. In addition, virtually the entire land area of the leasehold will be devoted to waste disposal, with no areas reserved for stockpiling of excavated site soils or other construction materials.

Review of Adequacy

Toward the end of facility life, logistical difficulties may arise, if insufficient land area is available for stockpiling excavated soils. As in Section 8.2, no conclusion is possible about the extent to which closed and stabilized disposal units may or may not be adversely affected by active waste disposal operations.

9.7 DECONTAMINATION AND DISMANTLEMENT

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Dismantle, decontaminate, as required, and dispose of all structures, equipment, and materials that are not to be transferred to the site custodian....(66B)

Summary of Information Provided

The draft Closure Plan commits to removing all structures from the disposal facility. Contaminated structures will be decontaminated as required by NRC Regulatory Guide 1.86 before release for unrestricted use, or will be disposed in the open disposal unit. No descriptions are provided of the methods to be used for decontamination. No information is given about the containers, if any, into which waste generated from decontamination activities will be placed or any processing to which decontamination waste will be subjected prior to disposal. No information is provided about the characteristics of waste that might be disposed onsite, whether the result of decontamination or direct disposal of structures.

No information is given about the sequence of disposal unit construction and structure removal and decontamination.

Review of Adequacy

The commitment to decontaminate before release or to dispose contaminated structures onsite is acceptable. However, additional information is required about the methods to be used for decontamination, waste characteristics, and the disposition of waste that results from decontamination and decommissioning.

The timing of structure removal relative to new disposal unit construction is unclear and leaves open the question of how the functions for which each building was provided will be performed after the building is removed.

Insufficient information is contained in the draft Closure Plan to justify a conclusion that plans for dismantlement, decontamination, and disposal of structures, equipment, and materials will satisfy the requirements of the regulation.

10. ENVIRONMENTAL MONITORING

10.1 POST-OPERATIONAL MONITORING

Regulatory Requirement

After the site is closed, the licensee responsible for post-operational surveillance of the disposal site shall maintain a monitoring system based on the operating history and the closure and stabilization of the disposal site. The monitoring system must be capable of providing early warning of releases of waste from the disposal site before they leave the site boundary. (WAC 246-250-340(3))

License Condition

The licensee shall conduct an environmental monitoring program capable of detecting the potential contribution of radioactive material from the site to the environment. The program shall include collection of samples and analyses at frequencies specified in the Facility Standards Manual. The licensee shall coordinate sampling schedules with the Department to provide, when possible, duplicate samples on a prearranged frequency. A comprehensive annual report of the sample analyses, with statistical trend analyses and discussions of all anomalous results and actions taken, specification of the quantity of each of the principal contaminants released to unrestricted areas in liquid and in airborne effluents during the preceding year, wind rose for the facility, depth to water and depth to bottom as well as non-radiological contaminates specified in the FSM, for all groundwater wells, ventilation exhaust samples taken from the inspection facility, and comparisons of onsite groundwater wells and U.S. DOE groundwater wells in the vicinity of the facility shall be forwarded to the Department by June 1 of each year. The report shall be submitted in general accordance with the department's document entitles "Recommended Content and Format for Annual Environmental Reports." Deviations in the reporting format must be approved by the department. In addition, the licensee shall report immediately any

environmental monitoring results in excess of reporting levels specified in the Standards Manual. (61)

License Condition

The licensee shall conduct an experimental monitoring program designed to determine the extent and modes of migration of disposed waste into the unsaturated zone, in accordance with procedures specifically approved by the department. Annual reports shall be made to the department by June 1, 1993, and June 1 of each year thereafter. The report shall include a discussion of the results of the program. (62)

License Condition

...All requirements for environmental monitoring, site inspection, maintenance, and site security continue whether wastes are being buried or not. (64)

Summary of Information Provided

See the discussion of the proposed post-operational monitoring and site monitoring programs in Sections 7 and 6, respectively.

An environmental monitoring program will be conducted throughout the periods of facility closure and post-closure institutional control. This monitoring program is designed to provide early warning of any unanticipated releases of radioactivity in sufficient time to take corrective action before any releases to the general environment exceed regulatory limits.

To ensure a smooth transition of the environmental monitoring program to the custodial agency, the draft Closure Plan calls for training of the custodial agency in the monitoring procedures. In addition, parallel monitoring programs will be performed by USE and the custodial agency during the stabilization period to ensure consistency in the

monitoring results. The licensee has not described measures to be taken to assure that comparable monitoring equipment and instrumentation will be used by the custodial agency to provide continuity in monitoring results.

The draft CP does not indicate presence of a vadose zone monitoring program, but the licensee has installed three vadose zone monitoring wells to experiment with soil gas sampling and analytical techniques. These will be used to monitor toluene, xylene, radon-222, and tritium quarterly for two years. At the end of that time, recommendations will be made for further testing or installation of additional vadose zone wells.

The draft Closure Plan does not describe features of the monitoring program that would enable identification of the source of any contamination that might be detected in any component of the monitoring program.

Review of Adequacy

An adequate description of the post-operational monitoring program that will be used is provided in the draft Closure Plan. However, no description is provided of how the operating history and the closure and stabilization of the disposal site will be considered in developing, implementing, and maintaining the post-operational monitoring system.

Consistent with proposed additions to the monitoring program, a comprehensive vadose zone monitoring system is needed at the facility to provide early warning of any releases and to distinguish the source of any contamination found in downgradient groundwater monitoring wells. This is particularly important, given the long period required for infiltration through the 305 ft (93 m) of vadose zone to the groundwater and the potential for changes in groundwater flow patterns that may occur during that time due to cleanup of certain DOE facilities. The vadose zone monitoring system that results after the experimentation effort must be carefully reviewed to assure that it will provide the information necessary to adequately monitor phenomena in the unsaturated zone.

Because of the importance of the vadose zone monitoring, consideration should also be given to other monitoring techniques that may provide a more complete picture of trends

in radionuclide movement. These should address not only downward movement toward groundwater but also lateral diffusion and upward movement through trench caps. The latter is important because of the relatively high evapotranspiration rates at this site. Other monitoring techniques that have been proposed by USE for use at its Ward Valley, California site include neutron logging, gamma spectral logging, and water vapor flux and plant transpiration rate measurements, in addition to soil gas sampling, soil sampling, and vegetation sampling.

Additional concerns about the environmental monitoring program are presented and discussed in Section 7.

10.2 CORRECTIVE MEASURES

Regulatory Requirement

The licensee shall have plans for taking corrective measures if the environmental monitoring program detects migration of waste which would indicate that the performance objectives may not be met. (WAC 246-250-340(4))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Investigate the causes of any statistically significant levels of radioactive or hazardous materials in environmental samples taken during operation and stabilization. In particular, any evidence of unusual or unexpected rates or levels of radionuclide migration in or with the groundwater shall be analyzed, and corrective measures implemented.... (66N)

Summary of Information Provided

Corrective actions to be taken for sample results that exceed action levels are specified in Richland Operations Procedure No. 15. This procedure incorporates investigation levels that trigger further evaluation of a potential problem and reporting levels that require a report to WDOH and a mitigative action. These levels have been established based upon background levels, laboratory detection limits, or a percentage of a regulatory limit. The licensee has indicated in supplemental information provided on September 16, 1992 that this procedure can be updated at the time of closure to incorporate the specific requirements of the draft Closure Plan.

No information is provided about plans for taking corrective measures, should the need be determined.

Review of Adequacy

The commitment to update action levels when the site is closed is acceptable. Additional information should be provided about plans for taking corrective measures, should the need be determined.

11. FUNDING FOR DISPOSAL SITE CLOSURE AND STABILIZATION

11.1 CLOSURE ASSURANCES

Regulatory Requirement

The applicant shall provide assurances prior to the commencement of operations that sufficient funds will be available to carry out disposal site closure and stabilization, including: (a) decontamination or dismantlement of land disposal facility structures; and (b) closure and stabilization of the disposal site so that following transfer of the disposal site to the site owner, the need for ongoing active maintenance is eliminated to the extent practicable and only minor custodial care, surveillance and monitoring are required. These assurances shall be based on department-approved cost estimates reflecting the department-approved plan for disposal site closure and stabilization. The applicant's cost estimate must take into account total costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work. (WAC 246-250-520(1))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Document the arrangements and the status of arrangements for orderly transfer of site control and for long-term care by the government custodian. Also document the agreement, if any, of state or federal governments to participate in, or accomplish, performance objectives. Specific arrangements to assure availability of funds to complete the site closure and stabilization plan shall be documented.... (66C)

Summary of Information Provided

The draft Closure Plan presents a description of and basis for expected and planned costs of disposal site closure and stabilization, including decontamination or dismantlement of disposal facility structures and closure and stabilization of the disposal site. The estimated costs of perpetual maintenance are also presented and explained. No justification is provided for the unit costs that are used in calculating the costs of closure and maintenance.

Although not explicitly stated, all closure activities are apparently assumed to be accomplished by USE, which is shown to be the operator through the end of the closure period. No mention is made of the possibility of an independent contractor performing the closure activities.

The draft Closure Plan asserts that the closed and stabilized disposal site will not likely require ongoing active maintenance and that only minor custodial care, surveillance, and monitoring will be required following closure.

The draft Closure Plan presents documentation asserting that the extent of funds that have been and will be assured (or set aside in the State's control) for the purpose of closing, stabilizing and maintaining the disposal facility is adequate to assure that the disposal facility will be closed, stabilized, and maintained as planned.

Review of Adequacy

Justification must be provided for the unit costs that are used in calculating the costs of closure and maintenance. It should be assumed that an independent contractor will perform closure activities. Under this assumption, the costs to accomplish closure are likely greater than shown in the draft Closure Plan. As noted in foregoing sections of this evaluation, justification is lacking for the assertions that the closed and stabilized disposal site will not likely require ongoing active maintenance and that only minor custodial care, surveillance, and monitoring will be required following closure.

Thus, the adequacy of closure and perpetual care funds, based on information contained in the draft Closure Plan, is not apparent.

11.2 SUFFICIENCY OF CLOSURE ASSURANCES

Regulatory Requirement

The amount of the licensee's financial or surety arrangement shall change in accordance with changes in the predicted costs of closure and stabilization. Factors affecting closure and stabilization cost estimates include inflation, increases in the amount of disturbed land, changes in engineering plans, closure and stabilization that has already been accomplished, and any other conditions affecting costs. The financial or surety arrangement shall be sufficient at all times to cover the costs of closure and stabilization of the disposal units that are expected to be used before the next license renewal. (WAC 246-250-520(4))

Summary of Information Provided

The cost estimate presented in the draft Closure Plan assumes a single base case. It does not describe the effects on the estimated closure and stabilization costs of such factors as secure interest rates, inflation rates, changes in (closure) engineering plans, closure and stabilization that has already been accomplished, or other conditions affecting costs.

The costs of closing disposal units that are expected to be used before the next license renewal are not explicitly presented. No description is provided that shows that financial or surety arrangements will be sufficient at any time in the future to cover the costs of closing and stabilizing the disposal units that are expected to be used before the next license renewal.

The draft Closure Plan does not provide a USE commitment that the amount of financial or surety arrangement will change in accordance with changes in the projected costs of closure and stabilization.

Review of Adequacy

Although there is reason to believe that financial assurance may be adequate to assure closure and maintenance, the requirements of this regulation are not met by information provided in the draft Closure Plan.

12. MAINTENANCE OF RECORDS, REPORTS, AND TRANSFERS

Regulatory Requirement

...Copies of records of the location and the quantity of wastes contained in the disposal site must be transferred upon license termination to the chief executive of the county in which the facility is located, the county zoning board or land development and planning agency, the state governor, the United States Department of Energy, and other state, local, and federal governmental agencies as designated by the department at the time of license termination. (WAC 246-250-600(4))

License Condition

...The facility closure and stabilization plan shall address how the licensee meets or plans to meet the following requirements:...Compile and transfer to the department complete records of site maintenance and stabilization activities, trench elevation and locations, trench inventories, and monitoring data for use during custodial care for unexpected corrective measures and data interpretation....(66J)

Summary of Information Provided

The licensee's draft Closure Plan calls for transfer of copies of records on the location and quantity of radioactive waste at the facility to the Governor's Office and other state, local, and federal agencies designated by NRC or the state at license termination. The draft Closure Plan also identifies the categories of records to be transferred to the custodial agency.

Review of Adequacy

The requirements of this regulation are satisfied by information presented in the draft Closure Plan.

ponding of precipitation and runoff is possible above the disposal unit. Thus, analyses and conclusions about the rate at which water might infiltrate into the disposal unit are unfounded.

The following deficiencies make conclusions about the potential for subsidence impossible:

- Lack of detailed information on information about waste form and waste container degradation.
- Lack of detailed information about void backfilling procedures and backfill material to be used.
- Lack of material and construction specifications for interim or final cover.
- Lack of static and dynamic settlement calculations and analyses.
- Lack of justification for the adequacy of surcharging plans (in terms of the extent of surcharge material to be used and the duration of surcharge).

- Liquefaction -- The high relative density of the Hanford Formation materials and the large depth to groundwater provides suitable soils for supporting heavy foundation loads and eliminate the possibility of liquefaction. Thus, in general, the conclusion is reasonable that the potential for liquefaction is minimal. However, without information about cover material characteristics, compaction requirements, and the maximum degree of saturation in cover materials, no firm conclusion about the potential for liquefaction can be made.

- Slope Stability – The specified slope of 1:4 (vertical to horizontal) is steeper than that recommended by the NRC for long-term stability of slopes for disposal of uranium mill tailings. In that case, the NRC recommends a maximum slope of 1:5 (vertical to horizontal) under general conditions. Justification demonstrating the stability of the steeper proposed slopes should be provided. Since such justification is not provided in the draft Closure Plan, no conclusion about slope stability is possible.

As described above, questions remain about the stability of principal design features. Thus, the extent to which ongoing active maintenance following facility closure will be required is not known. Therefore, the regulatory requirement of achieving long-term stability without reliance on ongoing active maintenance is not satisfied by information presented in the draft Closure Plan.

INTERROGATORIES REGARDING USE DRAFT CLOSURE PLAN

This document presents interrogatories that aim to cause information required in the U.S. Ecology (USE) draft Closure Plan to be provided. It is expected that USE should address all interrogatories in a revised draft Closure Plan that is a stand-alone document, i.e., all needed information is contained in the body of the revised draft Closure Plan or in Appendices thereto.

At the conclusion of each paragraph, references to related sections in the review of the draft Closure Plan (RAE-9206/2-1) are presented in brackets.

1. Protection of the General Population -- What is the uncertainty in the calculated dose from the full gardening scenario? How much greater might the dose be because of uncertainty? Assuming that no institutional controls are maintained at the disposal facility 100 years following closure (including DOE control of the Hanford Reservation) and recognizing that activity adjacent to the disposal facility (as defined by the buffer zone) is not considered intrusion, what other exposure scenarios are possible? What radiation exposures considered in the preparation and justification of 10 CFR 61 might result from these additional exposure scenarios to members of the general public? **[3]**

   Please describe the features in the disposal unit design that provide assurance that releases of diffusive radionuclides (e.g., tritium, carbon-14, and radon-222 contained in or generated by disposed waste) through the disposal unit cover will not exceed acceptable limits. How can assurance be provided that these features will function effectively, despite the potentially damaging effects of differential settlement and the possibility of biological intrusion? How might evapotranspiration act to augment the rate at which these radionuclides migrate to the surface of the disposal unit? What doses are possible to members of the general public via pathways influenced by this type of release following the assumed loss of institutional control? **[3, 6, 8.4,]**

   Please describe how the chemical trench, the tank farm, and the reactor head were modeled in the groundwater analysis. **[3]**

   Please provide a list of the inventory of waste disposed in the facility to date and projected for the future. The source term should provide nuclide specific concentrations and volumes by trench, waste class, waste stream, and waste form. Additionally, physical, chemical, and radiological properties used in the analyses should be included (such as dose conversion factors, sorption characteristics, and half lives). Provide a similar list for the projected source term of the new trenches (12, 15, and Special Materials). Provide an estimate of the relatively simple inventory expected to be generated from the decontamination efforts projected during facility closure. **[3]**

   If a large capillary suction exists within the unsaturated vadose zone beneath the trenches, leachate entering the unsaturated vadose zone from the base of the disposal trenches can potentially be pulled laterally as well as vertically, transporting contaminant to the ground surface. Please describe the hydrology of the unsaturated

zone between the trench and the aquifer (e.g., site conceptual model, modeling assumptions, and projected water movement). [3]

Please provide well-reasoned justifications, supported with data and calculations as appropriate, for excluding any pathway from the analyses of potential doses to members of the general public. Of particular interest are potential releases to the surface water, atmospheric, soil, plants, and animals. [3]

Please provide parameters, mathematical models, input data, results, uncertainties, and limitations of models and conceptual models used in contaminant transport analyses. Account for the effects of daughter in-growth, non-uniform aquifer dilution near the disposal facility, chelating agents in the waste, erosion, infiltration, and release mechanism from the waste. [3]

2. Intruder Dose Projections -- What exposure scenarios to inadvertent intruders have been considered? Which intrusion scenarios considered in the preparation and justification of 10 CFR 61 are not addressed and why? What account is made of the potential for tritium, carbon-14, and radon-222 to diffuse through the disposal unit cover systems to cause radiation exposures? Please provide details of dose projections for inadvertent intruders. Include a description of the methodologies used, exposure scenarios considered, and data used to represent the scenarios, the results of calculations, interpretation of the results, and demonstration that the results satisfy regulatory requirements. [4]

3. Protection During Closure Operations -- What evaluations of occupational radiation exposures have been conducted to assess normal, abnormal, and accident conditions that might prevail during and following closure? How are accidents that might occur during decontamination and decommissioning considered? What methods, models, computer codes, exposure scenarios, and data have been used in such evaluations? Please provide justification for each of the models and codes used in these evaluations. Show by model results or measurements that radiation exposures at the cover system surface are and will be within acceptable limits. [5]

Considering the composited waste characterization that exists, how are radiation exposure rates calculated? What characteristics were determined or assumed in representing waste forms, waste containers, backfill materials, and cover materials in calculating the transport of gamma radiation through the various components of the disposal unit cover? How are these characteristics verified? [5]

What activities in the presence of radiation were considered? What time durations, distances, shielding factors, and exposure rates were used to represent these activities? Describe how "skyshine" occupational exposures from uncovered or partially covered trenches were modeled in the projection of occupation doses during closure activities. [5]

Please provide detailed information in response to the above questions, together with justifications for all choices made in the evaluation process. Correlate the calculated exposures during closure to those measured using employee dosimetry badges during normal operations. [5]

Please provide information and documentation that demonstrates what efforts have been made to maintain radiation exposures as low as reasonably achievable. What closure design/operating choices or revisions have been made to satisfy the ALARA principle? What criteria have been used to guide the decision process? **[5]**

4. Slope Stability -- Please state the maximum slope of the disposal unit interim and final cover. Show that this slope and the design of the cover do not result in erosion that would require ongoing active maintenance. **[6, 8.4]**

   Please provide justification that the side slopes (1:4 vertical to horizontal.) are likely to be stable in the long-term. **[6, 8.4]**

5. Wind Erosion -- Identify and justify the choice of the design basis wind for design against wind erosion. Please identify whether the conditions stated in the draft Closure Plan for design are normal or abnormal conditions. **[6, 8.4]**

   The conclusion is drawn in the draft Closure Plan that wind erosion would be 0.1 in. (0.25 cm) per year if the gravel mulch on the cap were not in place. Explain what impacts this erosion rate would have on long-term stability of the disposal unit. In evaluating the effects of the erosion rate cited above, describe the potential for increased infiltration when the cover is eroded so that it is flush with natural grade. Alternatively, project and justify the wind erosion rate, accounting for the gravel mulch and reestablished Indian Rice grass and discuss the impact on long-term disposal unit stability. **[6, 8.4]**

6. Water Erosion -- Describe how that the choice of design basis rainfall event was selected considering site-specific conditions, (e.g., size of the area to be drained, slopes, distances, and time to concentration). Explain why the Probable Maximum Precipitation event was not used as the design basis rainfall event. **[6, 8.4]**

7. Settlement -- Please provide additional information about factors that influence settlement in the disposal unit. Include information about the analytical methods used, assumed design conditions, data, and results. What are the design criteria for settlement and differential settlement in the disposal unit? **[6, 8.4]**

   Describe the foundation material in terms of its geotechnical stability. Describe the potential for waste form and waste container degradation over the long-term. How will USE deal with container degradation that does not commence or become important for many years or perhaps decades after emplacement in the disposal units? **[6, 8.4]**

   Some operational information is essential to evaluate thoroughly the potential for settlement. Please provide specific information about the characteristics of the backfill material (e.g., particle size distribution, composition, and moisture content) and the procedures used to assure that void spaces are properly filled. What fraction of container volume is essentially void in older trenches? In newer trenches? To what extent have voids in containers been considered in estimating the potential settlement? How was waste compressibility been addressed? How will subsidence that may result several decades into the future (when disposal containers have decomposed or lost their structural capability) be addressed or remediated? **[6, 9.1]**

