

HAZARDOUS AND SOLID WASTE AMENDMENTS PORTION
OF THE RESOURCE CONSERVATION AND RECOVERY ACT PERMIT
FOR THE TREATMENT, STORAGE, AND DISPOSAL OF HAZARDOUS WASTE

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE, WCM-127
SEATTLE, WASHINGTON
(206) 553-1266

Issued in accordance with the applicable provisions of 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 (40 CFR), and the Hanford Federal Facility Agreement and Consent Order (FFACO).

ISSUED TO: U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE
(OWNER/OPERATOR)
825 JADWIN AVENUE
RICHLAND, WASHINGTON 99352
EPA I.D. Number: WA7 89000 8967

This permit is effective as of 28 September 1994, and shall remain in effect until 27 September 2004, unless revoked and reissued (40 CFR § 270.41), terminated (40 CFR § 270.43), or continued in accordance with 40 CFR § 270.51.

ISSUED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY

Randall F. Smith, Director Date
Hazardous Waste Division,
U.S. Environmental Protection Agency
Region 10

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INTRODUCTION

Permittee:US Department of Energy
Richland Operations Office
EPA I.D. No.: WA7 89000 8967

Pursuant to the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6901 et seq., commonly known as "RCRA"), and the Hazardous and Solid Waste Amendments of 1984 ("HSWA"), and regulations promulgated thereunder by the U.S. Environmental Protection Agency ("EPA"), which are codified and, to be codified in Title 40 of the Code of Federal Regulations ("CFR"), a HSWA permit is issued to the U.S. Department of Energy (hereinafter called the "Permittee"), who owns and operates a dangerous and hazardous waste treatment, storage and disposal facility located at Richland, Washington.

This HSWA Permit issued in accordance with 40 CFR § 271.19(f) and in conjunction with the Dangerous Waste Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Dangerous Waste (Dangerous Waste Permit), issued by the Washington State Department of Ecology ("Department"), constitutes the RCRA permit for this facility. Use of the term "Permit" within the HSWA Permit shall refer to the HSWA Permit while use of the term "Permit" in the Dangerous Waste Permit shall refer to the Dangerous Waste Permit.

The Permittee, pursuant to this Permit, shall be required to investigate any releases or potential for release of hazardous waste or hazardous constituents from any Solid Waste Management Unit ("SWMU") at the facility, regardless of the time at which waste was placed in such unit. The Permittee shall be required to take corrective action for any such releases on-site and/or off-site where necessary to protect human health and the environment. The Permittee shall also be required to comply with all land disposal restrictions applicable to this facility as set forth in the Hanford Federal Facility Agreement and Consent Order ("FFACO"), and to certify annually that on-site generation of hazardous waste is minimized to the extent practicable.

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein and applicable regulations contained in 40 CFR Parts 124, 260 through

264, 266, 268, and 270. Nothing in this permit shall preclude the Administrator from reviewing and modifying the permit at any time during its term in accordance with 40 CFR § 270.41.

Applicable federal regulations are those which are in effect on the date of final administrative action on this permit and any self-implementing statutory provisions and related regulations which, according to HSWA, are automatically applicable to the Permittee's dangerous and hazardous waste management activities, notwithstanding the conditions of this permit.

This permit is based on the administrative record and the assumption that information and reports submitted by the Permittee prior to and subsequent to issuance of this permit are accurate. Any inaccuracies found in this information may be grounds for termination or modification of this permit, in accordance with 40 CFR §§ 270.41, 270.42, and 270.43, and potential enforcement action. The Permittee must inform EPA of any deviation from or changes in the information contained in the application which would affect the Permittee's ability to comply with the applicable regulations or permit conditions or which may affect substantive provisions of the permit.

During the lifetime of this permit, the state of Washington may become authorized pursuant to Section 3006 of RCRA, as amended, 42 U.S.C. § 6926, to issue the HSWA portion of RCRA Permits. After delegation of the Corrective Action requirements of HSWA by the Agency to the Department, the RCRA permit shall be modified through a Department-initiated permit modification to incorporate the specific requirements of the HSWA permit into the Department's Dangerous Waste Permit. This modification shall be considered a Class 3 modification in accordance with Dangerous Waste Permit Condition I.C.3.

Authorization of the state of Washington for HSWA corrective action shall not change the conditions of this permit in any substantive manner. However, at the time the Department modifies the RCRA permit to incorporate HSWA corrective action permit conditions, any citations to federal regulations regarding corrective action shall become citations to equivalent state regulations. Any citations to the Agency and the Department, or to the Administrator and the Director, shall become citations to the Department and the Director. The Agency shall maintain an oversight role of the authorized state program and, in such capacity, may enforce any permit condition under

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the authorized state program if, in the Agency's judgment, the Department should fail to enforce that permit condition.