To what extent are voids between and in the lower layers of waste containers filled and how is this assured? How do remaining void spaces affect disposal unit stability in the long-term? What is the maximum thickness of lift that is used in placing backfill material? What are the required characteristics of backfill material, including particle size distribution? What are the moisture and compaction requirements for the backfill material? Demonstrate and justify that the plan for surcharging the cover of the disposal unit will be effective at reducing voids that may have formed during the operational life of the trench and, thereby, minimizing subsidence after closure. **[6, 8.4, 9.1]**

What are the projected settlements and differential settlements within the disposal unit under static and dynamic conditions? Demonstrate and justify that the projected settlement and differential settlements in the disposal unit satisfies the design criteria for settlement and differential settlement. **[6, 8.4, 9.1]**

What effects will projected settlement have on ponding of rainfall over the disposal unit? On projected infiltration into the disposal unit? Demonstrate and justify that projected settlement and differential settlement in the disposal unit will not jeopardize the ability of the disposal unit to satisfy all four performance objectives of WAC 246-250. **[6, 8.6]**

Please provide data and records showing subsidence, settlement, cracking, animal burrows and erosion observed in interim covers to date. Please provide records showing the extent of subsidence remediation (including quantities of fill material added) conducted to date. **[6, 9.1]**

8. Liquefaction -- Please provide information about cover material characteristics, compaction requirements, the maximum degree of saturation in cover materials, and analyses to demonstrate that the potential for liquefaction under design conditions does not threaten the stability of the disposal unit. **[6]**

9. Frost Damage -- The Draft Closure Plan has not addressed the impacts of frost action on facility design features. Although frost action is not expected to impact the facility, no data have been provided to support this conclusion. Please provide these data. **[6]**

10. Cold Creek Probable Maximum Flood -- The nearest drainage to the facility is Cold Creek, an ephemeral stream. Although it is presumed that Probable Maximum Flooding of Cold Creek will not impact the facility, no data or maps have been provided to support this conclusion. Please provide these data. What effect would the Probable Maximum Precipitation event (PMP) have on the facility? **[6, 8.5]**

11. Topographic Map -- Please provide a legible topographic map of the general vicinity of the disposal site. A map of the Scale of 1:24,000 with 2-ft contour interval for a distance sufficient to define the upstream drainage basin is desired. **[6]**

12. Meteorology -- In the September 16, 1992, supplemental information, the licensee has provided wind rose data for 1991, a year with more wind than normal, although not a record-setting year. To provide a more representative description of typical conditions, wind rose data averaged over a number of years are needed. These data

should be relatively available from various USDOE publications (e.g., 1987 DOE/EIS-0113). **[6]**

13. Facility Description and Nearby Facilities -- The specific location of the US Ecology facility with respect to nearby USDOE facilities is unclear. Figure 2.1A in the September 16, 1992, supplemental information indicates that the facility is due south of the southwest portion of the 200-East Area. However, Figure 2.6h in that supplement shows that the facility is located southwest of the southwest corner of 200-East Area. An accurate location is important to evaluate potential groundwater flow conditions and potential effects from groundwater contamination plumes near the US Ecology facility. Identify which figure accurately portrays the location of the facility and provided a corrected figure(s) for the other map, as appropriate. **[7]**

    Please discuss the relationship of the facility and the proposed post-operational environmental monitoring program to nearby existing facilities or activities. Evaluate and demonstrate acceptable the extent to which such nearby facilities and activities might mask releases from the USE disposal facility. **[7]**

14. Need for Ongoing Active Maintenance -- Considering information provided in response to the questions above, please provide a discussion that demonstrates that the need for ongoing active maintenance will be avoided following facility closure. (Active maintenance means any significant remedial activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.) **[8.2]**

15. Interference Between Operations, Construction, and Closed Disposal Units -- Please provide dimensioned facility layout and section drawings, descriptions of operating and construction procedures, and justification that construction or waste placement activities will not interfere with or impact closed and stabilized disposal units. **[8.2]**

16. Disposal Unit Covers -- What is the design basis for each component of the disposal unit covers? Please provide analyses and discussion to demonstrate that the disposal unit cover performs better in terms of water infiltration rates than undisturbed native soil. Please provide analyses and justification that the water storage capacity of the cover system is adequate to prevent water infiltration into the disposed waste. Please provide analyses of water movement in the covers which show the expected dynamic behavior. **[8.4, 8.6]**

    Please provide information that justifies the filter design for transitions from material of one size distribution to another, particularly from the soil layer above the gravel layer into the gravel layer of the final cover. **[6, 8.4]**

    Please provide analyses and justification that the bentonite geocomposite liner will remain functional despite settlement projected to occur. Address, particularly, the effects of differential settlement. Given that this liner is shown to be effective in its

role as a moisture barrier, provide information and analyses that would justify this thickness. [8.4, 8.6]

Please provide information on measures that will be taken to assure that the impermeable membrane liner will not be damaged during its installation and cover construction and rendered ineffective. [8.4, 8.6]

Please demonstrate that the gravel mulch and vegetation of the final cover under undisturbed conditions, complements natural site characteristics (e.g., wind erosion, deposition, precipitation, surface water erosion, and infiltration rates). Show how these layers provide protection against erosion that natural components do not. [8.4, 8.5]

Provide descriptions of material characteristics or specifications of material to be used in covers. What measures will be taken to assure that these materials are not subject to weathering and degradation in their disturbed conditions? [8.4]

17. Terrestrial Ecology -- The description of terrestrial ecology focuses on threatened and endangered species. However, an additional consideration in evaluating the adequacy of the closure plan is the potential for deep-rooted plants and burrowing animals to damage the earthen cover system. Deep-rooted plants and burrowing animals can create conduits for surface water to enter the disposal cell and contact the waste. Both plants and animals may also bring contamination to the surface, where it can more readily enter environmental pathways. The trench cover needs to be thick enough or of such a design that such plants and animals are precluded from reaching the buried waste. [8.4]

Please provide data on typical root depths for the dominant and minor plant species that are located on the site or expected under any projected successional patterns. Please also provide data for the species proposed for revegetating the site after closure. Please provide data on the presence of burrowing animal species and the depths to which they penetrate. Provide analyses and justification to demonstrate that such penetration will not reduce the ability of the disposal unit design to satisfy performance objectives. [8.4]

18. Surface and Subsurface Water Drainage System -- What is the design basis for each component of the drainage system? Please provide analyses demonstrating that the ditches are sized to conduct water at an adequate rate. What account has been taken of the potential for these drains to become clogged with soil or debris from degraded impermeable membrane liner? [8.5]

Please provide a final grading plan. Explain the effects subsidence is expected to have on the grading of the cover in the long-term. [8.5]

Please provide analyses and discussion demonstrating that the drains in the cover system are sized to conduct percolating water at an adequate rate. Please describe the disposition of any water that enters these drains. [8.5]

19. Surface Water Run-on -- What is the design basis for determining whether the disposal unit covers are sufficiently high to preclude run-on from offsite areas? Please

provide calculations or analyses to quantify the potential depth of run-on at the site and demonstrate that the cover is sufficiently high to prevent run-on from offsite areas. **[8.5]**

20. Minimizing Contact Between Water and Disposed Waste -- What provisions have been made to conduct water away from the disposed waste, should water pass through the impermeable membrane and bentonite geocomposite liners? Please provide analyses and justification that these provisions will perform as required and as designed. **[8.6]**

21. Background Radiation Levels -- The draft Closure Plan calls for radiological surveys to be conducted on trench caps during the closure, stabilization and custodial periods. The resulting direct gamma radiation levels will be compared against a baseline value derived from existing environmental monitoring data. The closure plan does not make clear which data will be used to establish the baseline values. The draft plan states that environmental dosimeter measurements for perimeter stations published in the Hanford Site Environmental Report will be used. However, the September 16, 1992, supplemental information on license condition 61.d indicated that the perimeter stations referenced are those located around the active disposal area of the USE facility. It is unclear if these are one and the same sets of monitoring stations. Clarify which stations will be the source of the baseline values and describe how baseline levels will be determined. **[10.1]**

22. Radiation Levels at Disposal Units Cover Surfaces -- Please provide calculations or measurements that demonstrate that radiation levels at disposal unit surfaces will be within acceptable limits. If calculations are used, please provide a description of the methodologies , scenarios, and data used to project radiation dose rates at the surface. **[8.4, 9.2]**

23. Markers and Surveys -- Please provide information about the means by which the boundaries and locations of each disposal unit will be located and mapped. Show explicitly that land survey techniques that satisfy regulatory requirements will be used. **[9.3]**

    Please provide a clear description about how many markers will be used and where they will be placed. What efforts will be given to assure that disposal units as distinct from disposal areas will be marked with monuments. Please discuss the durability of concrete used in the markers. What are the specifications for the brass plates and inscriptions? **[9.3]**

    Explain the relationship between "federal [land survey] control systems" that are to be used and the required three permanent survey control points (referenced to USGS or NGS control stations) that must established on the site to facilitate surveys. Confirm that the control stations used for land survey control were established by USGS or NGS and that they provide the required horizontal and vertical controls which have been checked against USGS or NGS record files. **[9.3]**

24. Buffer Zone -- Provide a clear description of the land area to be used as a buffer zone and that is wholly within the State leasehold. Identify the extent of the buffer zone below the disposal units. Describe all intended uses of the buffer zone. Show that the

buffer zone is adequate for the required purposes of the buffer zone, namely, that environmental monitoring and mitigative measures can be carried out as needed. [9.4]

25. Effect of Operations on Closure Measures -- Explain how all required activities can be carried out within the boundaries of the leasehold, especially toward the end of the facility life. Describe whether sufficient land area will be available for stockpiling excavated soils and how logistical difficulties will be avoided. [9.6]

26. Decontamination and Dismantlement -- Please provide descriptions of the methods to be used for decontamination. What are the physical and radiological characteristics of waste that might be disposed onsite, whether the result of decontamination or direct disposal of structures? To what processing, if any, will decontamination waste be subjected prior to disposal? [9.7]

Describe the sequence of disposal unit construction, structure removal and structure decontamination. Explain, in particular, how existing structures on site, whose functions are apparently essential to the operation of the disposal facility, will be removed from areas that are expected to be used for disposal of waste. [9.7]

27. Vadose Zone Monitoring Program -- Please describe what efforts will be made to install and operate an effective, comprehensive vadose zone monitoring system at the facility to provide early warning of any releases and to distinguish the source of any contamination found in downgradient groundwater monitoring wells. How will downward movement toward groundwater, lateral diffusion, and upward movement through trench caps be monitored? Explain how other monitoring techniques that may provide a more complete picture of trends in radionuclide movement will be used. Show how consideration was given to such techniques as neutron logging, gamma spectral logging, water vapor flux and plant transpiration rate measurements, soil gas sampling, soil sampling, and vegetation sampling be used to determine the behavior of these phenomena during the experimental stage, as well as the implementation of the vadose zone monitoring program? [10.1]

Vegetation sampling will also be performed on trench caps for the three trenches containing the most tritium to address the potential for gaseous diffusion of tritium through the trench caps. It is not clear whether soil sampling will also occur on the trench caps. The licensee's September 16, 1992, supplemental letter indicates that soil sampling will be performed only at monitoring stations on the perimeter of the facility. However, because of high evapotranspiration rates at the site, there may be a net upward movement of certain radionuclides (e.g., tritium, carbon-14, and radon-222) through the trench caps. This indicates a potential need for soil and soil gas sampling and monitoring of surface releases on trench caps to supplement the gamma surveys. Please revise the monitoring program to include soil and soil gas sampling and surface release monitoring on the closed trench caps or provide justification for not doing so. [10.1]

28. Environmental Monitoring Program -- How will the operating history and experience and the closure and stabilization of the disposal site be considered in developing, implementing, and maintaining the post-operational monitoring system? Please give examples how this has been done in the current plan. [10.1]

29. Air Monitoring Program -- The proposed background air monitoring station is located near the administrative building. However, this location may not be upgradient for a portion of the year. The section on meteorology indicates that the wind direction is predominantly from the northwest, although the secondary wind direction is from the southwest during the spring and fall and other wind directions occur during the year. This means that, for purposes of distinguishing any releases from the USE facility from those from nearby DOE facilities, the two air monitoring stations on the west side of the facility would tend to serve as background locations much of the year. Moreover, the station near the administrative building would be downgradient of the disposal area during some portions of the year. Thus, a full understanding of the meaning of the air monitoring results from each of these stations requires that information on wind direction on the corresponding days is also needed. This is essential to determine whether any increased levels that are detected originate from the USE facility or from other nearby facilities or activities. Please provide justification that this station can be used as a background monitoring station. Also, provide information on how data on wind direction will be incorporated into analyses of air monitoring, including the source of such data (e.g., onsite wind vane, Hanford meteorological station, or other). **[10.1]**

The closure plan proposes to continue the air monitoring only through the second year of the post-operational period. Although, soil and vegetation monitoring at the air monitoring stations will be continued to provide an indication of airborne releases, these samplings will be done on an annual basis. This may make it difficult to ascertain the source of any elevated levels that are detected. Consideration should be given to conducting a formal evaluation at the end of the second year to determine if the air monitoring should be continued for a longer time to verify that the source of any increased levels is not the USE facility. Please revise the proposed environmental monitoring program description by adding such a step or provide justification for not doing so. **[10.1]**

30. Soil and Vegetation Sampling -- As with the background air monitoring stations, the soil and vegetation sampling location near the administration building may actually be downgradient of the disposal areas for some portion of the year. Please provide justification that this location can be used as a background soil and vegetation sampling location. Indicate any and all corrections and correlations that will be necessary to utilize data from this station for the stated purposes. **[10.1]**

31. Groundwater Monitoring Program -- The closure plan indicates that six additional monitoring wells will be installed prior to site closure. One will be an additional upgradient well, while the others will provide additional downgradient monitoring. It is difficult to determine from the maps provided by the licensee whether the existing and proposed background monitoring wells are suitably placed. The text of the proposed closure plan indicates that a tritium plume is encroaching upon the USE facility from the southwest. However, the proposed monitoring wells are to the west of the facility, rather than the southwest corner. Because the figure provided in Attachment 3.8i of the supplemental information does not depict the location of the USE facility, it is difficult to determine the relationship between the tritium plume and the USE facility and, hence, the suitability of the background well locations. Please provide a revised figure 3.8i that shows the relationship of the US Ecology facility to the tritium plume. Provide an explanation of why the background wells are

suitably placed. Provide a justification for not placing the new background well at the southwest corner to provide a true background for all disposal trenches, given that the direction of groundwater movement across the site is from the southwest to northeast. **[10.1]**

32. Transfer of the Monitoring Program -- The September 16, 1992 supplemental information indicates that training of the custodial agency in the monitoring procedures will be provided to ensure a smooth transition. In addition, parallel monitoring programs will be performed by USE and the custodial agency during the stabilization period to ensure consistency in the monitoring results. If not, describe the measures that will be taken to ensure that comparable equipment and instrumentation are used by the custodial agency to provide consistent monitoring results. **[10.1]**

33. Post-Closure Observation -- WAC 246-250-130 requires that the post-closure observation period must be five years unless a shorter or longer period has been approved by the Department. Sections 3.8 and 19.0, including material provided in the September 16, 1992, supplemental information, indicate that USE plans a closure period of up to two years, followed by a stabilization period of two years. At that time, the facility would be transferred to the custodial agency. Thus, USE is proposing a post-closure observation period of two years versus the five years specified in the regulations. No basis for this shorter observation period has been given in the closure plan. Please provide an explanation and justification for this proposed shorter period of observation. Alternatively, revise the plans for observing the closed disposal facility so that the five-year observation requirement will be satisfied. **[1, 10.1]**

34. Corrective Measures -- Please describe plans for taking corrective measures for addressing such conditions as erosion, settlement, and cover cracking, should the results exceed action levels or subsidence be detected. How will action levels be updated when the need is determined? How will the source of any contamination (e.g., which disposal unit) that might be detected in any component of the monitoring program be determined? **[10.2]**

35. Closure Assurances -- Please provide justification for the unit costs that are used in calculating the costs of closure and maintenance. Please revise cost estimates to account for the possibility that an independent contractor may perform the closure activities, as required by WAC 246-260-520(1). Explain how the estimated costs of closure and maintenance by an independent contractor differ from those estimated in then draft Closure Plan. **[11.1]**

36. Sufficiency of Closure Assurances -- What effects will such factors as secure interest rates, inflation rates, changes in (closure) engineering plans, closure and stabilization that has already been accomplished, or other conditions have on the estimated closure and stabilization costs? **[11.2]**

How will USE assure that financial or surety arrangements will be sufficient at any time in the future to cover the costs of closing and stabilizing the disposal units that are expected to be used before the next license renewal? Provide analyses to show that financial and surety arrangements will indeed be sufficient. **[11.2]**

Please provide a commitment that the amount of financial or surety arrangement will change in accordance with changes in the projected costs of closure and stabilization. **[11.2]**

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July 7, 1988

REVISED WAB

FOR COMMENT:

ASSUMPTIONS IN THE PHASE TWO STUDY ON SITE CLOSURE AND PERPETUAL CARE AND MAINTENANCE OF LLW SITE AND THE JOINT TECHNICAL STUDY

Phase Two seeks to provide a reasonable engineering basis for site closure of the commercial LLRW site on the Hanford Reservation, as operated currently by US Ecology, Inc. under a sublease from the state. Fees provide money into funds for site closure, and perpetual care and maintenance. At closure the site reverts to the state, then to the federal government. Lease agreements are in place to ensure this.

While the economics, technology and politics of LLW disposal are in a state of flux today, eventually the state will deliver a closed site to the federal government. The most fundamental assumption is that while they may be different, the state's closure standards can be no worse than the standards the state now asks of USDOE for equivalent wastes derived from defense operations. While the state and its site contractor are in a form of short-term economic partnership, in the long run closure performance is the state's concern.

Much of the concern over site closure focuses on technical assumptions about the geology, hydrology and engineering characteristics of the site, which differ, in some regards, from the nearby 200 Area sites used by USDOE for waste storage and eventual disposal. In the search for optimal closure technology the state is on its own, but a great deal of USDOE research is still applicable in general terms.

The assumptions listed, following, are derived from various sources. They reflect the author's views, and are proposed for consideration and comment today, before detailed closure engineering studies begin. For convenience they are organized as a narrative, but numbered individually beginning with 001.

Regulations and Jurisdictions; Standards; Fees and Application

001. LLW site closure will be done under present and future standards created by RCRA, CERCLA, WACs and RCWs, with the most restrictive of these prevailing at any given time. Closure proposals which do not meet the standards need not be considered further by the state.

002. The site contractor at any given time up to closure operates as a business, not a governmental agency. The contractor should not be burdened with defining closure standards, only with compliance. But as a concerned and knowledgeable party, the contractor should be a full participant in informal proceedings before regulatory actions and planning affecting closure.

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AGENDA

Planning Meeting for Joint Technical Study
Washington State Department of Ecology and US Ecology, Inc.

Review purpose of planning meeting and of joint technical study

Discuss study participants and timeline

Outline scope of work for joint technical study

Discuss technical and other assumptions

- Regulations and jurisdictions
- Erosion and deposition at the site
- Precipitation, future climates
- Saturation and recharge
- Barrier/cover designs
- Waste packing effects on performance
- Assumptions relating to EPA
- Systems engineering

Set next planning meeting date

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003. Fees charged to LLW disposers must reflect the full cost of site closure, via the impounded funds delivered to the state. The state in turn is fully accountable for the integrity and appropriate application of these dedicated impounds. The difference between fees charged to users and fees delivered to the state is a matter for negotiation between the state and prospective contractors when sublease agreements expire.

004. Proper application of impounded funds covers the design, engineering and construction of closures; the monitoring of closure performance; and remediation where necessary. Maintenance of closures is specifically included, but the primary function of closure designs is to reduce long-term obligations for monitoring and maintenance, while protecting public health and safety in predictable ways.

005. The state will not propose or implement closure designs which are lesser in performance than those of the federal government at the Hanford site; and will cooperate fully in joint technical development of perfected designs and operational techniques. To the extent possible, considering site characteristics, identical or equivalent standards will be applied.

Erosion and Deposition at the Site; Airfoils

006. The LLW site is different from other parts of the 200 Area plateau. Winds are the dominant force in the microtopography.

007. There has been net deposition of aeolian sediments since the Mazama ashfall, ca. 6800 years B.P., but the greatest extent of deposition in this interval is unknown.

008. The thin, spotty veneer of fines and organic soil at grade implies that there may be cycles of erosion and deposition taking place today. Strong winds raise "dust" from the surrounding undisturbed areas. Fines and organic soil are generally absent from the areas at grade where there has been human activity, implying that there is active erosion.

009. There is no clear evidence to indicate what will happen in the future to a site closed at grade, regarding erosion or deposition. If the site is closed above grade, erosion will occur unless there is durable mechanical resistance (033) built in.

010. The site is characterized by small dunes aligned normal to the prevailing strong wind direction. Progradation in the lee of dune crests is evidence of rapid crest movement downwind, partially retarded by vegetation; in hollows, there is active wind scour.

011. The pattern of dunes and crest movement is clearly visible in large-scale aerial photographs. Time-sequence photography can help to determine rates of crest movement.