DEFINITIONS

For purposes of this permit, the following definitions shall apply:

- a. **"Action Levels"** shall mean those specified concentration levels for constituents in groundwater in an aquifer, surface water, soil or air, which, when exceeded by releases of constituents from a solid waste management unit or RCRA Past Practice unit at a facility, may require corrective action.
- b. **"Administrator"** shall mean the Administrator of the U.S. Environmental Protection Agency (EPA) or a designated representative. The Director, Hazardous Waste Division, EPA Region 10 (with the address as specified on page one of this permit) is a duly authorized and designated representative of the Administrator for purposes of this permit.
- c. **"Agency"** shall mean the U.S. Environmental Protection Agency, Region 10 (with the address specified on page one of this permit).
- d. **"Corrective Action Management Unit (CAMU)"** shall mean an area within a facility that is designated by the Administrator under 40 CFR Part 264, Subpart S, for the purpose of implementing corrective action requirements under 40 CFR § 264.101 and Section 3008(h) of RCRA, 42 U.S.C. § 6928(h). A CAMU shall only be used for the management of remediation wastes generated pursuant to CERCLA response actions, or corrective action pursuant to Sections 3004(u), 3004(v), and 3008(h) of RCRA, 42 U.S.C. §§ 6924(u), 6924(v), and 6928(h).
- e. **"Director"** shall mean the Director of the Washington State Department of Ecology or a designated representative of the Director for purposes of this permit.
- f. **"Department"** shall mean the Washington State Department of Ecology (with the address specified on page sixteen of this permit).
- g. **"Facility"** or **"site"** shall mean, for purposes of implementing corrective action under 40 CFR § 264.101, all contiguous property under the control of the owner or operator seeking a

permit under Subtitle C of RCRA, or implementing corrective action under RCRA Section 3008(h). The facility shall mean that portion of the approximately 560 square miles in Southeastern Washington State including leased lands, which is owned by the United States Department of Energy and which is commonly known as the Hanford Reservation. The facility includes that identified in the physical description of the contiguous property (including structures, appurtenances and improvements) used to manage dangerous or hazardous waste. For purposes of corrective action, the Hanford Federal Facility property description is as set forth in Attachment F of the HSWA portion of the RCRA permit.

- h. **"FFACO"** means the Hanford Federal Facility Agreement and Consent Order, as amended.
- i. **"Hazardous Constituent"** means any constituent identified in Appendix VIII of 40 CFR Part 261.
- j. **"Information Repository"** shall mean a repository which is accessible to interested parties which contains or provides access to data, documents, reports, and other public information relevant to the public understanding of the activities, findings, and plans for and developed pursuant to corrective action investigations and activities for specific units as identified in the FFACO or in Part III of the HSWA permit.
- k. **"Lessee"** shall mean the entity or entities that hold real property under the terms of a written lease executed by the Permittee. This term shall also include any sublessee that holds real property under the terms of a written lease executed by the Permittee's lessee.
- l. **"Permittee"** shall mean the United States Department of Energy, the owner of the "facility" (as that term is defined in this permit) seeking a permit under Section 3005(c) of RCRA, 42 U.S.C. § 6925(c).
- m. **"Raw Data"** shall mean laboratory reports, drilling logs, and other supporting information generated from investigations and available to the Permittee or its Lessees.

- n. **"RCRA Past Practice Units"** shall mean any waste management unit, with exception of regulated, i.e., treatment, storage and disposal ("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 SWMUs and other non-SWMUs (e.g. one-time releases), regardless of the date waste was received or discharged at the unit.
- o. **"RCRA Permit"** shall mean the Dangerous Waste Portion of the RCRA Permit for Treatment, Storage, and Disposal of Dangerous Waste (Dangerous Waste Permit) issued by the Washington State Department of Ecology, pursuant to Chapter 70.105 RCW and Chapter 173-303 WAC, and the HSWA Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Hazardous Waste (HSWA Permit) issued by the U.S. Environmental Protection Agency, Region 10, pursuant to 42 U.S.C. § 6901 et seq. and 40 CFR Parts 124 and 270.
- p. **"Release"** shall mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of any hazardous waste or hazardous constituents, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents.
- q. **"Remediation Waste"** shall mean all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments), and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under 40 CFR § 264.101 and Section 3008(h) of RCRA, 42 U.S.C. § 6928(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing Sections 3004(v) or 3008(h) of RCRA, 42 U.S.C. §§ 6924(v) or 6928(h), for releases beyond the facility boundary. Remediation wastes may include wastes generated as part of CERCLA response actions as well as part of RCRA corrective actions.

- r. **"Solid Waste Management Unit (SWMU)"** shall mean any discernible unit at which solid waste has 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 hazardous waste or hazardous constituents have been routinely and systematically released.
- s. **"Temporary Unit(s)"** shall mean a unit within a facility consisting of tanks or container storage areas located at the facility which are used only for the storage or treatment of hazardous wastes (including hazardous constituents) for a period not exceeding one year, unless extended by the Regional Administrator in accordance with 40 CFR § 264.553(e). Temporary units shall be designated by the Administrator for the purpose of implementing corrective actions under 40 CFR § 264.101 or Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), in accordance with the procedures and requirements set forth in 40 CFR § 264.553.
- t. Unless otherwise noted, all schedules refer to calendar time; i.e., thirty (30) days means thirty (30) calendar days.
- u. All definitions contained in 40 CFR Parts 124, 260 through 264, 266, 268 and 270 are hereby incorporated by reference into this permit, except that any of the definitions used above shall supersede any definition of the same term given in the respective regulations. Where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be the standard dictionary definition or their generally accepted scientific or industrial meaning.