012. Man-made, unprotected soil structures above grade are particularly subject to erosion. The soil pile over the "chemical" trench provides a good example of recent degradation and progradation, which is datable. Wind records from the nearby USDOE Meterological Station are applicable at the site.

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013. Airfoil characteristics are a dominant factor in above-grade barrier/cover design, and the only "neutral" design will be at grade and indifferent to dune formation and movement, and capable of revegetation.

014. None of the existing above-grade soil structures at the site is resistant to wind erosion. None of the trenches can be considered permanently "closed" in this regard.

Precipitation; Future Climates

015. Average annual rainfall is on the order of 7 in. Over 11 in. has been recorded since 1970. A credible contemporary maximum is 19.7 in. (50 cm).

016. In a year with higher than normal precipitation there will be one or more events of short duration superimposed on the average seasonal pattern.

017. Within the lifetimes of radioactive and hazardous chemicals at the site there will be a cooler, wetter climate.

018. Before the end of the present interglacial it is probable that natural or man-caused atmospheric changes will affect precipitation patterns.

019. Dendrochronological records show cycles of tens of years, over the past 400 years, which can affect recharge at the site.

Saturation and Recharge

020. Saturation under existing conditions can reach 7 to 10 ft. (2 to 3 m), as evidenced by incipient salt horizons at the site.

021. At and below the saturated zone water can move upward through evapotranspiration or downward as recharge, depending on subsequent events.

022. Animal burrows and root casts can produce local saturation at depths greater than would otherwise be reached.

023. Below the deepest root zone, at about 20 ft (6 m), water will dominantly percolate downward.

024. Under present conditions a net recharge of 5 cm is appropriate and conservative, as proposed by USDOE.

025. Increased precipitation due to climatic cycles, as opposed to single events, can result in greatly increased recharge due to the overturn effect.

Barrier/Cover Designs

026. Any design must be compatible with generic EPA standards.

027. The capillary barrier design proposed by USDOE (Appendix "M" of the DEIS) is deficient and needs more work. In any case a capillary barrier alone cannot prevent infiltration under plausible climatic scenarios.

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028. A capillary barrier, under average conditions and in the short term, can be effective in water removal as part of a multilayer design. However its mechanical integrity is likely to degrade with time. An effective lifetime of 300 years is reasonable.

029. A multilayer barrier must necessarily include water-excluding elements of an absolute nature. (see 073)

030. Potential infiltration along the sidewalls of a closed trench must be inhibited by barrier design.

031. The optimal barrier/cover will be at grade and capable of revegetation; it is reasonable to include compaction and/or reworking of abandoned trenches to achieve this objective if possible.

032. An above-grade design must be demonstrably capable of resisting wind erosion for 1000 years, with the high expectation that it will last longer. Archaeological evidence is applicable.

033. Above-grade barriers/covers over individual trenches are less desirable than a single low airfoil over several or all closed trenches. The "artificial outcrop" concept is practical at the site.

034. Where basalt riprap is part of the design, its dimensions will be determined by the natural fracture spacing, generally between 1.5 and 3 ft. (0.5 to 1 m). Larger rocks would be imported.

035. Geotextiles are to be used only as aids in construction and not as permanent active components of a design.

036. The lifetime of Portland cement in concrete is limited to 100 years.

037. Paper, cloth and wood in the waste will oxidize and contribute to subsidence over an extended period.

038. Earth shaking from local small seismic events will contribute to subsidence.

039. Wind-induced vibration causes fines to flow downward into voids. These fines are loosely packed and only contribute to compressive strength after long periods, perhaps centuries. Fines deposited by wind can work into interstices in a capillary barrier and negate its effectiveness.

040. Depressions below grade caused by subsidence are subject to wind scour, with fines being removed preferentially at any wind velocity.

041. Upwind airfoils or barriers can result in net accretion, net wind erosion, or particle-size sorting downwind. The effects are difficult to predict for a given design, due to velocity variation.

042. Neither the state nor the present site operator takes credit in its performance estimates for container integrity after closure. External mechanical forces or internal corrosion, for example, may cause container failure. This is not to say that container packing and development of

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supporting soils or fills are to be neglected, but are treated as insurance rather than as primary protection.

043. The natural porosity of Hanford soils is in the range 15 to 18 percent, at grade. A lower bound is 12 percent.

044. Porosity plus voids in loosely-packed waste can exceed 25 percent, and is difficult to predict.

045. Vibratory and compressive compaction, and coarse sand or gravel infilling, may be justifiable added expenses in order to enhance post-closure performance.

046. Current economic incentives for Volume Reduction (VR) may improve the engineering character of future wastes, but in the abandoned trenches loose packing must be assumed.

047. Compaction and subsidence characteristics of disposed wastes will always be different from the undisturbed ground, so that trench geometry is an important design parameter.

048. Any natural interlayering of less permeable horizons in the surrounding soils is capable of directing water into the trenches.

049. The use of sheet piling may be desirable in terms of reduced excavation costs and enhanced performance. If concrete sheet piling is used, the cement should be pozzolanic.

050. Even with massive mechanical compaction before barrier/cover construction, it is inevitable that subsidence will continue on an exponential declining curve for at least 300 years.

051. The recent (May, 1988) test using horizontally-stacked steel drums was a failure in terms of rupture of empty drums, but is useful in demonstrating the compressibility of loosely-packed waste. A logical extrapolation is that massive compaction with only a few ft. of soil over the top of wastes would (1) provide more below-grade room for barrier/cover construction to grade, and (2) make unloading of waste trucks much faster and easier due to trafficability.

052. The construction of Trench 15 ("supertrench") provides a good opportunity to experiment with innovative packing and compression technology without much impact on operations.

053. The fact that Trench 15 is upwind from the other abandoned facilities makes its performance key to postclosure site performance. Good packing technique, compression and barrier/cover design here will enhance overall site closure.

Special Assumptions Regarding EPA Comments of May 19, 1988

054. Without complete records and manifests from the early years of site operations, we assume that we are dealing with "Mixed Low-Level and Hazardous Waste" in Trenches 1 through 13 and the other abandoned facilities. EPA, NRC and state standards may well apply; and the distinction noted between new and

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existing units in regard to sorbing agents is recognized, and is extended to other considerations on a conservative basis.

055. While EPA, inter alia, is developing and refining LLW disposal criteria and regulations, we assume that the trend is toward "best practice with current technology", so that our proposed barrier/cover designs and other site closure features will be planned to exceed, where economic and feasible, regulations still in development.

056. We assume that the design "guidance" in OSWER Directive No. 9487.00-8 is close to the final resulting regulations. Any variances we request will be based on the unique regional and local geotechnical and climatic characteristics of the site, and will be aimed at better closure performance. There is no site in the U.S. and only one other site in the world with this combination of geologic, hydrologic and climatic conditions.

057. We assume that the EPA Regional Administrator agrees on the hazards and risks of installing liners and LCRS at abandoned LLW trenches on the site. We will propose "equally effective" designs.

058. We agree with and assume that waste isolation from percolating groundwater is the overriding design criterion. Everything we will propose is planned to exclude the "bath-tub" effect EPA notes, under 10 CFR 61.7(b) (2) and 61.51 (a) (6), and state regulations. We also note that present site practice is wholly deficient in this regard, so that any new actions we will propose must strike some sort of balance between this and 057, above.

059. The EPA "Conceptual Design" of the Directive is not applicable at the Hanford site. Construction according to Figures 1 through 4 would be highly suboptimal.

060. Our principal concern with the Conceptual Design is that it is well above grade. For documentable reasons above-grade airfoils at Hanford are to be discouraged in engineering terms.

061. Run-on is not a problem at the site for more than a few minutes during a heavy rainfall; the Hanford soils are porous, rather poorly compacted sands, silts and gravels. Today the water table is over 300 ft. (100 m) below grade.

062. We assume that items 001 through 061 in this listing constitute fairly comprehensive listing of site-specific conditions at the facility; and that as the most directly-affected state agency we are cognizant of the need for independent, innovative designs here.

063. We assume that neither we nor the present site operator/sublessee will ever be completely satisfied with our closure designs, but they will represent our best professional judgment as to long-term protection of public health and the environment with the resources which are likely to be available.

064. We further assume that EPA and NRC will carefully consider our requests for variance on, as EPA states, a reasoned "cause-by-case" basis.

Systems Engineering Assumptions

DRAFT

("Systems Engineering" is an often misused term. It refers to the final outcome of a complex system's operation, typically as defined by the worst possible or worst probable outcome. Its principal value is in identifying the critical components of a system, as opposed to those whose failure does not destroy system performance)

065. The present and anticipated Curie count at the LLW site is not sufficient to make the present flow of the Columbia River unusable for domestic purposes, of itself, under any plausible scenario.

066. Leaching and groundwater contamination due to failure of the site's closure is additive to other Hanford-derived sources and natural background when they all appear in the River at once, under some plausible scenarios, causing a potential violation of standards.

067. There may be a degree of tolerance within the standards applied to the LLW site and the surrounding Hanford defense waste sites, but nobody knows what it is and, in any case, conservative site-specific standards are appropriately applied to Columbia River concerns.

068. The more acute problem at the LLW site is that long-lived or non-degradable chemical hazardous wastes can enter the unconfined ("upper") aquifer and, along with the more soluble radioactive wastes, show up in a future, local water supply for either domestic or agricultural use. Standards aside, this is the dominant health risk.

069. It must be assumed that the Hanford Reservation, including the LLW site, will be reclaimed for domestic and agricultural use within 300 years. These are irrigable lands under present economics.

070. While the lands at and around the LLW site are as good or better than new lands currently being brought under irrigation, at that time there will be no excess available surface irrigation water, so that deep wells will have to meet local needs. Well drawdown will greatly accelerate upper aquifer water velocities toward the wellpoints.

071. The combination of increased aquifer velocities and a short path to the environment, along with increased recharge, is the main "systems" threat from deficient site closure. It could operate very locally and independantly of the deeper, semi-confined aquifers, and of concerns with the Columbia River.

072. Markers and warnings will not be effective beyond 300 years and will never be effective hydrologically.

073. While not much can be done to absolutely prevent human intrusion, essentially solid lower elements in barrier/closure designs can aid in inhibiting it. The same elements can prevent animal or root intrusion, and deflect near-surface peroolating groundwater. Thus on a systems basis these elements are critical in engineering design. The main cause of their failure will be subsidence.

074. On a "systems" basis Permanent Care and Maintenance is an empty term. Any care will be confined to site security and sampling of monitoring wells while the Hanford site is occupied, after which it will be abandoned.

DRAFT

Monitoring wells are unlikely to show positive results during the period, if the barrier/cover is adequate, so that a minimal well deployment is justified. Maintenance, short of full excavation and reconstruction, or total grout injection, is limited to such things as rearranging riprap as it settles.

075. The only Remediation known today consists of In-Situ Vitrification, at a cost (1988 dollars) of $7 to $10 per cu ft. We assume that higher-threat locations at Hanford and elsewhere will preclude its use here, based on relative risks and priorities.

076. Therefore the major effort today should be on closure with the best possible barrier/cover design that can be developed during the period that the site is generating a revenue stream.

077. While costs have not yet been estimated, it is unlikely that current fees, the Closure Fund and the Perpetual Care and Maintenance Fund combined are adequate to safely close and abandon the site.

078. With successful completion of Phase Two we will be in a position to recommend to the Legislature a "systems" technical approach and the costs to implement it.

08/01/88 16:29 N085 WA8967 172
001

Sarah Hana 7-7-88
Wa Ecology
206 459 6861
8:45 - 10:00 Aug 4 @ Marriott Sea Tac
9am - 5pm

A facsimile transmission from

the

Office of Nuclear Waste Management

mailing address: Department of Ecology
Office of Nuclear Waste Management
Mail Stop PV-11
Olympia, Washington 98504-8711

street address: 5826 Pacific Avenue, Suite B
Lacey, Washington 98503

To: Wayne Pierre

From: Sarah Hana

Number of pages including this sheet: 10

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If problems arise, please call: (206) 459-6861
927-1932

Hold for BW

Christine O. Gregoire
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

June 8, 1988

Marcia Williams, Director
Office of Solid Waste
U.S. Environmental Protection Agency
401 M Street S.W.
Washington, D.C. 20460

9413286.0631

Dear Ms. Williams:

The purpose of this letter is to invite your agency to participate in three project update meetings for phase two of the site closure/perpetual care and maintenance (PC&M) project for the commercial Hanford low-level radioactive waste disposal facility (LLRWDF). As you may recall, phase one of this project addressed conceptual design criteria for closure and PC&M at the LLRWDF; we appreciate your agency's participation during that phase.

We hope that your agency's participation will continue throughout phase two as the contractor, A. T. Kearney, Inc., refines the conceptual designs developed in phase one and develops comprehensive engineering specifications and cost estimates for the closure/post closure and PC&M programs and activities for the LLRWDF. Please find enclosed the phase two final scope of work for your reference. Thank you for your comments on the draft scope of work.

The purpose of the three project update meetings is to review the contractor's progress and address any issues that may arise during the studies. The first meeting will take place on June 30, 1988, in Alexandria, Virginia, at the offices of A. T. Kearney, Inc. The second meeting will be on August 4, 1988, at the San Francisco office of A. T. Kearney, Inc., and the third meeting is scheduled for September 8, 1988, in Seattle. We invite your participation in these meetings and look forward to the continued active involvement of your agency in this study.

Sincerely,

Max S. Power

Max S. Power, Program Director
Office of Nuclear Waste Management

MSP:dr

Enclosure

cc: Jim Michael
Kenneth D. Feigner

→ Dan Sokol
598 9390

Kay Breden
703 836 6210

2

MEMORANDUM OF AGREEMENT BETWEEN THE
STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY
AND
A. T. KEARNEY, INC., MANAGEMENT CONSULTING FIRM

APPENDIX A
Scope of Work

I. Introduction, and Contract Goals and Objectives

The purpose of this contract is for the CONTRACTOR to assist the DEPARTMENT in defining site closure and perpetual care and maintenance requirements for the commercially operated low-level radioactive waste disposal facility (LLRWDF) on the Hanford reservation near Richland, Washington. This Scope of Work statement applies to the second phase of contractor studies of site closure and long-term care requirements for the LLRWDF. Furthermore, the results of phase two will be used to prepare the state for competent participation in the joint technical study called for in the site operator's sublease with the state.

The state maintains two interest-bearing accounts designed to provide for site closure and perpetual care and maintenance. These are required under the terms of the lease by which the state holds the site and will ultimately return it to the Federal Government. The phase two study will provide site-specific engineering designs and estimate anticipated costs for these activities, in order to determine the adequacy of the closure and perpetual care and maintenance funds.

If any dispute arises regarding the specific work needed to perform the tasks described in section II, the general contract goals and objectives contained in this section shall be used to resolve such disputes.

A. Instructional Requirements.

As well as addressing the technical concerns listed below, the phase two tasks must respond to three basic instructional requirements:

1. Today, and for at least a few years to come, the CONTRACTORS'S proposals for closure must be satisfactory to the Department of Ecology (the DEPARTMENT) and the Department of Social and Health Services; to NRC under 10CFR61; and to EPA under the RCRA/CERCLA authority it shares with the state. The applicability of RCRA/CERCLA to this facility will be considered by the CONTRACTOR where necessary. Other more constraining standards and powers may well be applied as national policy develops. The outcome of USDOE's own uncertainties on the same issue may provide guidance during phase two. The Courts have consistently upheld retroactive application of these and related standards; such retroactivity must be anticipated.

2. The closure technology must be comparable to that adopted by USDOE for its own, adjacent LLW sites. It must be presumed that for some years before final federal abandonment of the Hanford reservation,

USDOE will own and manage the site through reversion at the end of the underlying leasehold.

3. The closure technology must be sound and conservative. It must demonstrate to the engineering community and the public a strong capability to contain all dangerous materials into near geologic time. Phase two study results, as well as study methods, must withstand capable outside peer review.

B. Engineering Specifications and Estimates.

The phase two scope of work requires the CONTRACTOR to specify, extend and refine the conceptual designs developed in phase one work (contract #C0087229) as described in chapters five and six of the phase one final report. The goals of this contract are to produce comprehensive engineering specifications and estimates for the closure/post-closure and perpetual care programs and activities for the LLRWDF.

Tasks 1 and 2 of Section II, "Technical/Engineering Design Specifications" and "Cost Estimates" are overriding concerns of the DEPARTMENT.

II. TASKS

This contract includes six major task categories to be performed by the CONTRACTOR. The CONTRACTOR shall take full advantage of all applicable existing reports and documents and shall not recompile data or repeat analyses. The CONTRACTOR shall also address all comments received on the phase one report during phase two.

The word "optimization" appears in this Scope of Work. By this the DEPARTMENT means not formal code-based analysis, but experienced judgments as to which of the alternatives being examined best meets minimum regulatory standards and then goes on to provide the best value and estimated performance. These judgments should be backed by simple calculations and references, as appropriate.

The word "model" is used in the predictive sense, not implying the construction of codes or algorithms and formal sensitivity testing.

The work "probability", unless otherwise specified, means the best judgment as to the likelihood of a certain outcome relative to some other outcome, rather than a statistical exercise resulting in a specific value between 0 and 1. The terms "probable" and "improbable" should be backed, where possible, by simple calculations or references.

Task 1: Technical/Engineering Design Specifications

a. Engineering Specification Objectives.

The engineering specifications will be used to define closure and long-term care programs which ensure the protection of public health and environmental safety. Throughout this contract, the CONTRACTOR shall provide numerical and

technical extension and refinement to phase one work completed on June 30, 1987. The CONTRACTOR shall provide extensive written information complete in both scope and level of detail to assist the DEPARTMENT in developing a regulatory framework for design, construction and successful completion of site closure and long-term care programs for the LLRWDF. Furthermore, the comprehensive development of site closure and perpetual care and maintenance activities and programs must comply with all applicable state and federal laws and regulations, including but not limited to 10 CFR (20,61,140), 40 CFR (264,265,270) and all applicable 1984 Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act, RCW 70.105, and WAC (173-303, 402). Design specifications for closure and long-term care must also meet the requirements of emerging regulations such as 40 CFR 193, and be consistent with developing Hanford site criteria and standards for waste disposal which are designed to assure that cumulative environmental impacts from all 200 Area Plateau operations are acceptable.

The tasks required to be performed by the CONTRACTOR require final, engineering and technical specifications for design, construction, quality assurance and contingency planning in sufficient detail to produce complete cost estimates for long-term care at the LLRWDF. At a minimum the CONTRACTOR must address the following objectives contained within the applicable state and federal regulations:

1. Closure and Post Closure Objectives
2. Environmental Monitoring Objectives
3. Trench Cover Criteria
4. Contingency Planning
5. Perpetual Care and Maintenance Objectives

Each of these categories is subdivided below:

1. <u>Closure and Post Closure Objectives</u>

   A. Stabilize and/or contain the waste and close the facility in a manner that minimizes environmental monitoring requirements and minimizes the need for further maintenance

   B. Control, minimize or eliminate escape of:

      i. radioactive, hazardous and mixed wastes
      ii. radioactive and hazardous waste constituents
      iii. leachate, contaminated run-off to ground or surface water and atmosphere, and materials subject to wind erosion and dispersal

   C. Provide sampling to determine the extent of near-surface decontamination necessary, and sampling to demonstrate that the procedures were adequate to dismantle, and remove as required, equipment and buildings

   D. Prevent intrusion into the waste by humans or biota

   E. Prepare contingent closure plans which link design modifications to component and system failure

F. Establish run-on control from episodic events

G. Physically stabilize wastes to support the final cover

H. Determine costs required for routine and unexpected corrective closure plans

I. Minimize infiltration regardless of adverse climatic changes (1000 yrs.)

J. Reduce gamma radiation from buried wastes to background at the site boundary

K. Ensure that trench markers are in place, stable and keyed to benches, and clearly and permanently mark identifying information

L. Establish buffer zone criteria, vertical and horizontal

M. Describe a program to compile and transfer to the custodial agency complete site records

2. Environmental Monitoring Objectives

A. Develop an environmental monitoring program that details design, type, total number, placement and sampling schedules of groundwater wells and unsaturated zone monitors, and provide details of the sampling and analysis plan, i.e., how air soil and groundwater are sampled, analytical methods used, references for methods, chain of custody, and quality assurance procedures

B. Inspect monitoring equipment (QA Plans)

C. Calibrate monitoring equipment (QA Plans)

D. Monitor the soil and soil-pore liquid to determine whether radioactive and/or chemically hazardous constituents migrate out of trenches

E. Estimate background values

F. Determine baseline values

G. Establish methods to determine whether statistically significant increases over baseline values occur (alert and action levels), methods to investigate the causes of any increases, and methods to implement corrective action. It is important to explore straightforward alternatives to conventional statistical trend and graphical analyses in order to allow for qualitative as well as quantitative assessments regarding the release of contaminants

H. Develop contingency plans which detail responses to contamination should it occur, and which are linked to design modifications

I. Tabulate recurring costs for contingency plans and routine long-term programs including personnel and equipment needs

3. Trench Cover Criteria

A. Minimize or prevent infiltration and contaminated liquid migration from trenches over long periods and changed conditions

B. Establish vegetative cover, grade and soil characteristics which are consistent with the natural surroundings

C. Function with minimum maintenance

D. Promote drainage away from stabilized trenches

E. Minimize erosion of final cover by wind action

F. Accommodate long-term waste settling & subsidence in cover design

G. Ensure cover permeability ≤ permeability of the stabilized mass, natural subsoils present or bottom liner system

H. Maintain integrity & effectiveness of final cover including making repairs

I. Inspect materials, textiles and coatings for uniformity, damage, imperfections (Construction QA)

J. Inspect for tight seams and joints, absence of tears, punctures, blisters, etc. (Construction QA)

K. Detail contingency plans linked to design modifications which include the funding required for response personnel and equipment

L. Prevent or minimize animal and vector intrusions.

4. Contingency Planning

A. Coordinate contingency plans for integrated responses to potential emergency situations

B. Define the number of personnel required for effective contingency response, and provide personnel training

C. Describe equipment required for effective contingency response

D. Detail costs required for contingency program

E. Detail corrective action linked to design review and modifications

5. Perpetual Care and Maintenance Objectives

A. Minimize active maintenance

B. Provide periodic surveillance

C. Provide effective environmental monitoring programs

D. Physically control subsurface access to the disposal site during long-term care

E. Establish criteria for institutional controls in the period beyond 100 years

F. List minor custodial care requirements for 100 years

G. Provide an effective passive site security system that requires minimum maintenance, for 100 years

b. Engineering Specifications Instructions.

The CONTRACTOR shall develop detailed engineering and technical specifications for the design and implementation of operational and structural components of the closure and long-term care programs for the LLRWDF which refine the conceptual designs described in chapters five and six of the phase one final report shall be developed. The technical and engineering aspects of this task shall address design, construction and quality assurance programs for closure and perpetual care. Engineering specifications for the programs and activities shall define programs which provide a high level of confidence that public health and safety will be protected, and which comply with all applicable state and federal laws and regulations.

The CONTRACTOR shall perform design optimization in order to ensure cost-effective long term performance. The logic, assumptions, and interactions considered shall be provided in the reports required under this contract, so that cost-effective long-term performance is ensured. Since closure and integrated system designs are based on optimal components, data must be obtained and evaluated for system interactions. These evaluations are essential to confirm the ability to model, monitor and predict future performance of the closure and long-term care programs at the LLRWDF. The written technical analyses must analyze the probability and consequences of contamination and component failure, predict and evaluate long-term performance in the field, and indicate the assumptions used in those predictions. Furthermore, the specifications provided must be sufficient to support the immediate construction and operation of a <u>partial closure</u> project should the DEPARTMENT decide to undertake such a project.

By "comprehensive engineering specifications" the DEPARTMENT means drawings and specifications adaptable directly to the site closure program without further conceptualization. This shall include one recommended design and at least two alternates, in detail sufficient to hand over to an architectural and engineering (A&E) firm for implementation. At least one design will rely primarily on the capillary (Richards) effect, and at least one will not.

The DEPARTMENT does not expect trench-by-trench plan drawings, because it realizes that these cannot be made until we are reasonably certain of subsidence and differential compaction over time.

The CONTRACTOR shall explain how to estimate these effects at each trench by mechanical or geophysical probing; what geophysical services are available and where; how much they are likely to cost on a unit basis; and the relative merits and drawbacks of each.

The CONTRACTOR's specifications and drawings shall be aimed at specific Hanford conditions, but generic within the LLW site. Drawings should be cross-sections which can be later adapted on a trench-by-trench basis by an A&E contractor to result in trench-specific plan drawings for use by the construction contractor in estimating and bidding the work, and by QA inspectors to ensure compliance.

In a multilayer barrier/cover design the DEPARTMENT anticipates that some elements will be capable of dimensioning now, while others will be adjustable within a range of dimensions to accommodate subsidence at a particular trench or even within the plan view of a trench. It is in this sense that the DEPARTMENT would not call these Phase Two deliverables "detailed engineering plans which can be handed directly to the contractor." On the other hand, such elements of the design as lateral extension beyond the edge of a trench, and final profile relative to grade after compaction and natural subsidence, should carry recommended dimensions. An experienced civil engineer or engineering geologist should be able to meld the CONTRACTOR'S generic design and the results of the geophysical (or mechanical) probing of a trench to produce plan drawings which tell the A&E and construction contractors where to set stakes and calculate the volumes and costs of all materials to be placed in that barrier/cover.

If mechanical stiffeners are part of the design, such as lateral metal supports (as in "reinforced soil"), the essential dimensions to solve the beam equation for a trench of a certain width should be part of the generic design. The same applies to crowned structures such as clay or bitumen caps which act to deflect groundwater to the sides, and to airfoils above grade, which are somewhat sensitive to width.

In the case of materials, the DEPARTMENT will canvass USDOE and their contractors to determine the local availability and cost of engineering materials such as screened sand and cobbles, basalt riprap and topsoil for revegetation. The DEPARTMENT expects the CONTRACTOR to clearly identify all the materials the CONTRACTOR's designs call for, by name and by specification relative to tests common in construction industries. "Clean sharp quartz sand screened to 30 mesh" would be an example. Simply stating a desired engineering property is inadequate.

In the case of materials not readily available on-site or nearby, it will be adequate to specify, as above, the material to be imported and the unit quantities a design requires, e.g., cubic ft per sq. yd. For the CONTRACTOR's cost estimates, use manufacturers' F.O.B. prices for manmade materials. For bulk materials such as asphalt or bentonite clay, the DEPARTMENT will obtain and supply figures based on local experience.

1. Operational System Components

Environmental monitoring is the principal post closure operational activity foreseen for the site. It is not conceivable, today, that the LLRWDF would still be monitored alone, while surrounded on three sides by USDOE sites of nearly the same character without some concurrent monitoring activity of a wider areal nature. The CONTRACTOR shall detail monitoring plans for the site network of sampling points which serve to deal with its particular contributions to wider-area aquifer or soil contamination, with particular attention to short- and mid-term liabilities and health risks posed by the LLRWDF uniquely. Wide-area monitoring does not relieve the state of responsibility for high-quality site monitoring. The CONTRACTOR shall furnish engineering specifications for a recommended network encompassing deployment of wells, vadose zone instrumentation points and biotic sampling which will establish baselines and set the criteria for identification of excursions.

The CONTRACTOR shall address the need for sufficient site-specific baseline monitoring data to be established prior to closure and the institutional care period in order to permit meaningful interpretation of long-term monitoring results. By "baseline" the DEPARTMENT means a measurement tool which establishes the average, expected or normal environmental monitoring results indicative of proper waste management practices.

The CONTRACTOR shall address Contingency plans which follow the guidelines in 40 CFR 264.90 and WAC 173-303-645 to determine the appropriate responses to existing or future contamination, should it occur, and which are linked to design modifications. Contingency plans include, but are not limited to, response to contamination detected in the vadose zone, groundwater, soil, plant and animal tissue.

The CONTRACTOR shall develop written specifications for environmental monitoring programs. These programs shall include the monitoring of groundwater, vadose zone, trench covers, plant tissues, soil, air and any other related constituents in optimal combinations. Further, the CONTRACTOR shall analyze existing data to determine the confidence intervals associated with the type, number, placement, and sampling schedules for the entire monitoring network. The monitoring requirements shall ensure early warning capabilities and a high level of confidence, as well as careful analysis of longer-term effectiveness and areal interactions.

2. Structural System Components

Of the various structural components associated with closure and post-closure operations, the trench cover system is critically important. Effective waste containment at the LLRWDF relies inherently on a properly designed cover system. The CONTRACTOR shall determine the optimal combination of basic structural elements in the trench cover system. Structural design drawings and specifications which describe in detail individual trench cover components and the final integrated trench cover system, the nature of interactions between the various cover layers in the

assembled multi-layer trench cover system, and barrier failure scenarios shall be provided by the CONTRACTOR.

Structural design specifications shall include but not be limited to the selection of various cover materials, including specific geosynthetics proposed in the cover design; thickness and shape determination of various cover layers; the types and sizes of any proposed riprap, gravel and cobble. In addition, barrier failure scenarios as recommended by the CONTRACTOR or the DEPARTMENT for the alternative and recommended trench cover system designs shall be evaluated. The CONTRACTOR, using the results of this evaluation, shall demonstrate long-term and dynamic trench cover stability. The trench cover system will require engineering evaluations under this contract sufficient in detail for an architectural and engineering firm to bid on.

Task 2: Cost Estimates (1988 dollars)

The second task required under this contract is to develop costs associated with the technical and engineering specifications developed in task one, above. The cost information provided shall consist of estimations and other pertinent information (in 1988 dollars) which detail the costs of individual components and total costs associated with the complete closure and long-term care program requirements. The cost report shall provide information necessary to support the DEPARTMENT's presentation to the Legislature of proposed changes in the amounts to be taken from commercial disposal fees to capitalize closure, and perpetual care and maintenance, so that when final site closure is accomplished there will be sufficient funds to complete the state's obligations, according to applicable state and federal regulations at that time.

Regulatory requirements and closure standards will almost certainly continue to evolve over the site operational period and until final closure, so that calculated cost assumptions must be fully stated in the CONTRACTOR's report, in order to perform later adjustments to the cost models. Cost estimates and the underlying models must be fully keyed to the closure engineering designs nominated under other tasks. While relatively straightforward, this process goes to the heart of Legislative concerns, and its presentation must be impeccable in the report. Excessive details are not required in areas of large uncertainty, but all assumptions and their bounding conditions must be clearly and fully documented. For example, it is not required to forecast the cost of structural reinforcing iron, but reinforced concrete costs should be keyed to standard indices such as in Engineering News Record, with knowledgeable interpretation.

In regard to "cost assumptions", later adjustments will be largely the DEPARTMENT's responsibility as conditions change and technology evolves, so there should be full reconstructability of lumped cost estimates in the CONTRACTOR'S reporting.

Task 3: Short-Term Technical Assistance

The CONTRACTOR shall provide the DEPARTMENT with short-term technical assistance. This assistance shall include technical issues on a short turnaround basis and site evaluations pertaining to the LLRWDF as requested by

the DEPARTMENT. The CONTRACTOR shall maintain the necessary expertise and personnel to perform thorough reviews of specified technical documents, to provide technical input to the DEPARTMENT, and to assist the DEPARTMENT in performance assessment activities at the LLRWDF. The staff, tools, and data of the CONTRACTOR shall be available and transferable to the DEPARTMENT as needed for ongoing technical analyses for the duration of the contract period. The specific activities and scope of deliverables will be identified periodically during the contract period by mutual agreements between the CONTRACTOR and the DEPARTMENT and will be made in writing.

Task 4: Participation in Meetings

The CONTRACTOR shall be prepared to meet with DEPARTMENT personnel at a negotiable location to discuss progress of the contract. A minimum of 3 meetings is required. During these meetings it will be required that the CONTRACTOR instruct DEPARTMENT staff on technical and cost project developments specific to the contract. Special monthly update meetings are also required to be conducted by the CONTRACTOR at a negotiable location and are expected to include representatives from the Washington State Department of Ecology, Washington State Department of Social and Health Services, Nuclear Regulatory Commission, United States Department of Energy, the Environmental Protection Agency, and the current site operator. Attendance at all meetings must be approved in writing by the DEPARTMENT.

Task 5: Preparation of Written Reports

The CONTRACTOR may be required to submit a mid-course corrected work plan at anytime during the contract. The CONTRACTOR shall submit two Draft Final reports during the course of the contract no later than September 30, 1988 and two final reports no later than November 30, 1988 to the DEPARTMENT. The two written reports correspond to task items one and two, above, and the scope of these reports is outlined in these tasks. Additionally, the CONTRACTOR must review and to the extent feasible incorporate comments received on the phase one final report into the draft and final phase two reports required to be submitted under this contract. The CONTRACTOR shall provide to the DEPARTMENT ten copies, and one original for each of the draft reports for tasks one and two. Furthermore, the CONTRACTOR shall provide to the DEPARTMENT twenty copies and one original for each of the final reports for tasks one and two.

Task 6: Peer Review Participation

The DEPARTMENT will conduct a peer review and CONTRACTOR will be expected to participate, largely through response and comment in writing, as opposed to presence at venue.

The term "peer review" in this document refers to a specific process used in the publication of refereed articles in reputable technical journals. It specifically does not suggest "review panels" of experts, but it is far more than asking a colleague across the hall for opinions and editorial help.

Peer review participation is a straightforward, one-time assignment for a few senior individuals. Here and in the other Tasks resources saved should be applied to actual engineering work on Task 1B.

For purposes of this Scope of Work statement, CONTRACTORS should plan for submission of a Draft Final Report to the DEPARTMENT, which will in turn remove personal and, where possible, corporate identifiers, and then send the basic technical portions to recognized, expert individuals in the specialties involved (the "peers") who have no direct or indirect interest in the matter except to ensure the overall quality of technical work; freedom from errors in calculations; a current awareness of collateral research results; thorough grounding in basic science and engineering principles; and readable style.

The DEPARTMENT plans on utilizing three to five, possibly more, peer reviewers, who will receive nominal compensation. The DEPARTMENT will act as the coordinating Editor. The CONTRACTOR may and probably will be asked to respond to written criticism from an anonymous peer. As Editor, the DEPARTMENT will incorporate peer comments and CONTRACTOR responses in the final text.

Response to a critical, anonymous peer review need not be burdensome, but it requires intense application of knowledge by the most highly skilled professionals in the CONTRACTOR organization, and within a limited time allotment driven by overall project schedules. The CONTRACTOR should propose the individuals who will respond to the peer review critique, and their qualifications, and be prepared to provide their services (late in the contract period) on short notice for a limited time. CONTRACTOR should state its agreement with this eventuality, on a reasonable, professional basis.

As a point of reference, we accept and incorporate pp. 2-1 through 2-15 of the technical proposal submitted by A. T. Kearney, Inc. to the DEPARTMENT dated May 16, 1988 as a general description of the approach to the contract work.

III. Key Personnel

The following list of personnel are to be considered Key Personnel and their participation as represented by the project hours indicated in the cost proposal submitted by A.T. Kearney, Inc. to the DEPARTMENT dated May 16, 1988 in this effort is necessary for successful completion of the work hereunder. The CONTRACTOR shall not replace, reassign, or cause such personnel to be removed form the capacities or change aforementioned project hours by more than 10 percent without the prior written permission of the contract officer, except in the case of major disability or voluntary separation from the CONTRACTOR's employ.

1. Mr. David C. Anderson
2. Mr. Gordon D. Bennett
3. Mr. Dan Sokol
4. Ms. Mary T. Adams

IV. Budget

Total cost of the contract shall not exceed $ 150,000.

Billings for not less than monthly periods are authorized for the percentage of work completed. Documentation to support each invoice shall include a narrative summary of work completed by tasks and a statement of costs

WA8967
382-2221 6-8-8

US ENVIRONMENTAL PROTECTION AGENCY
TELECOMMUNICATIONS CENTER
WASHINGTON, DC 20460

EPA FACSIMILE REQUEST AND COVER SHEET

PLEASE PRINT IN BLACK INK ONLY

TO: George Hofer, Chief

OFFICE/PHONE: Permits Section, EPA Region ~~X~~ Fax ~~#~~ 399-2803

REGION/LAB: ~~X~~

FROM: Betty Shackleford

PHONE	MAIL CODE
382-2221	WH5638

OFFICE: SPB; PSPD, OSW

DATE	NUMSER OF PAGES TO INCLUDE THIS COVER SHEET
6/21/88	13

Please number all pages

INFORMATION FOR SENDING FACSIMILE MESSAGES TO EPA HEADQUARTERS

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PANAFAX	(202) 382-7884 (auto)	(202) 382-2078
PANAFAX	(202) 382-7886 (auto)	(202) 382-2078
MANUAL	(202) 382-2078	

The EPA Communications Center has the capability for sending and receiving facsimile messages to CCITT Group I, II, and III Equipment.

EPA Form 5040-5 (Rev. 12-83) Replaces EPA Form 5040-5A and the previous edition of EPA Form 5040-5, which are obsolete.

WA8967 17a
5-19-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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WASTE MANAGEMENT BRANCH

MAY 19 1988

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

(P)

Mr. Max S. Power
Director, Office of Nuclear
Waste Management
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504-8711

94120-6-MAP

Dear Mr. Power:

Thank you for your letter of April 28, 1988 and for the opportunity to comment on the draft Phase Two Scope of Work for Closure and Perpetual Care and Maintenance Requirements for the commercial low-level radioactive waste disposal facility at Hanford. You should be aware that our review and comments are based on the assumption that the facility will be seeking a RCRA permit. Accordingly, the scope of work has been reviewed in the context of satisfying the closure requirements found in 40 CFR 264.

Questions on the enclosed comments, which are not intended to supercede, usurp or in any other way replace Regional input, may be addressed to Betty Shackleford who coordinated the review for my Office on (202) 382-2221.

Sincerely yours,

Bruce R Weddle

Bruce R. Weddle, Director
Permits & State Programs Division

Enclosure

cc: David Eberly, Engineer
Office of Solid Waste

George Hofer, Permits
Section Chief, Region X

Enclosure

1. Closure Objectives (Page 3)

An objective of closure should be to minimize infiltration regardless of adverse climatic changes [Section 264.310(a)(1)].

2. Environmental Monitoring Objectives (Page 3)

a. Provisions for air monitoring should also be considered.

b. The distinction between background and baseline values needs to be clarified and the usefulness of such information evaluated. For example, corrective action at solid waste management units under Section 3004(u) of RCRA is predicated on health based values where available.

3. Trench Cover Criteria (Page 4)

Additional criteria should be to:

- minimize infiltration (Section 264.310)

- have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present [Section 264.310(a)(5)].

4. Task 1: Technical/Engineering Design Specifications (Page 6)

Closure of a portion of a landfill or partial closure must still meet the requirements specified in Section 264.310.

5. Appendix A - Department's Technical Concerns (Page 11)

Knowledge of the waste volumes to within an order of magnitude is not consistent with the manifesting goals of RCRA. This concern is amplified for new waste shipments recognizing ALARA concerns.

Consider carefully the implications of not addressing high energy short-lived waste species (i.e., $\leq$ 50 years) where intrusion may represent the primary concern, for example.

6. Stabilization (Page 12)

This section is somewhat confusing. Note that use of sorbing agents is not allowed [Section 264.314(b)] for new landfill units while such practices are not expressly prohibited for existing units [Section 264.228(a)(2)(iii)]. Stabilization implies chemical stabilization.

7. Engineered Barriers (Page 12)

a. A single component cap is not normally acceptable under RCRA. You are referred to the Joint NRC-EPA Guidance on a Conceptual Design Approach for Commercial Low-Level Radioactive and Hazardous Waste Disposal Facilities which is enclosed for further details.

b. Information available to EPA suggests that the reliability of concrete for protracted periods (i.e., >100 years) is questionable.

8. Above-Grade Airfoils and Wind Erosion (Page 14)

Care must be taken in constructing the barriers below grade in that one of the objectives of the cover is to prevent run-on.

9. Precipitation and Percolation; Evapotranspiration (Page 15)

The fact that evapotranspiration exceeds precipitation in the area of the landfill does not mean that ground-water contamination will not occur. Consideration of the tritum experience at Hanford may provide useful empirical information on this issue.

AUG 3 1987

TO THE STATES, COMPACT REGIONS, AND ALL NRC LICENSEES

SUBJECT: JOINT NRC-EPA GUIDANCE ON A CONCEPTUAL DESIGN APPROACH FOR COMMERCIAL MIXED LOW-LEVEL RADIOACTIVE AND HAZARDOUS WASTE DISPOSAL FACILITIES

Under the Resource Conservation and Recovery Act (RCRA), the U.S. Environmental Protection Agency (EPA) has jurisdiction over the management of solid wastes with the exception of source, byproduct, and special nuclear material, which are regulated by the U.S. Nuclear Regulatory Commission (NRC) under the Atomic Energy Act (AEA). Low-Level Radioactive Wastes (LLW) contain source, byproduct, or special nuclear materials, but they may also contain chemical constituents which are hazardous under EPA regulations promulgated under Subtitle C of RCRA. Such wastes are commonly referred to as Mixed Low-Level Radioactive and Hazardous Waste (Mixed LLW).

Applicable NRC regulations control the byproduct, source, and special nuclear material components of the Mixed LLW (10 CFR Parts 30, 40, 61, and 70); EPA regulations control the hazardous component of the Mixed LLW (40 CFR Parts 260-266, 268 and 270). Thus, all of the individual constituents of Mixed LLW are subject to either NRC or EPA regulations. However, when the components are combined to become Mixed LLW, neither agency has exclusive jurisdiction under current Federal law. This has resulted in dual regulation of Mixed LLW where NRC regulates the radioactive component and EPA regulates the hazardous component of the same waste.

The attached guidance document provides a conceptual design approach for Mixed LLW disposal facilities. It has been developed jointly by the NRC and EPA to assist commercial LLW disposal site operators and State and Regional Compact regulatory agencies in designing disposal facilities that satisfy both EPA and NRC regulations for Mixed LLW facilities. Although EPA is currently in the process of promulgating regulations that further define the technical parameters for the leak detection, leachate collection, and double liner systems, affected parties may proceed to develop designs for disposal units that will accept Mixed LLW in accordance with existing regulatory requirements. Owners and operators should, however, keep abreast of developing EPA regulations in this area. The attached guidance is based on NRC and EPA regulations in effect on August 1, 1987.

The attached guidance presents a conceptual design approach that meets EPA's regulations covering minimum technology requirements for liners and leachate collection systems, and NRC's requirements for minimization of contact of waste with water, while also assuring long-term stability and avoidance of long-term maintenance which are required by both agencies. The concepts proposed in this document are presented as general guidance; specific design details are expected to be complementary to particular site conditions, so that a license application will have to address site characteristics and their relationship to a proposed design as well as the details of any engineered portion of the facility. The application of this guidance will not affect the requirements for waste disposal facilities to comply with all applicable NRC and EPA regulations.

United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response

EPA

DIRECTIVE NUMBER: 9487.00-8

TITLE: Joint NRC-EPA Guidance on a Conceptual Design Approach for Commercial Mixed Low-Level Radioactive and Hazardous Waste Disposal Facilities

APPROVAL DATE: August 3, 1987

EFFECTIVE DATE: August 3, 1987

ORIGINATING OFFICE: OSW

☒ **FINAL**

☐ **DRAFT**

STATUS:
[ ] A- Pending OMB approval
[ ] B- Pending AA-OSWER approval
[ ] C- For review &/or comment
[ ] D- In development or circulating headquarters

REFERENCE (other documents):

OSWER OSWER OSWER

E DIRECTIVE DIRECTIVE D

The attached guidance should permit licensees to develop safe and effective designs for disposal of Mixed LLW that fully meet the regulatory requirements of both agencies. Depending on the particular type of conceptual design selected by a licensee, EPA may permit variances to the requirements for double liners and leachate collection systems.

Sincerely,

Hugh L. Thompson, Jr., Director
Office of Nuclear Material
Safety and Safeguards
U.S. Nuclear Regulatory Commission

J. Winston Porter
Assistant Administrator
Office of Solid Waste
and Emergency Response
U.S. Environmental
Protection Agency

Enclosure:
As stated

JOINT NRC-EPA GUIDANCE ON A CONCEPTUAL DESIGN APPROACH FOR COMMERCIAL MIXED LOW-LEVEL RADIOACTIVE AND HAZARDOUS WASTE DISPOSAL FACILITIES

Introduction

The Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA) requires that the three operating low-level radioactive waste (LLW) disposal facilities remain available through 1992. By that time, all states and compact regions are required to assume complete responsibility for LLW disposal. Both existing and new disposal facilities may receive commercial mixed low-level radioactive and hazardous waste (Mixed LLW), which is regulated by the U.S. Nuclear Regulatory Commission (NRC) under the Atomic Energy Act (AEA), and by the U.S. Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA). Mixed LLW is defined as waste that satisfies the definition of LLW in the LLRWPAA and contains hazardous waste that either (1) is listed as a hazardous waste in Subpart D of 40 CFR Part 261 or (2) causes the LLW to exhibit any of the hazardous waste characteristics identified in Subpart C of 40 CFR Part 261. To assist in applying this definition, NRC and EPA issued joint guidance entitled "Guidance on the Definition and Identification of Commercial Mixed Low-Level Radioactive Waste and Answers to Anticipated Questions" on January 8, 1987.

This jointly developed NRC-EPA guidance document presents a conceptual design approach that meets the regulatory requirements of both agencies for the safe disposal of Mixed LLW. Other designs, or variation of the proposed design concept may also be acceptable under the requirements of both agencies and will be reviewed on a case-by-case basis as received.

EPA regulations in 40 CFR Part 264, Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, identify the design and operating requirements for owners and operators that dispose of hazardous waste in landfills [264.300 to 264.317]. These regulations involve requirements for the installation of two or more liners and a leachate collection and removal system (LCRS) above and between the liners to protect human health and the environment. Exceptions to the double liner and leachate collection system requirements are allowed, if alternative design and operating practices, together with location characteristics, are demonstrated to EPA's Regional Administrator to be equally effective in preventing the migration of any hazardous constituent into the ground water or surface water.

NRC regulations in 10 CFR Part 61, Licensing Requirements for Land Disposal of Radioactive Waste, indicate that long-term stability of the waste and the disposal site require minimization of access of water to the waste [61.7(b)(2)] and that the disposal site must be designed to minimize, to the extent practicable, the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal [61.51(a)(6)]. The primary objective of the above NRC regulations is to preclude the possibility of the development of a "bath-tub" effect in which the waste could become immersed in liquid

(e.g., from infiltration of surface water runoff) within a disposal unit below grade with a low-permeability bottom surface.

The guidance on a conceptual design approach that is offered in the subsequent paragraphs is intended to present basic design concepts that are acceptable in addressing the regulations of both the NRC and EPA with respect to requirements for liners, leachate collection systems and efforts to minimize the contact of liquid with the waste. It should be recognized that the guidance is being provided at the conceptual level and that the design and details that are complementary to specific site conditions need to be engineered by potential waste facility owners and operators. The application of the guidance in this document will not affect the requirements for licensees of waste disposal facilities to comply with all applicable NRC and EPA regulations.

Conceptual Design

Sketches and a brief discussion of the design considerations for an above grade disposal unit are provided. This design concept has been developed primarily to demonstrate the integration of EPA's regulatory requirements for two or more liners and a leachate collection system above and between liners and the regulations of the NRC that require the contact of water with the waste be minimized. In addition, the design concept fulfills the need under both agencies' regulations to assure long-term stability and minimize active maintenance after site closure.

In this approach, the Mixed LLW would be placed above the original ground surface in a tumulus that would be blended into the disposal site topography. Schematic details of some of the principal design features of an above grade Mixed LLW disposal unit are provided in the sketches accompanying this guidance document. Figure 1 depicts the three dimensional overall view of a conceptual Mixed LLW disposal unit; Figure 2 provides details of the perimeter berm, liners, and leachate collection system; Figure 3 presents a cross-sectional view of the covered portion of the disposal unit; and Figure 4 describes the final cover system.

In the overall view of the Mixed LLW disposal facility, the double liners and leachate collection and removal system are installed before the emplacement of the Mixed LLW; and the cover system is added at closure. The leak detection tank and leachate collection tank are encircled by a berm that controls surface water runoff from precipitation that would fall directly on the waste facility site. The drainage pipes in the upper primary collection system would collect any leachate that could possibly develop above the top flexible membrane liner and below the emplaced waste. Any leachate collected would drain through the pipes to the primary leachate collection tank where the leachate would be tested and treated, if required. Any leachate collected by the lower leachate collection and removal system would drain to the leak detection tank. The development of significant amounts of leachate from the solidified waste after closure is not anticipated. This is because the closure requirements provide that the cover must be designed and constructed 1) to provide long-term minimization of water infiltration into the closed disposal facility, 2) to function with minimum maintenance, 3) to promote drainage and minimize erosion,

and 4) to have a permeability less than or equal to the permeability of any bottom liner system. It is anticipated that the area shown on Figure 3 between the slope of the final cover and the run-on control berm, where the tanks are located, would be regraded and the tanks removed at the end of the post-closure care period (normally 30 years) when leachate development and collection is no longer a problem.

Figure 2 provides the general details required by EPA regulations for the double liner and leachate collection and removal system. The perimeter berm for leachate runoff control would assure that all leachate is collected below the waste and safely contained and transported through the drainage layers and pipes to the tanks located outside the final cover slope. NRC's regulations requiring minimizing contact of the waste with water are fulfilled by requiring the waste to be placed above the level of the highest water table fluctuation and above the drainage layers where leachate would collect. The bottom elevation of the solidified Mixed LLW would be required in all instances to be at elevations above the top of the perimeter berm.

In Figures 3 and 4, the design concepts for the final cover over the solidified waste zone and the perimeter berm are presented. The actual zone for placement of solidified Mixed LLW may consist of different options, depending on the licensee's selection. Options that would be acceptable include use of stable high integrity waste containers (HICs) that have the spaces between containers filled with a cohesionless, low compressible fill material or placement of the waste in an engineered structure, such as a reinforced concrete vault. A cover system over the waste that would be acceptable to the EPA and NRC is shown in Figure 4. The cover system would consist of (1) an outer rock or vegetative layer to minimize erosion and provide for long-term stability, (2) a filter and drainage layer that transmits infiltrating water off of the underlying low permeability layers, (3) an impervious flexible membrane liner overlying a compacted low permeability clay layer, and (4) a filter and drainage layer beneath the compacted clay layer. If the solidified waste zone does not consist of an engineered vault structure with a top roof, an additional compacted clay layer should be placed immediately above the emplaced waste to direct any water infiltration away from the waste zone. Mixed LLW that contains Class C waste as designated by NRC's regulations would need to provide sufficient thickness of cover materials or an engineered intruder barrier to ensure the required protection against inadvertent intrusion.

Variations on the above described design approach may include placement of the Mixed LLW in an engineered reinforced concrete vault, a steel fiber polymer-impregnated concrete vault, or double-lined high integrity containers that are hermetically sealed. If proposed by license applicants, these variations would be reviewed by both the EPA and NRC on a case-by-case basis to evaluate their acceptability and conformance with established Federal regulations.

For questions related to NRC regulations and design requirements, contact:

Dr. Sher Bahadur, Project Manager
Division of Low-Level Waste Management
and Decommissioning
Mail Stop 623-SS
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Facility specific questions, permitting requirements, variances and other related concerns should be addressed to either the EPA Regional office or State agency authorized to administer the mixed waste program as appropriate. For general questions related to EPA regulations and design requirements, contact:

Mr. Kenneth Skahn, Senior Engineer
Waste Management Division
Mail Stop WH-565E
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

FIGURE 2

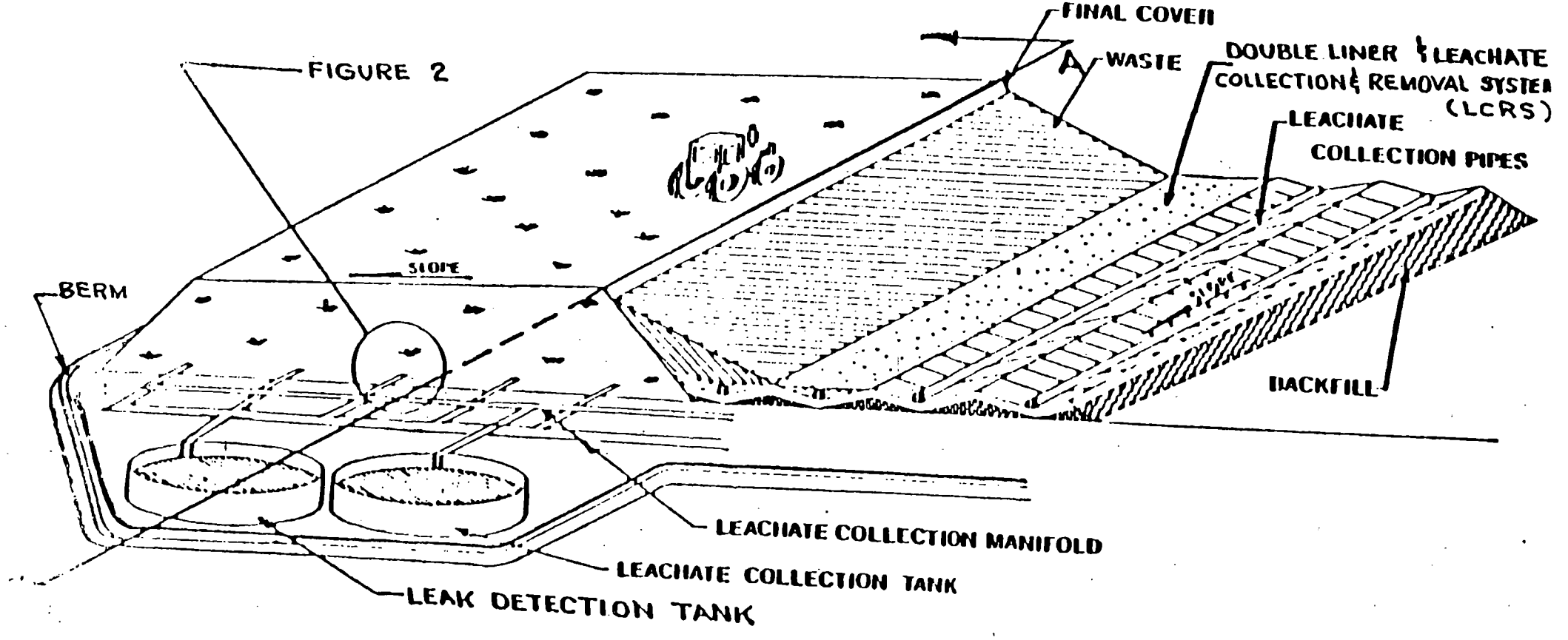
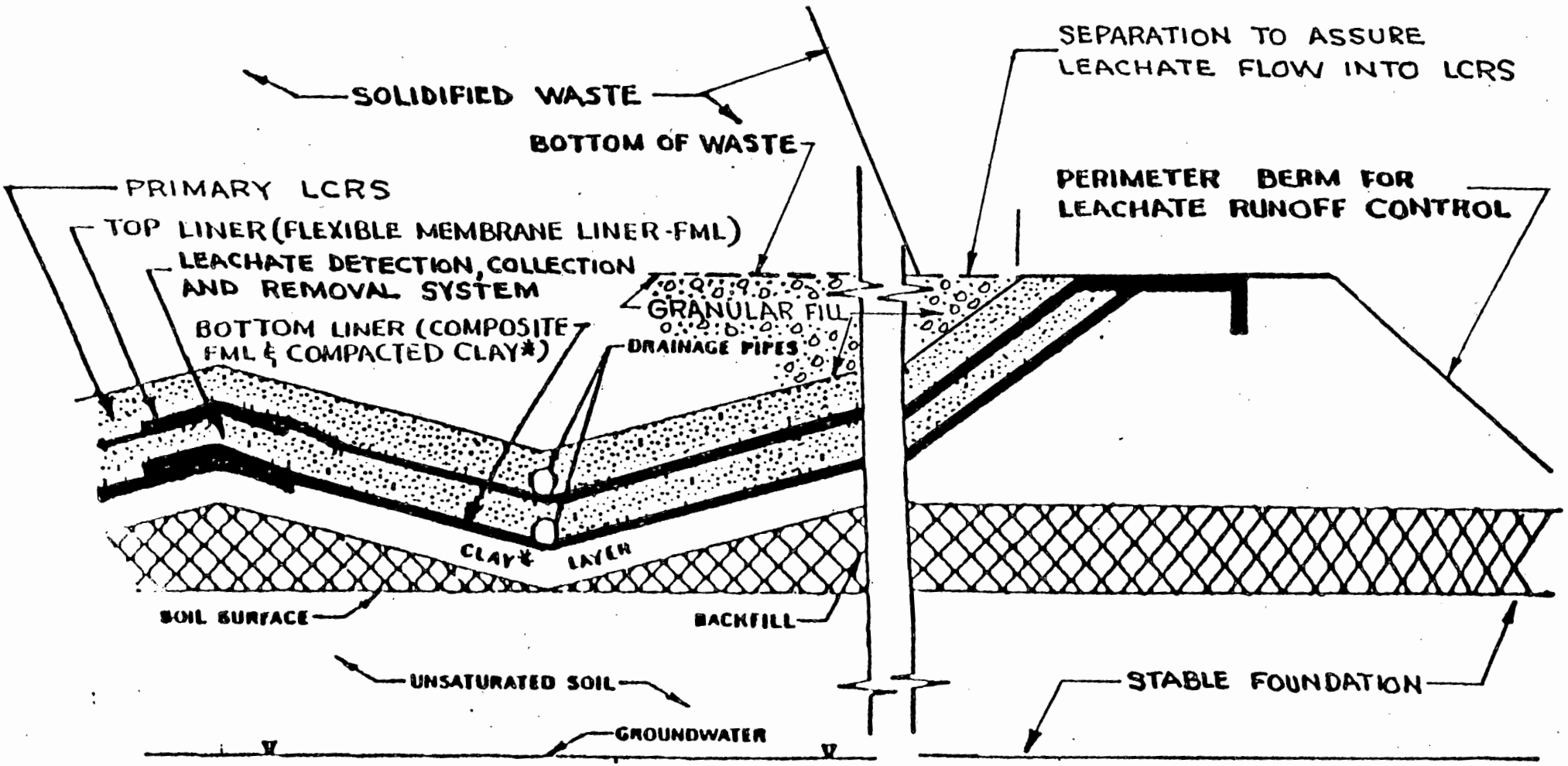


FIGURE 1- MIXED WASTE DISPOSAL FACILITY



*The compacted clay layer is to be a minimum 3 feet in thickness and have a hydraulic conductivity less than 1×10^{-7} cm/sec

FIGURE 2 - DOUBLE LINER AND LEACHATE COLLECTION SYSTEM

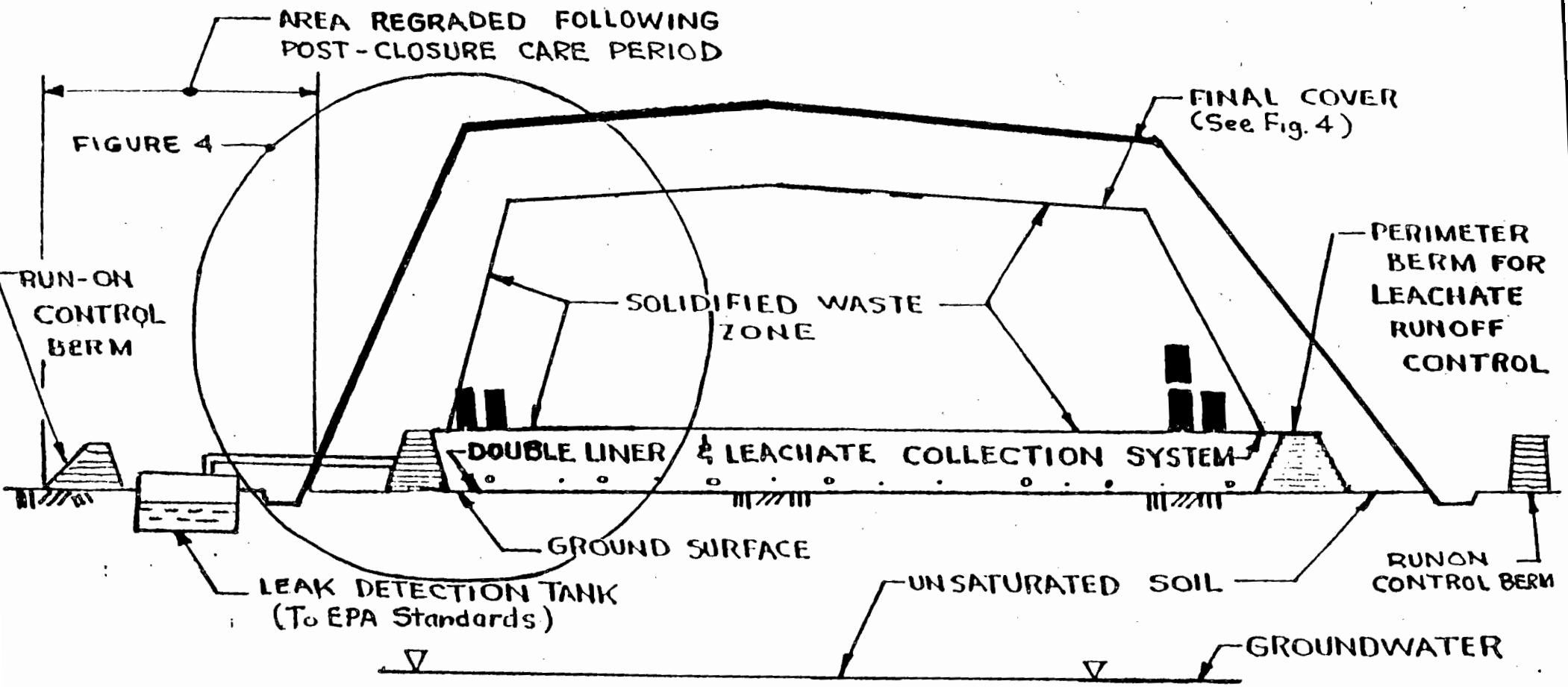


FIGURE 3- CROSS-SECTIONAL VIEW A-A

(VERTICAL SCALE EXAGGERATED)

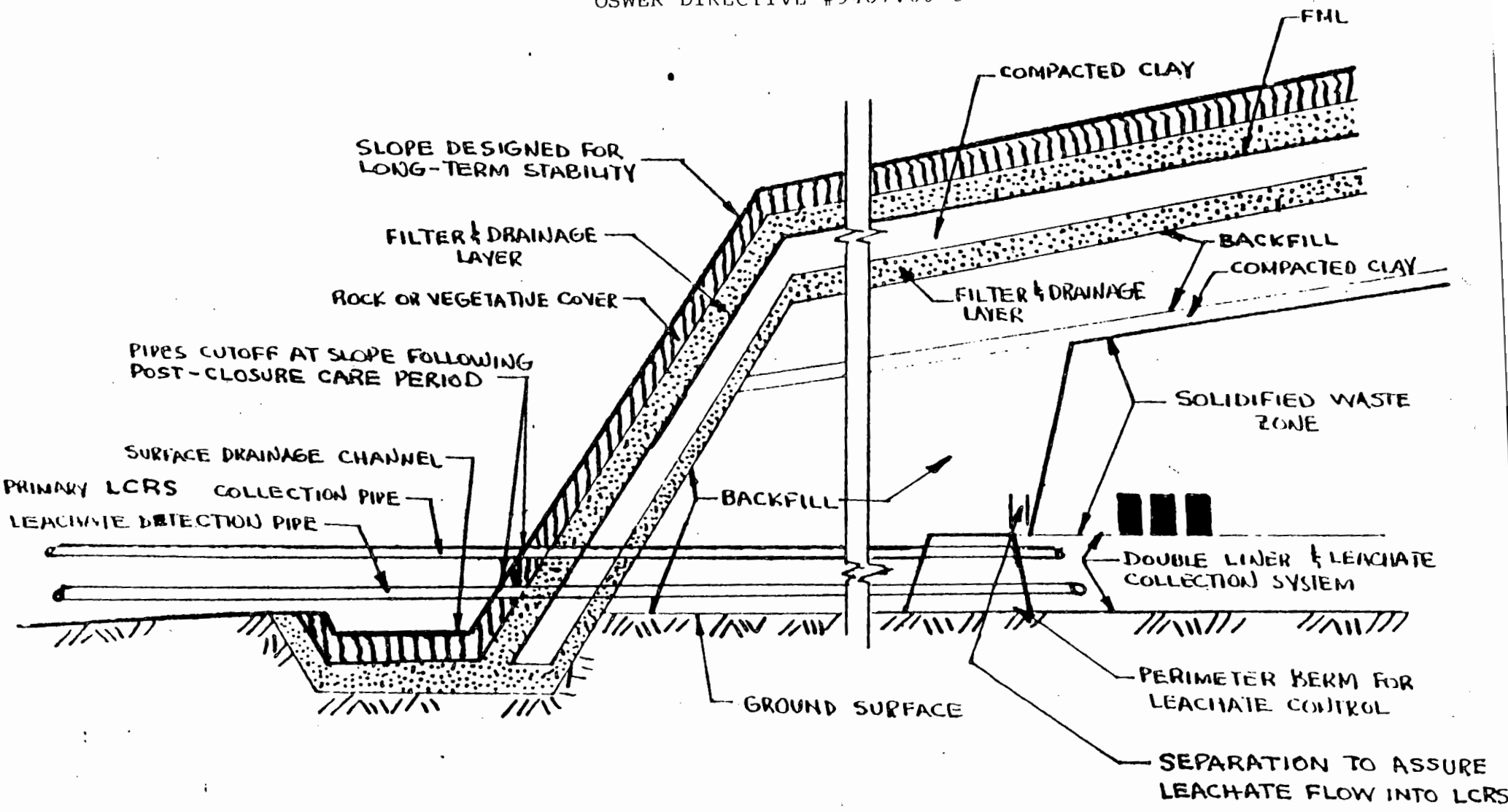


FIGURE 4 - WASTE COVER SYSTEM

(VERTICAL SCALE EXAGGERATED)

WA8960 17
11-19-85

ANDREA BEATTY RINIKER
Director

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

November 19, 1985

Mr. Stephen A. Carpenter
Facility Manager
US Ecology
P.O. Box 638
Richland, WA 99352

Dear Mr. Carpenter:

The Department of Ecology and the Department of Social and Health Services staffs have reviewed US Ecology's October 31, 1985 proposal regarding closure of the company's resin tanks. The following comments are intended to provide you with additional information which must be acted on in order to move towards a timely and proper closure. This information is a follow up to the Department of Ecology's November 8, 1985 letter to you concerning these tanks.

Interagency discussions have revealed tank number 3 to be of special concern and a high priority for closure due to it's level of radioactivity and the potential hazard it now presents. Consequently, company staff should accelerate planning activities for tank 3 which are directed towards: (a) verifying the volume and ascertaining the consistency and stratification of remaining wastes, and (b) developing a methodology for the collection of representative samples from selected sites along the length of the tank. These specific plans must be submitted to the departments within one week of receipt of this letter.

With this information in hand we will then proceed with final review and authorization to immediately fill the tank 3 void space and to stabilize wastes in place to the extent practicable. We are hopeful this process will be completed in a timely fashion.

Planning activities regarding the sampling of tanks 1 and 2, and of surrounding soils should proceed as per the above referenced November 8, 1985 letter with final approval accommodating the requirements of both agencies. Approval for the closure of these tanks and of the area in general will follow our receipt of this analytical data. Company staff should begin planning now for overall (tank area) closure activities which will meet the requirements of Washington's Dangerous Waste Regulation (Chapter 173-303 WAC), Rules and Regulations for Radiation Protection (Title 402 WAC), and the company's operating radioactive materials license (WN-I109-2). We would be happy to meet with company staff regarding any or all of these requirements.

Improvements of the sampling methods and analytical techniques for surrounding soils and remaining liquids and sludges contained within tanks 1, 2, and 3 will be necessary. General guidelines for sampling and testing can be found in EPA-SW846, Test Methods for Evaluating Solid Waste. Planning for these activities should include at least the following:

1. Sampling of liquid waste remaining within tank 1 (special attention should be given to possible stratification of organics).

2 Disposal of significant quantities of liquid (more than 25 gallons) remaining in any of the tanks into an operating disposal unit.

3 Analysis of samples to include quantitative analyses for metals and a detailed GCMS scan.

4. Analyses should be specific rather than the "no library match" statement, with actual concentrations of chemical constituents presented or a minimum detectable limit given.

5. Samples collected from tanks 1, 2, and 3 should be in triplicate. One set should be analyzed as above, the remaining two should be held by the company for possible additional analyses.

As stated above, our agencies will be working closely together to coordinate the reviews and approvals necessary for completion of these decommissioning activities. Thank you for your attention to this matter.

Sincerely,

Richard A. Burkhalter, Supervisor
Industrial Section
Washington State Department of
Ecology

Terry Strong, Head
Radiation Control Section
Washington State Department
Social and Health Services

RAB/TS:pk

cc: Elmer Martinez

WA 8967 17a
WORKCOPY
PIERRE
10·30·85

A. N. SHINPOCH
Secretary

STATE OF WASHINGTON
DEPARTMENT OF SOCIAL AND HEALTH SERVICES
Olympia, Washington 98504-0145

October 30, 1985

Sid V. Wright, Jr.
Vice President, Operations
US Ecology, Inc.
P.O. Box 7246
Louisville, Kentucky 40207

Dear Mr. Wright:

In our telephone conversations of October 29 and 30, 1985, you stated that readings on Tank Number 3 showed 500 mr/hr at 2 feet from some crusted material in the bottom of the tank and that exposure rates as high as 1000 R/hr could be expected on contact with the crusted materials. The department has assessed the public health and environmental risks associated with excavation and movement of Tank Number 3 compared to the public health and environmental risks of stabilizing Tank Number 3 in place and has concluded that movement of the tank represents the potential for significant occupational exposure, without apparent benefit to the public health and environment.

At this time, the department sees no long-term environmental benefit to relocating the tank. Long-term environmental protection can be achieved by alternate in situ stabilization programs. The department requires that US Ecology submit an in situ stabilization plan as soon as possible which will address the classification of the solid material in the tank with regard to Appendix E of the license, describe how the tank will be taken out of service, and the procedures which will be used to stabilize or decommission Tank Number 3 and any other tank which will likely pose a similar unnecessary radiation hazard.

Sincerely,

Nancy P. Kirner, Supervisor
Waste Mangement Unit

NPK:pm

cc: Roger Stanley, WDOE

CUSTOMER U.S. Ecology
ADDRESS P.O. Box 638
CITY Richland, WA 99352
ATTENTION S.A. Carpenter cc: Elmer Martinez
INVOICE NO. 509146

REPORT OF ANALYSIS

SAMPLES RECEIVED	CUSTOMER ORDER NUMBER

TYPE OF ANALYSIS ICP Scan

CEP #		Element	Result
85-9-162	Tank # 1	Aluminum	Negative
	Tank # 2	Aluminum	Negative
	Tank # 3	Aluminum	Negative
85-9-162	Tank # 1	Boron	Positive
	Tank # 2	Boron	Positive
	Tank # 3	Boron	Positive
85-9-162	Tank # 1	Calcium	Positive
	Tank # 2	Calcium	Positive
	Tank # 3	Calcium	Positive
85-8-162	Tank # 1	Cobalt	Negative
	Tank # 2	Cobalt	Positive
	Tank # 3	Cobalt	Negative
85-9-162	Tank # 1	Copper	Positive
	Tank # 2	Copper	Positive
	Tank # 3	Copper	Positive
85-9-162	Tank # 1	Iron	Positive
	Tank # 2	Iron	Positive
	Tank # 3	Iron	Positive
85-9-162	Tank # 1	Magnesium	Positive
	Tank # 2	Magnesium	Positive
	Tank # 3	Magnesium	Positive
85-9-162	Tank # 1	Manganese	Positive
	Tank # 2	Manganese	Positive
	Tank # 3	Manganese	Positive
85-9-162	Tank # 1	Molybdenum	Negative
	Tank # 2	Molybdenum	Negative
	Tank # 3	Molybdenum	Negative
85-9-162	Tank # 1	Sodium	Positive
	Tank # 2	Sodium	Positive
	Tank # 3	Sodium	Positive

APPROVED BY
9/18/85 James J. Mueller, President

Consortium for Environmental Pollution, Inc.
P.O. Box 5351 • 1925 Rosina • Santa Fe, New Mexico 87502

CUSTOMER U.S. Ecology
ADDRESS P.O. Box 638
CITY Richland, WA 99352
ATTENTION S.A. Carpenter cc: Elmer Martinez
INVOICE NO 509146

REPORT O ANALYSIS

SAMPLES RECEIVED	CUSTOMER ORDER NUMBER

TYPE OF ANALYSIS ICP Scan

CEP #		Element	Result
85-9-162	Tank # 1	Nickel	Positive
	Tank # 2	Nickel	Positive
	Tank # 3	Nickel	Positive
85-9-162	Tank # 1	Zinc	Positive
	Tank # 2	Zinc	Positive
	Tank # 3	Zinc	Positive
85-9-162	Tank # 1	Barium	Negative
	Tank # 2	Barium	Positive
	Tank # 3	Barium	Negative
85-9-162	Tank # 1	Chromium	Positive
	Tank # 2	Chromium	Positive
	Tank # 3	Chromium	Positive
85-9-162	Tank # 1	Selenium	Negative
	Tank # 2	Selenium	Positive
	Tank # 3	Selenium	Negative
85-9-162	Tank # 1	Sodium	Negative
	Tank # 2	Sodium	Negative
	Tank # 3	Sodium	Negative
85-9-162	Tank # 1	Mercury	Negative
	Tank # 2	Mercury	Negative
	Tank # 3	Mercury	Negative
85-9-162	Tank #1	Cadmium	Negative
	Tank # 2	Cadmium	Positive
	Tank # 3	Cadmium	Negative
85-9-162	Tank # 1	Arsenic	Negative
	Tank # 2	Arsenic	Negative
	Tank # 3	Arsenic	Negative
85-9-162	Tank #1	Lead	Positive
	Tank # 2	Lead	Negative
	Tank # 3	Lead	Negative

APPROVED BY
9/18/85 James J. Mueller, President

Centrule for Environmental Pollution, Inc.

CUSTOMER U.S. Ecology
ADDRESS P.O. Box 638
CITY Richland, WA 99352
ATTENTION S.A. Carpenter cc: Elmer Martinez
INVOICE NO. 509146

REPORT OF ANALYSIS

SAMPLES RECEIVED 9/10/85 | CUSTOMER ORDER NUMBER

TYPE OF ANALYSIS Organics

U.S. Ecology Waste Characterization

GC/MS Scan

95-09-162-1
Tank # 1

18.2%	2-Butene
40.9%	No library match *
2.3%	Napthalene

This sample also contains:

Propene
Propanoic acid, methyl ester
1,2 - hydrazinedicarboxaldehyde
Tolune
2-Heptanol
Xylenes
Benzene, trimethyl
Phenol, 4-2,2,3,3-tetramethyl
Benzene, 1-ethyl, 2-methyl
Oxazole, 2,5-diphenyl

85-09-162-2
Tank # 2

8.0%	Propanediol
10.8%	1,4-Dioxane
11.9%	Benzene, Methyl
3.9%	2-Hexanol
9.6%	Benzene, 1,3-dimethyl
2.3%	Benzene, 1,2-dimethyl
4.0%	Benzene, 1,2,4-trimethyl
9.7%	Benzenesulfonic acid, 4-hydroxy
2.1%	Decane, 5-methyl
5.6%	Ethanon, 1-(3-thienyl)
27.5%	Napthalene
2.2%	1-Propene, 2-methyl-;tetramer
2.0%	2,5-Pyrrolidinedione

APPROVED BY
9/18/85 James J. Mueller, President

Carbon for Environmental Pollution, Inc.
P.O. Box 5961 • 1925 Rosina • Santa Fe, New Mexico 87502

CUSTOMER U.S. Ecology
ADDRESS P.O. Box 638
CITY Richland, WA 99352
ATTENTION S.A. Carpenter cc: Elmer Martinez
INVOICE NO. 509146

REPORT O
ANALYSIS

SAMPLES RECEIVED 0/19/85 | CUSTOMER ORDER NUMBER

TYPE OF ANALYSIS Organics

U.S. Ecology Waste Characterization

GC/MS Scan

85-09-162-3
Tank #3

25.7%	Pentane, 3-methyl
4.2%	Cyclopentane, methyl
10.4%	No library match *
59.6	No library match *

This sample also contains:

Cyclohexane
< 0.1% Hydrazine
Napthalene
Phthalate

85-09-162-4
Tank #4

50.4%	1,4-Dioxane
22.1%	No library match *
1.3%	2-Hexanol
3.4%	2-Butyne
1.7%	Ethanone, 1-(3-thienyl)
9.8%	Napthalene
1.4%	Benzothiazole
1.3%	Butanamide, N-(aminocarbonyl)-2-ethy-
7.3%	Oxazole,2,5-diphenyl

This sample also contains:

Xylenes
1,3-Butdiene

* These spectra contain ions of mass 31 and 32. The base peak for hydrazine is 32 (N_2H_4). The ion at mass 31 could either be CH_4O or N_2H_3. The compounds represented by these peaks may be hydrazine reaction products.

APPROVED BY
9/18/85 James J. Mueller, President

Center for Environmental Pollution, Inc.
P.O. Box 5351 • 1925 Rosina • Santa Fe, New Mexico 87502

TANK FARM PROJECT

Phase II

6.0 INTRODUCTION (Reference RWT 005, Phase I and RWT 005, Phase II)

Completion of Phase I (Removal of Liquids from the Tank Farm) and subsequent inspection of the integrity of the tanks (Phase II 6.2) have revealed that 1) a substantial amount of dry resin (±550 cubic feet) remains in tank 3 and, 2) the weight distribution and suspect structural integrity of the tanks make it undesirable to attempt to lift them. In keeping with US Ecology's policy of maintaining radiation exposures to personnel and the environment "as low as reasonably achievable" (ALARA), this procedure provides guidelines for in-place closure of tanks one, two, and three. Tanks four and five have been removed per RWT 005, Phase II.

6.1 TANK IMMOBILIZATION

6.1.1 Absorb any residual fluid in the tanks by the addition of sufficient absorbant material (Aquaset/Patroset). Perform any manual mixing necessary to ensure that no free-standing liquid remains.

6.1.2 Locate, by Cartesian coordinates, horizontal and vertical positions of the ends of tanks one, two, and three.

6.1.3 Prepare an access ramp to the tanks so as to minimize obstructions to bulk concrete delivery trucks.

sludges?

6.1 Continued

6.1.4 Cover all risers except the one on the elevated end of each tank with visqueen or polyethylene sheeting and secure in place with cloth duct tape.

6.1.5 Pour concrete directly from the bulk delivery truck into the tanks via the elevated riser openings. Concrete will be of the commercially available Portland cement type utilizing a high density aggregate in the 4,000 pounds per cubic yard range. A high slump factor (5 - 7") will be required to maintain a fluidity necessary necessary to minimize voids in the tanks.

6.1.6 Visually inspect the filled tanks twenty-four (24) hours after to ensure that void spaces are minimized. Add additional concrete as necessary. Any spillage or overflow will be treated as potentiall contaminated and disposed in trench eleven in drums.

6.1.7 Radiological controls will be as per RWT 005, Phase I.

6.2 REMOVAL OF CONTAMINATED SOIL

6.2.1 Soil identified in accordance with RWT 005, Phase II, 5.4, as potentially contaminated has been stockpiled in the area to the southeast of tank one. Maximum contamination levels measured ranged from 1,000 to 3,000 DPM per frisk on the surface of one cubic yard lots of excavated soil. Contamination did not appear

6.2.1 Continued

to be uniformly distributed, but rather appeared in small isolated spots, probably a direct result of the Phase I operation itself. A gamma scan utilizing a micro-R mater shows essentially background levels on all excavated soil. A conservative calculation based on a maximum concentration of 3,000 DPM per 10 gram sample (roughly the area of a direct frisk utilizing an HP 210 to 1/2" deep) yields a specific activity of .0013 microcuries per gram. This is considerably less than the .002 microcuries per gram which is the deminimus specific activity for classification as radioactive material for transport (49 CRR 173.403 y.). Actual measurements taken on core samples show activities less than minimum detectable activity for gross alpha and gross beta-gamma.

6.2.2 The potentially contaminated soil will be placed into the facility dump truck with front end loaders and transported over a single designated route to the working face of trench eleven for use as backfill. A backfill ramp will be maintained to ensure that all potentially contaminated soil is placed at least eight feet (8') below original (1965) grade.

6.2.3 The top layer of soil (1 - 2") will be removed from the designated dump truck route and used as backfill in trench eleven.

6.2.4 Radiation surveys will be conducted in the stock pile area and roadway and random soil samples will be collected to insure that no residual

6.2.4 Continued

contamination remains in the stockpile area or designated dump truck route.

6.3 SOIL SAMPLING IN THE VICINITY OF THE TANKS

RESERVED

6.4 CLOSURE OF THE TANK FARM AREA

RESERVED

0284

State of Washington
Department of Ecology

TELECOPY TRANSMITTAL

DATE: 11-1-85
TIME: 11:53
NO. OF PAGES: 10 + Cover

TO (NAME / AGENCY): Bob Stamness

FROM (NAME / DIVISION): Roger Stanley
Dept of Ecology

REMARKS

THIS MACHINE IS A 3M EMT 1000 AUTOMATIC GROUP I MACHINE SET TO RECEIVE AT 3 MINUTES. CAN BE ADJUSTED TO RECEIVE AT 4 OR 6 MINUTES FROM GROUP I MACHINES. CAN ALSO RECEIVE FROM DIGITAL GROUP III MACHINES THAT HAVE GROUP II COMPATIBILITY.

LOCATION: DEPT OF ECOLOGY HEADQUARTERS
ROOM 111 ABBOTT RAPHAEL HALL
ST MARTINS COLLEGE CAMPUS
OLYMPIA, WA 98504 - MS: PV-11

MACHINE TELEPHONE: (206) 459-6007
OPERATOR TELEPHONE: (206) 459-6000
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09/17/86 bg

Bob Schumacher

Nov 1 Eg -
1140 hr.

Bob & Wayne

please get Ed Cowan and go over their stuff - I'll have DSHS tell U.S. Ecology to secure the area, certify radiation levels, and give us more on the chemical end - They told me verbally that these levels held most regs.

Why the sudden push to solidify in place?

Call me @ 3:30 - 4:00 so I can get back to ~~U.S. Ecology~~ DSHS.

R.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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U S E C O L O G Y, I N C.

RICHLAND, WASHINGTON

RCRA CLOSURE PLAN

OCTOBER 29, 1985

ATTACHMENT V

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CLOSURE PLAN
FOR WAD 060048360

1.0 GENERAL

The Richland low-level radioactive waste (LLRW) disposal facility, located on the 573-square-mile, federally-owned Hanford Reservation in southeastern Washington, has been used since 1965 for disposal of LLRW. The facility consists of slightly less than 100 acres leased by the operator, US Ecology, Inc., from the state of Washington which, in turn, leases 1000 acres, including the facility, from the United States Department of Energy (USDOE).

Certain radioactive wastes received at the facility contained chemicals which may be defined as hazardous under RCRA. One pre-RCRA trench, referred to as the chemical trench, contains only nonradioactive chemicals. Trenches 1-11 contain minor amounts of randomly-placed LLRW which may be defined as RCRA hazardous, although only Trenches 6-11 have been used since the implementation of RCRA.

The disposal units which may contain RCRA-regulated wastes will be closed on or before November 8, 1985, by a decision of US Ecology to cease accepting any such suspect waste. No waste will be in storage at that time. Closure, in accordance with this closure plan, when approved by the Regional Administrator of the United States Environmental Protection Agency (USEPA), will be certified by both the operator of the facility and by an independent registered professional engineer. The LLRW facility will continue to accept LLRW and dispose of it in units which will not contain RCRA-hazardous waste.

2.0 TANKS

Not applicable because no RCRA-hazardous material is stored in tanks at this facility.

3.0 SURFACE IMPOUNDMENT

Not applicable because no surface impoundment exists at this facility.

4.0 LAND TREATMENT

Not applicable because land treatment has not been practiced at this facility.

5.0 LANDFILLS

5.1 Description of Facility

The LLRW disposal facility is located in Benton County, Washington, latitude N46°32'17", longitude W119°33'29", on high ground near the center of the Hanford Reservation in the southeastern Washington desert. The Hanford Reservation, which began operation in the 1940s as part of the Manhattan Project, is presently the site of several nuclear reactors, research facilities and waste disposal facilities. There are no permanent residents on the Reservation. It is more than 10 kilometers (6.2 miles) from the facility to the nearest Hanford boundary. The LLRW disposal facility is bounded on the north and west by the lease holding of the state of Washington and on the south and east by federal land controlled by the USDOE.

The Hanford Reservation is located within the Pasco Basin area of southern Washington, near the confluence of the Columbia and Yakima Rivers (Attachment 1). The nearest population center is Richland, Washington, which is located about three miles from the southernmost boundary of the reservation. The reservation is surrounded by the Rocky Mountains to the east and the Cascade Mountains to the west and south. Locally, several basalt ridges provide natural boundaries within the basin, further subdividing the area.

The LLRW facility is located between Gable Mountain and Gable Butte to the north, Yakima Ridge to the west, Rattlesnake Hills and Red Mountain to the south. The Columbia River, the natural surface water body nearest to the facility, is located about 12 miles east of the facility.

5.1.1 Climatology

The Pasco basin is located in the rain shadow of the Cascade Mountains and receives an average annual rainfall of about 6.3 inches, most of which occurs during the winter. The area is classified as a midlatitude semiarid

desert. The potential evapotranspiration (PET) is between 28 and 33 inches per year. Water balance computations, performed as part of the Basalt Waste Isolation Project (BWIP), indicate that the annual PET is about 29.4 inches. Attachment 2 is a graphical representation of the computed water balance and shows that precipitation is exceeded by evapotranspiration during nine months of the year. Infiltration can occur only during the period between November and January, when precipitation exceeds evapotranspiration. The net moisture deficit is found by subtracting the annual average rainfall from the PET. The net deficit for the LLRW facility is 23.1 inches. This equates well with the value found by the water balance of 22.95 inches.

5.1.2 Meteorology

Temperatures are relatively warm at the facility considering the latitide. Average monthly temperatures vary from 29°F in January to 76° in July. There are normally about 115 days a year with lows below freezing and about 13 days with highs above 100°.

The prevailing winds in the vicinity of the facility are mostly from the northwest. Seasonally, the wind speed is lower during the winter (monthly averages of 6 to 7 mph) than during the summer (8-10 mph) and the direction shifts come more commonly from the southwest during spring and fall. In an average year, there are about 26 days in which peak wind gusts exceed 40 miles per hour (USERDA 1975). Dispersion, the ability of the air to clear pollutants, is somewhat worse in the winter but varies widely. Air quality is generally good, mainly because of the low density of population and land use, with the main air quality problem being dust.

Severe weather conditions such as thunderstorms, occur on occasion. Thunderstorms occur about ten days a year, and

tornados are a rare but possible occurrence. One tornado and two other funnel clouds, not touching the ground, were observed on the Hanford Site during a 36-year observation period.

5.1.3 Geology

The Hanford area is described as a basalt plateau overlain by thick layers of unconsolidated to partially consolidated sediments which are Pleistocene to recent in age. The Pasco basin is underlain by basalt flows of the Columbia River Basalt Group. The basalt sequences are interbedded with erosional sediments, and are in excess of 700 feet in thickness. The basalt outcrops within the Hanford Reservation and near the facility. Attachment 3 contains geologic maps showing the surficial geology and general structural geology of the area, cross-sections showing the relationships of the various units and a stratigraphic column of the area. The upper unconsolidated sediments are contained in the Ringold and Hanford formations which are alluvial and colluvial in origin. The Hanford formation consists of sands, silts, clays and some gravels, which were deposited in alluvial fans. The Ringold formation is mostly sands, silts and clays, with some gravels and cobbles, and is either partially cemented or cemented. The Hanford and Ringold formations extend from the surface to a depth of about 510 feet near the LLRW facility (Rockwell, 1982).

The upper 50 to 100 feet of material consists of fine sand to silt and is uncemented. Several distinct zones of volcanic ash are present within the upper 50 feet (Rockwell, 1982).

On-site geological information has been derived from disposal unit excavations up to approximately 50 feet in depth and the installation of monitoring wells up to 360

feet in depth. The first 10 to 20 feet consists of colluvium, alluvium and dune sands with occasional layers of volcanic ash. The next 50 to 60 feet is mostly alluvial and colluvial materials with alternating layers of silt, fine sand and medium to coarse sand. These alternating layers probably represent the Touchet silts of the Hanford formation. The next 100 to 200 feet consists of poorly-sorted sands, silts and gravels. These materials probably represent the Pasco Gravel member of the Hanford formation. The water table occurs in a well-sorted sand and gravel which is probably the upper to middle Ringold formation. These sediments are moderately cemented and contain some caliche.

The water table occurs at an elevation of approximately 407 feet mean sea level (MSL). The depth of water in well 008 is about 318 feet from the surface. In well 010, it is about 328 feet. The difference in depth is caused by a difference in surface elevation (725 feet MSL at well 008 and 735 feet MSL at well 010). These water elevations are very close to the anticipated water elevation prior to well installation of 405 feet MSL which was based upon regional groundwater maps.

The geology between wells 008 and 010 (Attachment 4), which are approximately 350 feet apart, is very similar and correlates well with geological descriptions from other studies in the area. These similarities indicate that the deposits are probably of extensive size rather than small local variations. However, this observation will be further refined as the other proposed wells (Section 5.1.6) are installed at the facility.

5.1.4 Terrestrial Ecology

Looking first at vegetation, the environment of the Richland facility and the entire leasehold is

characterized as a shrub-steppe ecosystem typical of the federal Hanford Site and the semiarid Columbia Basin. A sagebrush/cheatgrass/Sandberg's bluegrass plant community dominates, while several other shrub-grassland communities occur nearby. Trees on the Hanford Site grow in riverbank communities adjacent to the Columbia River and several ponds and in abandoned towns or military campsites. When the vegetation of such a shrub-grassland community is removed by excavation or fire, the site becomes dominated by the invasive cheatgrass (Bromus tectroum). The cheatgrass is an annual species that grows in dense turf, is dead and dry by late summer, and is very susceptible to fire. Cheatgrass produces large amounts of seed, some of which remains in the soil year to year, and survives to the gradual exclusion of most native species which are more sensitive to fire or other disturbance.

There are few natural wildlife habitats on the Richland facility site, compared with the surrounding Hanford Site, so the number of species of wildlife is also limited. The federal security system makes it effectively a wildlife refuge, so the species that do occur there are readily noticeable. Of 27 species of mammals known to occur on the Hanford Site (USDOE 1984b), only about 12 would be expected on the Richland facility and only about 6 would be common, based on the habitats that exist there. The larger mammals would include the mule deer (Odocoileus hemionus), coyote (Canis Latrans), badger (Taxidea taxus), and black-tailed hare (Lepus californicus). The small mammals that are expected to be numerous include the Great Basin pocket mouse (Perognathus parvus) and the deer mouse (Peromyscus maniculatus). The 24 species of birds common on the Hanford Site include only a few that would be consistently present on the Richland facility, along with several others that would be occasionally present, such as hawks that hunt for prey over the area. No hawk nest

sites are believed to be on the site. The most common bird is the western meadowlark (Sturnella neglecta). Based on habitats that exist, the few species of reptiles found on the Hanford Site may also be found on the Richland facility site, including gopher snakes (Pituophis melanoleucus), norhtern Pacific rattlesnakes (Crotalus viridus), western yellow- bellied racers (Coluber constrictor), side-blotched lizards (Uta stansburiana), and sagebrush lizards (Sceloporus graciosus). The small mammals, reptiles, and insects such as ground beetles serve as prey for predators such as raptors, coyotes, and badgers.

No federally designated threatened or endangered animal species are known to inhabit the Richland facility or the leasehold (USFWS 1983). However, the bald eagle (Haliaeetus leucocephalus), a threatened species, and the peregrine falcon (Falco peregrinus), an endangered species, have been seen on the Hanford Site and may pass over the Richland facility. No critical habitat is designated in the region, and no suitable habitat exists on the Richland facility to attract them. Three additional species considered as candidates for listing as threatened or endangered species (USFWS 1983) may use the site. The ferruginous hawk (Buteo regalis) and the Swainson's hawk (Buteo swainsoni) may hunt for prey on the site (no nest sites are known or expected on the site), and the long-billed curlew (Numenius americanus) probably nests on or near the site in small numbers. The ferruginous hawk is classified as threatened by the state of Washington Department of Game. The same Department also lists several species of animals common to the Hanford Site as "sensitive," although it is not known if they are found on the leasehold. Examples include the Swainson's hawk, golden eagle, prairie falcon, burrowing owl, and loggerhead shrike (Washington State Dept. of Game 1983).

There are no federally recognized threatened or endangered plant species on the Richland facility. However, the U.S. Fish and Wildlife Service (USFWS 1980) is currently reviewing the status of several plant species that occur on the Hanford Site for consideration as proposed threatened or endangered species. Included in this category are the Columbia milk-vetch (Astragalus columbianus), and the persistent-sepal yellowcress (Rorippa calycina Variety columbiae). None of these are likely to occur on the Richland facility, as their specific habitat requirements are not found there. The Washington State list of Endangered, Threatened, and Sensitive Vascular Plants also includes several species found on the Hanford Site, some of which may occur on the leasehold (Washington Natural Heritage Program 1984).

5.1.5 Hydrology

The groundwater at the Hanford site occurs under both confined and unconfined conditions. The confined aquifers consist of sedimentary interbeds between basalt units. The basalt and some clay-rich interbeds serve as aquitards. The unconfined aquifer is contained within the Hanford and Ringold formations. The water table at the facility is encountered at a depth of approximately 320 to 330 feet below the ground surface or at about elevation 403 to 410 (referenced to MSL).

The aquifer characteristics for the unconfined aquifer have been developed by pump tests, conducted by Battelle and Rockwell, in a number of monitoring wells. The unconfined aquifer ranges in thickness from 0 to 230 feet, and the depth to water ranges from one foot, near the Columbia River, to 350 feet, near the center of the reservation. Attachment 5 includes a water table map for the unconfined aquifer and a comparison of hydraulic heads in the upper confined aquifer and the unconfined aquifer.

From these figures, it is possible to see that downward flow occurs in the aquifer over part of the Hanford reservation and upward flow occurs over the rest of the reservation.

The unconfined aquifer is recharged by the infiltration of precipitation along the flanks of the basalt ridges. The thickness, low moisture content, low precipitation and high evapotranspiration reduce the potential infiltration through the unsaturated sediments in the basin. The presence of alternating layers of sand and silt in the unsaturated zone indicates that the zone is anisotropic and that lateral movement of moisture probably would be preferred over vertical movement.

In 1971, an ongoing project was begun by Rockwell to assess the movement of moisture through the unsaturated zone. Using weighing lysimeters and neutron moisture probes, the moisture content variation over time was measured for the upper 55 feet of the unsaturated zone. The moisture content was found to fluctuate only in the upper six to seven feet of the material. Below 40 feet, the moisture content remained constant, varying by less than 0.25 percent over the year (Jones, 1978). Under these conditions, the only potential driving force is gravitational, which is equal to 1 cm/cm. The unsaturated hydraulic conductivity was found to be between 2×10^{-7} cm/sec and 2×10^{-9} cm/sec, yielding a potential downward movement rate of between 0.05 cm/yr and 7.9 cm/yr.

The unconfined aquifer is also subject to recharge from man-made sources. The major source of artificial recharge is from the disposal of liquid wastes by the USDOE. This liquid waste is generated by fuel reprocessing activities in the 200 East and 200 West areas. The waste generated in these areas is disposed of in infiltration basins. The

two groundwater mounds shown in the hydraulic head comparison map in Attachment 5 were created by the infiltration of waste liquids from USDOE activities in the 200 areas.

The second type of artificial recharge is from the infiltration of irrigation water. The irrigation occurs on property outside the boundaries of the Hanford Reservation, and does not impact the water levels at the facility.

Groundwater in the unconfined aquifer moves from west to east and discharges at perennial springs along the Columbia and Yakima Rivers, except during periods of high river stage. During periods of high river stage, water enters the aquifer from the rivers and is held as bank storage until the rivers return to normal pool elevations.

Based on the over 1000 wells installed by the USDOE, the groundwater flow in the water table aquifer in the vicinity of the facility has been readily characterized by USDOE and its contractors. Flow has been shown to be in an easterly to northeasterly direction in the area of the LLRW disposal facility. The hydraulic gradient, based on data from 1983, is approximately 0.0008 feet per foot (ft/ft), and has been estimated to be as high as 0.002 ft/ft. This gradient is considered to be the result of the disposal of liquid waste by the USDOE in the separations areas, located to the northwest and northeast of the commercial LLRW disposal facility. The estimated gradient prior to the artificial recharge is about 0.0003 ft/ft. The hydraulic conductivity was estimated to be 2000 feet per day (ft/d) or 13,300 gallons per day per square foot (gpd/ft^2) (Graham, 1981). The thickness of the aquifer was taken from literature as 230 feet. The porosity was estimated from descriptions of the material

to be about 35 percent. This yields a range in seepage velocities of between 5 ft/d and 75 ft/d, with the flow in the northeasterly to easterly direction.

5.1.6 Groundwater Monitoring System

This section describes the design of the groundwater monitoring system presently being installed at the LLRW disposal facility. The design includes: (1) a groundwater modeling study to determine optimum well spacing; (2) location of the wells; and (3) the design of the wells themselves.

This study used a finite-difference computer code developed by Prickett, et al., 1981. This code was used to simulate the movement of a solute in the groundwater. The model was verified using the examples given in Bulletin 65 of the Illinois State Water Survey.

The random-walk model is used to simulate the two-dimensional non-steady flow of a solute in a homogeneous aquifer. The transport model uses the particle-in-a-cell method to determine convective transport and a random-walk method to model the effects of large-scale dispersion. The basis for the random-walk code is that the distribution of a concentration for a solute may be represented by the distribution of a finite number of discrete particles. Each particle is moved by the groundwater flow and is then dispersed in accordance with the dispersion model.

The various parameters and values used in the model are shown in Figure 1. The dispersion coefficients in the longitudinal and transverse directions were selected after a review of pertinent literature (Gillham, et al., 1982). The final dispersivities were chosen after matching the computer-generated plume to an existing tritium plume from

Figure 1

SITE-SPECIFIC PARAMETERS

Hydraulic Conductivity	13,300 gpd/ft^2
Gradient	0.002 ft/ft
Aquifer Thickness	230 feet
Porosity	35%
Transmissivity	305,670 gpd/ft
Velocity	75 ft/day
Longitudinal Dispersivity	30 to 70 feet
Transverse Dispersivity	15 to 60 feet
Storativity	0.07
Retardation Coefficient	2

the 200 East Area. The values for longitudinal and transverse dispersivities that were obtained from literature ranged from 10 to 200 feet for the longitudinal and from 3 to 100 feet for the transverse (Gillham, et al., 1982), with the transverse dispersivity being the lesser of the two values.

The model used in this study was modified from the original random-walk model to run on a microcomputer, with the output directed to both a line printer and a graphics plotter. The model was calibrated using the site-specific data, which was given in Section 5.1.5. The model was then given additional data to allow for discharge to the Columbia River. The discharge was modeled as a well along the extreme northeastern and eastern boundary of the finite- difference grid, with a discharge rate of 100 gpm. The source of the contamination was chosen as a line extending northward for 200 feet from E440,000 to E440,200, along N2,237,800. This represents the easternmost boundary of Trench 10. The total number of particles which were inserted into the system was 100.

The relatively short source was chosen for a conservative estimate. In a worst-case scenario, the entire facility would be considered to be leaking. By using a smaller source, the width of the plume is reduced to, at a minimum, the length of the source.

The model requires that the groundwater flow be split into x- and y-components. This was accomplished by dividing the flow into an x-velocity of 70 ft/d and a y-velocity of 5 ft/d. This yields a value of 75 ft/d, which is equivalent to the highest estimated seepage velocity. The x-velocity was taken as the major component of flow, based on groundwater contours. The y-velocity is a minor

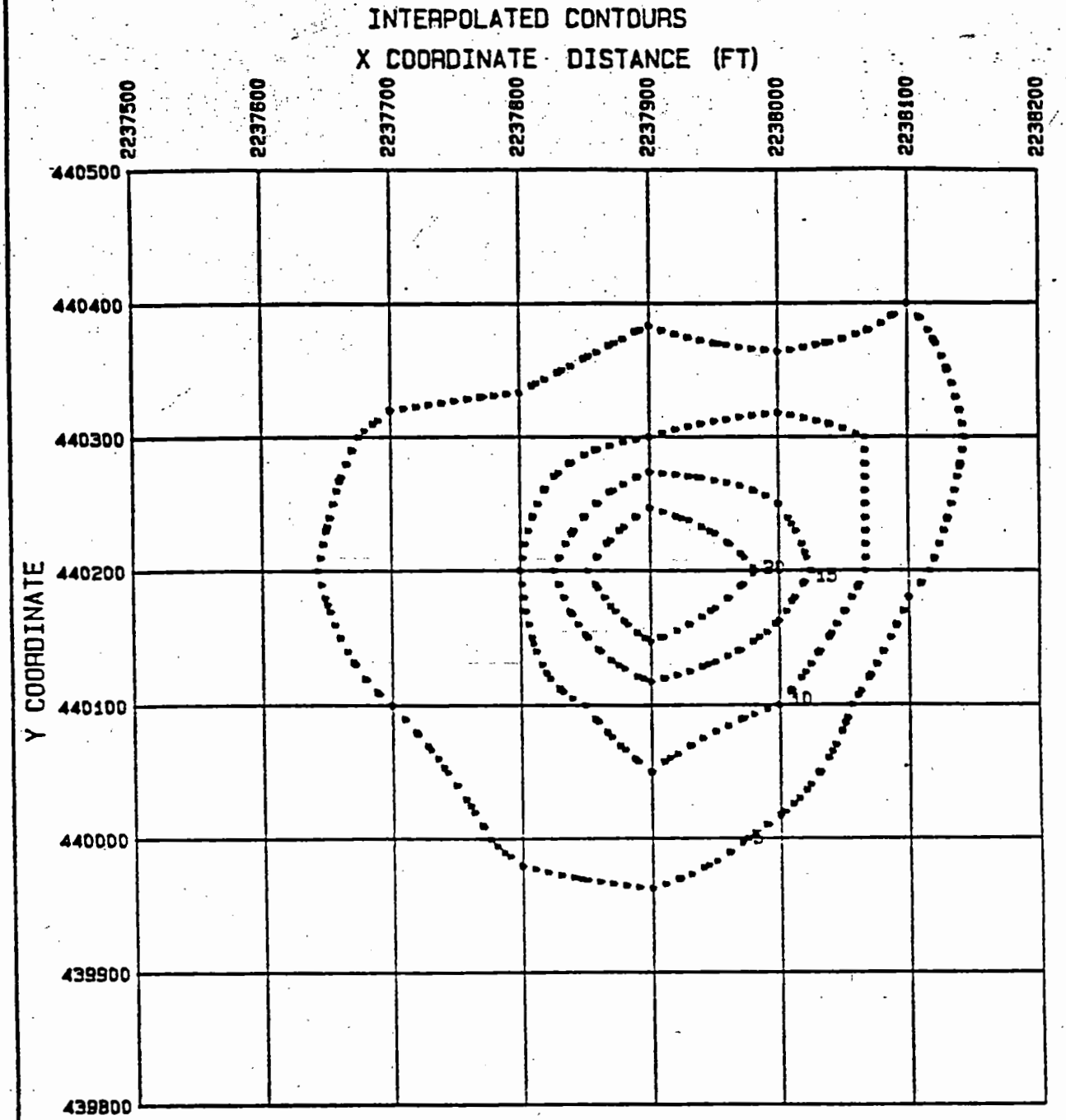
component. The higher velocity was chosen for conservative purposes, as it reduces the time required for movement of the contamination to occur.

The dispersivities used were varied in the ranges as shown in Figure 1 with the transverse dispersivity being less than the longitudinal. The model was calibrated by varying the dispersions and matching the resulting plume with the existing tritium plume from USDOE facilities. The results of the modeling indicate that the dispersivities should be approximately 70 feet longitudinally (in the x direction) and 40 feet transversely (in the y direction). Figure 2 shows the plume after five days of simulation with longitudinal and transverse dispersivities of 70 feet and 40 feet, respectively.

The proper placement and spacing of monitor wells is necessary to adequately monitor the facility. The spacing of the wells is dependent on several factors: first, the confidence level of the system; second, the distance to the monitored boundary; third, the size of the source; and fourth, the hydraulic characteristics of the media.

In this study, the size of the source was assumed to be 200 feet. The degree of confidence was taken to be the detection of at least ten percent of the maximum plume concentration. The groundwater velocity was taken as 75 ft/d and the distance to the monitored boundary was taken as at least 50 feet from the source.

The groundwater table map in Attachment 5 indicates that the flow is from the southwest to the northeast or east. The rate of movement is between 5 ft/d and 75 ft/d. This would indicate that the monitoring wells should be located



PROJECT: RICHLAND MONITORING FILE: 11 LOCATION: WASHINGTON	PARTICLE DENSITY CONTOURS AFTER 5 DAYS OF SIMULATION
US ECOLOGY, INC.	FIGURE 2

along the eastern side of the facility, with one or two along the west side to serve as background wells for statistical purposes.

The effects of dispersion have been evaluated by this study. The results of the modeling show that the size of the plume is directly related to the size of the dispersion coefficient. Therefore, the larger the dispersion, the larger the plume. The results of the analyses indicate that the longitudinal dispersivity is about 60 to 70 feet, and the transverse dispersivity is about 40 to 50 feet. These values indicate that wells spaced between 350 and 425 feet apart at a distance of 50 feet should be adequate to detect any excursions.

The well spacing is influenced by the distance from the source to the monitoring boundary. The minimum plume width is equal to the width of the source. The model showed that spreading would occur in the longitudinal as well as in the transverse direction. The plume width ranged from 374 feet at a distance of 25 feet to a width of 410 feet at a distance of 100 feet.

On the basis of the modeling study conducted by US Ecology, it was determined that the downgradient wells should be installed along the eastern boundary of the disposal area at a distance of at least 50 feet from the trenches. By placing the wells at this distance, the monitoring network will be more likely to detect any excursion which takes place at an early point. If the wells are placed too far away from the potential sources, the excursion will become much more developed before it is detected.

The spacing of the monitor wells at a distance of 50 feet from the source would be about 350 to 375 feet apart.

Upgradient wells could be spaced much farther apart, possibly 1000 feet apart, and as far from the potential source as possible.

The groundwater monitoring system layout was designed on the basis of the groundwater model and the actual configuration of the disposal units, fences and drainage features. The proposed monitoring system will consist of nine monitoring wells at locations shown in Attachment 6. These wells will consist of two upgradient wells (numbered 013 and 014) spaced 1000 feet apart just inside the facility's western fenceline and seven downgradient wells (numbered 002, 003, 004, 005, 006, 008 and 010) spaced between 280 feet and 400 feet apart at a distance of between 50 feet and 80 feet from the eastern (downgradient) ends of the disposal units. Although the actual locations vary somewhat from the model due to actual site conditions, the spacings and distances from the trenches are well within the ratio of well spacing to distance from the trench determined by the model. Thus, the design of the groundwater monitoring system is capable of detecting small groundwater excursions caused by the disposal units.

All wells will have six-inch-diameter type 304 stainless steel well screens below the saturated zone and to a distance of five to ten feet above the saturated zone. Six-inch-diameter wells were chosen on a practical basis to provide sufficient space for installation and removal of submersible pumps. Stainless steel well screens are being used due to their resistance to corrosion and to prevent erroneous analytical results caused by well screen materials. Well screens have been extended above the saturated zone to provide for seasonal variations in water levels and to allow sampling of lighter constituents which might float at the top of the saturated zone.

All wells, with the exception of well 005, will have an eight-inch-diameter mild steel casing above the well screen. Construction of these wells will be accomplished in the following manner which is consistent with the construction procedures typically used for monitoring well construction on the Hanford Reservation. A 12-inch casing will be advanced to a depth of 20 feet, then drilling will continue using an eight-inch 0.320-inch-thick mild steel casing with welded joints to a depth of 360 feet. A 40-foot-long, six-inch-diameter type 304 stainless steel well screen with a slot size of 0.020 inch, will be installed in the eight-inch casing using a neoprene top packer. The steel casing will be pulled back to expose the screen and will be cut off three feet above top of ground. The 12-inch casing will be pulled and the annular space between the eight-inch casing and the hole will be filled with neat cement from a depth of 20 feet to the surface. Attachment 6 includes the typical construction of these wells.

Well 005 will be constructed in a different manner. The casing of this well will consist of six-inch- diameter flush jointed PVC pipe. The difference in materials and construction methods is being incorporated to provide for evaluation of potential differences in analytical results caused by differences in wells. Well 005 will be constructed in the following manner:

A 12-inch casing will be advanced to 200 feet and a ten-inch casing will be further advanced through the 12-inch casing to a depth of 360 feet. The well will consist of a 40-foot-long, six-inch-diameter type 304 stainless steel well screen installed on a 320-foot-long, six-inch-diameter schedule 80 flush-jointed PVC pipe by a threaded coupling. Centralizers, located every 60 feet along the PVC casing will maintain the pipe in the center.

A filter pack consisting of uniform siliceous sand will be tremied into place around the screen and extended at least five feet above the top of the screen as the ten-inch casing is pulled. The annular space from the top of the sand to a point 200 feet below the surface will be filled with dry granular bentonite, tremied in place as the ten-inch casing is pulled. The remaining annular space will be filled by circulating a cement/bentonite grout from a depth of 200 feet to the surface as the 12-inch casing is pulled. A steel protective casing will be installed around the PVC casing and extended four feet below ground surface and set in neat cement. Attachment 6 includes the typical detail for well 005.

All monitoring wells will be provided with a cement pad sloped to drain away from the well and a lockable steel cap. Each well will be developed to a sand- and silt-free condition using a bailer, submersible pump or surge block. No water or any other fluid will be used in the development process. Once the wells are developed, they will be equipped with a stainless steel submersible pump, a teflon bladder sampling pump and stainless steel or teflon tubing, permanently installed.

The wells will be installed in two phases. Phase I, which will be completed by November 8, 1985, will consist of wells 003, 005, 008, 010 and 013. These wells are being installed to provide initial sampling and verification of the geology and groundwater flow patterns. The remainder of the wells (002, 004, 006 and 014) will be installed in Phase II which will begin once the first wells are sampled and verification is made that the additional wells are properly located.

5.1.7 Seismic

Benton County, Washington, is not listed in Appendix VI of Part 264. Therefore, no further information is required to demonstrate compliance with Part 264.18(a).

5.1.8 Flooding Potential

Federal Insurance Administration (FIA) maps exclude the Hanford Reservation. However, FIA maps of adjoining areas show the 100-year flood plains stopping short of the Hanford Reservation boundary. Potential flooding of the LLRW facility was also reviewed using information from the 1982 Rockwell Hanford Operations report on the site characterization for the Basalt Waste Isolation Project (Attachment 7, which has been modified to address specifically the LLRW facility). This information indicates that the LLRW facility will not be affected by flooding of the Columbia River, the Yakima River, nor Cold Creek, a small ephemeral stream which flows through the Hanford Reservation.

5.1.9 Topography

The topography of the central Hanford Reservation consists of a gentle rise covered with dunes and small closed basins. The topography of the area around the LLRW disposal facility is shown in Attachment 8, the portion of the U.S. Geological Survey (USGS) Coyote Rapids, Washington, Quadrangle which includes the LLRW disposal facility at a scale of 1:62,500 with 20-foot contour intervals. Although the scale and contour intervals exceed 1 inch = 200 feet and five feet, respectively, this map shows the topography to 12,000 feet or more beyond the facility boundary and includes sufficient detail to characterize the surrounding area and provide for engineering evaluations.

The topography of the LLRW disposal facility is shown on the facility topographic map in Attachment 8 to a scale of

1 inch = 100 feet and one foot contour intervals. The original surface was a series of dunes and small closed basins typical of the surrounding area. This surface is changing as a result of facility development and grading. The facility has a general slope from north to south of approximately one percent. This general slope provides ample opportunity to establish drainage with little or no danger of erosion.

5.1.10 Rainfall Runoff/Run-on

The disposal units which may contain RCRA-defined hazardous wastes will begin closure on or before November 8, 1985. Therefore, runoff from the facility will not be exposed to hazardous waste contamination. Since disposal units will be closed and runoff is uncontaminated, there is no requirement for collection and holding facilities.

Since it is located near the crest of a gentle rise, the facility is subject to only very localized run-on. Rarely is standing water seen, even in the closed basins. To preclude entry of surface water from outside the facility into any of the basins on the facility, a diversion ditch will be cut outside the east boundary which will collect runoff from east of the facility and divert it to the south (Attachment 9). Drainage on the other three sides is away from the facility. Construction of this diversion ditch requires USDOE approval.

The small, closed basins on the facility will be filled with soil or will be eliminated by trench construction as the facility develops. Closed disposal Trenches 1, 2, 3 and the chemical trench have been covered with 15 feet of silty sand excavated from more recent disposal trenches. This is in addition to the three feet of soil used to cover the waste and bring the trench backfill up to the original grade. Trenches 4, 4A, 4B, 5 and 6 will be

similarly covered with at least 15 additional feet of soil. All other trenches, which have eight feet of cover to grade, will have an additional ten or more feet of cover added as the material becomes available from excavation of new LLRW disposal units. This extra cover places the trench tops far above the maximum possible surface water elevation.

5.1.11 Types of Wastes Disposed in Trenches

A conclusive determination has as yet not been made regarding what, if any, hazardous chemical waste regulated by the RCRA has been disposed of at the Richland facility. At the time of this protective filing, the company is aware of only scintillation vials, containing less than 20 milliliters of cocktail containing organic material as one of several ingredients as being investigated for RCRA applicability. These vials which constitute less than 1.0% of all radioactive waste contained at the facility, were commonly received in lab pack configuration that contain twice the necessary volume of absorbent.

5.2 Landfill Characteristics

All trenches thus far utilized at the facility have been constructed in an east-west orientation. Subsequent trenches have been added to the south of the existing trenches (i.e., Trenches 1 through 6). Since completion of Trench 6, trenches have been constructed in the following chronological order: Trenches 8, 10, 4A, 7, 9, 11, 4B, 7A and 13. (Trenches 4B, 7A and 13 do not and will not contain any RCRA-defined hazardous wastes. Trench 11 has been partitioned into 11A, to close November 8, 1985, and 11B to remain open for LLRW only.)

Initially, trenches were constructed by excavation with a bulldozer and towed scraper, later assisted by a dragline. Trench size was determined by the expected rate of receipts and the capabilities of the available equipment. Trench depths in

Trenches 1, 2, 3, 4, 5 and 6 varied up to a depth of 35 feet. Trench 8 is 40 feet deep with slit trenches down to 48 feet. Trench 10 is 45 feet deep with slit trenches down to 53 feet. Trenches 9, 11 and 13 are 45 feet deep. Trench 4B is 40 feet deep. Trench 7A is 25 feet deep.

Most waste placement was random by procedure, per the facility ALARA program, with no attempt to record the exact location of individual shipments within a trench. This was done purposely to discourage unauthorized recovery of waste.

Wastes placed in Trenches 1, 2, 3 and 4 were received in metal drums, fiberboard drums and cardboard boxes.

The utilization of these trenches was approximately 25 to 30 percent. The other 70 to 75 percent is sandy backfill. Additional soil was mounded over the closed trenches to a height of two feet above the ground surface at the trench center line. This backfill was covered by a wind-erosion-resisting layer of six inches of pit-run gravel.

The practice of the random placement of drum containers is still used. Cardboard containers are no longer accepted for burial. Trench utilization increased to 35 percent.

Trenches completed subsequent to Trench 6 have at least eight feet of fill placed between the waste and natural grade with six inches of gravel extending ten feet beyond the trench boundaries to ensure appropriate erosion protection. These trenches have not been mounded as this is no longer required by the radioactive materials license WN-I019-2. Audits of the waste burial operations have been, and continue to be, performed by the Washington Department of Safety and Health Services on a daily basis and by the U.S. Nuclear Regulatory Commission at least yearly.

Groundwater beneath the facility is at a depth of approximately 328 feet, whereas the deepest trench constructed to date is approximately 45 feet deep with slit trenches down to 53 feet. It is not believed that groundwater at this depth will ever come in contact with buried waste. Seasonal fluctuations in the groundwater table would amount to only a few feet at most.

Completed trench caps are protected against the minor potential for erosion by wind or surface water. As soon as a filled disposal trench is backfilled, the closed trench surface is graded and covered by a six-inch-thick gravel blanket to prevent erosion by wind or water. Gravel materials are obtained from local gravel pits and typically have variable particle size and gradation depending upon original deposition and location. Although inspections of gravel cap blankets in place for several years indicate proper performance and deposition rather than erosion, an engineering study was conducted to provide criteria by which past procedures could be evaluated and to provide design procedures using available gravel (Attachment 10). Basically, the criteria provides an engineered procedure to evaluate and design gravel blankets which provide a permanent thickness of gravel of sufficient particle size over the cap to withstand erosion even in the most severe wind storms.

A designed gravel blanket over the trench caps is considered a conservative procedure since the geologic history of the site is one of deposition rather than erosion. It is estimated that deposition has occurred at a rate of one foot per one thousand years over the past 12,000 years. Erosion has been absent for approximately the same period of time. The low profile of the cap prevents its use as a wind barrier. Free-flowing, dry, silty sand will fill any voids in the gravel lattice and any expected low areas caused by cap settlement. It is expected that any sand blown from the cap will be replaced in a short period of time. As surplus material from trench excavation becomes available, it is

placed over the gravel to form a total thickness of 18 feet above the waste. Trenches already covered this way include the chemical trench and Trenches 1, 2, 3, 8 and 9.

Even considering a worst case scenario, the earthern cover over the disposed waste is assumed to be totally removed, resulting in exposure of the waste and its dispersal by the wind.

It has been concluded that if the entire low-level disposal facility were filled with waste, there would be approximately 65 acres of trench area. Assuming that this entire area of cover is eroded in 2000 years, then (at that time) a health risk of about 2.6×10^{-8} per year or one additional death in 38 million years can be calculated (Appendix E, Section E.3) under the wind transport scenario (Envirosphere, August 1985).

Any LLRW disposal facility is subject to some varying degree of long-term subsidence due to the physical nature of the waste and its handling requirements during disposal. Closure of the waste disposal area is a continuous operation and begins as soon as waste has been placed to a level eight feet below the natural ground surface. Intermediate backfill may or may not have been placed during the active disposal operation depending upon shielding requirements. Commencing with Trench 7, backfill material has been periodically placed on the waste as required for shielding and to fill void spaces. The periodic placement of fill material to fill voids has continued with trenches constructed subsequent to Trench 7. However, it is important to note that no significant subsidence has been noted in any trenches. Backfill normally is placed in its natural condition in one or more lifts depending upon the radiation exposure risk and type of equipment used. Normally, the material sifts down between waste containers in the top layers of waste to reduce the amount of void space. Compaction, beginning with the trenches constructed after Trench 6, has been achieved by surcharging the filled disposal area with facility soil excavated from newly-constructed disposal units and

by the passage of heavy wheeled and tracked equipment over the backfill. Due to the consolidation characteristics of the sands, effective settlement and reduction of void space is achieved during surcharging. Trenches 1 through 6, completed from 1965 to 1980, were not compacted by surcharge until recently (1985). However, no significant subsidence has been observed in these trenches.

Performance objectives require that disposal trenches be stabilized to minimize settlement. Closure procedures previously discussed minimize settlement after closure by consolidating waste and minimizing void space to a practical level. However, a certain amount of future settlement can be expected due to natural mechanisms. Previous experience, even with trenches closed under less stringent closure requirements, indicates that settlement has been minimal. As localized settlements occur, depressions are expected to be filled naturally by sand carried by the wind. Those depressions not naturally filled will be located and filled during post-closure inspections and maintenance. Surveillance and occasional maintenance is a security requirement for the custodial period after closure.

Natural conditions other than wind erosion must be considered in determining permanent cap stability and include such factors as surface water runoff, groundwater flow, frost action, and structural stability against slumping and gullying. Due to the arid nature of the site, the depth of the water table below the disposal units, the sandy nature of the cap, and gentle slopes of caps with gravel protection, natural conditions, even over a substantial period of time, pose a minimal danger to cap integrity.

Maintenance of a trench cap 18 feet thick with a six-inch gravel barrier at three feet or higher on Trenches 1 through 6, and at eight feet or above on trenches constructed subsequent to Trench 6, provides a zone for the operation of the hydrological cycle so

that infiltrating precipitation never reaches the waste. It also provides ample material to fill depressions created by subsidence without exposing waste and a zone for dispersion of the minor amount of gases which might form in the trench. Deep-rooted vegetation may be allowed to establish itself on the cap without fear of chemical migration through the plant to the surface. Since no imported materials are used in its construction, repair of the cap is a simple matter of adding more of the same local material or possibly just regrading the surface.

5.3 Partial Closure

Not applicable since ultimate closure is already in progress.

5.4 Ultimate Closure

At final waste disposal, the last RCRA disposal unit, if it is so classified, will be backfilled and capped as described in Section 5.2 with the exception of the placement of a ten-foot-thick protective cover over the completed cap, which will be accomplished as an adjunct to the excavation of the next LLRW disposal unit. Since the facility will continue to operate as a LLRW disposal facility, no other actions are required.

5.5 Decontamination of Equipment

All equipment used in handling possible RCRA-hazardous waste will continue in use on the LLRW disposal facility subject to current operating precautions and will require no separate decontamination.

5.6 Inventory Removal

Not applicable, since no RCRA wastes are stored at the facility.

5.7 Contaminated Soil Removal

Not applicable, since no operations are conducted outside the hazardous waste management area.

6.0 INCINERATORS

Not applicable.

7.0 THERMAL TREATMENT

Not applicable.

8.0 CHEMICAL, PHYSICAL, AND BIOLOGICAL TREATMENT

Not applicable.

9.0 SCHEDULE

See Figure 3.

SCHEDULE FOR CLOSURE AT END OF INTENDED LIFE OF THE UNITS CONTAINING WASTE POTENTIALLY REGULATED UNDER RCRA AT THE US ECOLOGY, INC., LOW-LEVEL RADIOACTIVE WASTE DISPOSAL FACILITY LOCATED NEAR RICHLAND, WASHINGTON (WAD 060048360)

		1985							1986						
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9.1	Notification of intent to close	X													
9.2	Approval of closure plan by USEPA Regional Administrator	XXXX	XXXX	XXXX											
9.3	Final waste receipt	X													
9.4	Complete treatment or disposal of waste inventory	X													
9.5	Closing of landfills	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XX				
9.6	Final closure										X				
9.7	Final inspection by owner/operator and Registered P.E.									XX	XX				
9.8	Certification of compliance with closure plan specifications by owner/operator and Registered P.E.										XXXXX	XXXXX	XXXXX	XXXXX	XXXX
9.9	Beginning of post-closure care										X				

10.0 COST ESTIMATE

10.1 Cost of Landfill Closure

1.	Final Backfill/Cap (8 ft over waste) Approximately 30% of the trench area will require backfill on November 8, 1985.		
	10,000 c.y. @ $2.29/c.y.	$22,900	
2.	Gravel Cover (0.5 ft. over final backfill)		
	2100 c.y. @ 8.10/c.y.	17,010	
3.	Trench Markers		
	2 ea. @ $200	400	
4.	Final Protective Covers (10 ft over cap). This excess cover will be placed as subsequent trenches are constructed. The cost is included in the trench excavation costs of those trenches.	-0-	
	Total Cost of Landfill Closure		$40,310

10.2 Certification
(Assume 10% of Landfill Closure Cost)

0.10 x $40,310		$ 4,031

10.3 Installation of Monitoring Wells

1.	Installation of Wells 4 ea. @ $19,500	$78,000	
2.	Sampling Equipment 4 wells @ $5,000	20,000	
	Total Installation of Wells		$98,000

10.4 Total Closure Estimate $142,341

11.0 COST JUSTIFICATION

Major cost items for closure activities have been estimated using data from the 1985 Dodge Guide to Public Works and Heavy Construction, McGraw-Hill, and typical costs for well installations and monitoring equipment received by US Ecology.

11.1 Backfill

This material is located on spoil material stockpiles at the facility. The average haul distance is approximately 2000 feet. From page 90 of the Dodge Guide, the cost for moving, spreading and compacting embankment materials using a scraper (5000 cubic yards with a haul distance of 2000 feet) is $2.29 per cubic yard. As the amount increases, the cost generally decreases. Since closure requires nearly twice the 5,000 cubic yardage used, the cost of $2.29 is probably a somewhat high estimate.

11.2 Gravel

It is assumed that gravel will come from a gravel pit within five miles of the facility. The cost for excavation, hauling by over-the-road vehicles, spreading and compacting is $8.10 per cubic yard (page 105, Dodge Guide).

11.3 Certification

Quality assurance and certification costs typically have been on the order of five percent to ten percent of the construction cost at US Ecology facilities, depending upon the scope of the project and quality assurance requirements. For closure certification, ten percent of construction cost is considered reasonable.

11.4 Monitoring Well Installation

The bid per well from the well contractor at the facility was on the order of $17,000 per well. The quality assurance contractor's proposal indicated approximately $2500 per well. Therefore, a total of $19,500 per well has been used in the estimates.

11.5 Sampling Equipment

US Ecology is presently receiving quotes for submersible pumps, teflon sampling pumps and teflon tubing. The quotes received to date indicate that the cost per well will be on the order of $5000.

12.0 REFERENCES

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