PART I. STANDARD CONDITIONS

I.A EFFECT OF PERMIT

I.A.1 This permit requires the Permittee to investigate any releases of hazardous wastes or hazardous constituents from SWMUs listed in HSWA Permit Condition III.B. These SWMUs are further described in the July 20, 1992, US Ecology RCRA Facility Assessment. This permit also provides procedures for reporting new units, procedures to complete a CMS/CMI, if required by the Administrator, procedures to implement interim measures if determined necessary by the Administrator or the Permittee, requires the Permittee to comply with all land disposal restrictions applicable to this facility, and requires annual certification that on-site generation of hazardous waste is minimized to the extent practicable.

I.A.2 This HSWA Permit is applicable to those treatment, storage and disposal ("TSD") units identified in Part III of the Dangerous Waste Permit. When Part III of the Dangerous Waste Permit is modified to add new TSD units to which HSWA requirements apply and which the Department is not authorized to implement, this HSWA Permit must be modified to incorporate the applicable HSWA requirements for those new TSD units.

I.B PERSONAL AND PROPERTY RIGHTS

I.B.1 This permit does not convey property rights of any sort, nor any exclusive privilege, nor does it authorize any injury to persons or property or invasion of other private rights, or any infringement of Federal, State, or local laws or regulations.

I.C PERMIT ACTIONS

I.C.1 This permit may be modified, revoked and reissued, or terminated for cause, as specified in 40 CFR §§ 270.41, 270.42 and 270.43.

I.C.2 The filing of a request for a permit modification, or revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance on the part of the

Permittee shall not stay the applicability or enforceability of any permit condition.

I.C.3 For RCRA past practice actions taken pursuant to the provisions of the FFACO, as amended, public participation will be provided in accordance with the provisions of the FFACO and the permit modification procedures of 40 CFR §§ 270.41 and 270.42. The remedies and schedules for implementation for RCRA past practice actions established pursuant to the FFACO shall be incorporated through permit modifications.

I.D SEVERABILITY

I.D.1 The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. Invalidation of any state or federal statutory or regulatory provision which forms the basis for any condition of this permit does not affect the validity of any other state or federal statutory or regulatory basis for said condition.

I.D.2 If any condition of this permit is contested, that permit condition, as well as any nonseverable conditions, shall be automatically stayed in accordance with 40 CFR § 124.16.

I.D.3 In the event that a condition of this permit is stayed for any reason, the Permittee shall continue to comply with the corresponding interim status standards in 40 CFR Part 265 until final resolution of the stayed condition.

I.E DUTY TO COMPLY

I.E.1 The Permittee shall comply with all conditions of this permit, except that the Permittee need not comply with the conditions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit issued under 40 CFR § 270.61. Any permit noncompliance, except under the terms of an emergency permit, constitutes violation of RCRA, as amended by HSWA, and is grounds for enforcement action, permit

termination, modification, revocation and reissuance of the permit, and/or denial of a permit renewal application.

I.E.2 Compliance with the terms of this permit does not automatically constitute a defense to any action brought under Sections 3004, 3007, 3008(a), 3008(c), 3008(v), 3013, and 7003 of RCRA (42 U.S.C. §§ 6924, 6927, 6928(a), 6928(c), 6928(v), 6934, and 6973), or under Sections 103, 104, 106(a), 106(e), and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §§ 9603, 9604, 9606(a), 9606(e), and 9607, or any other federal law (including the Emergency Planning and Community Right-To-Know Act of 1986, as amended ("EPCRTKA"), 42 U.S.C. §§ 11001 et seq.), governing protection of public health or the environment. However, compliance with the terms of this permit does constitute a defense to any action alleging failure to comply with the applicable standards upon which this permit is based (Section 3005 of RCRA, 42 U.S.C. § 6925).

I.F DUTY TO REAPPLY

I.F.1 The Permittee must submit a complete application for a new RCRA permit at least one hundred and eighty (180) calendar days before the RCRA permit expires, unless a later date is granted by both the Director and the Administrator.

I.G CONTINUATION OF EXPIRING PERMIT

I.G.1 As set forth in 40 CFR § 270.51, this permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete application (see 40 CFR § 270.13 through § 270.21) and, through no fault of the Permittee, both the Director and the Administrator have not made a final permit renewal determination.

I.H NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

I.H.1 It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

I.I DUTY TO MITIGATE

I.I.1 In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.

I.J DUTY TO PROVIDE INFORMATION

I.J.1 The Permittee shall furnish to the Administrator within a reasonable time any relevant information which the Administrator may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Administrator, upon request, copies of records required to be kept by this permit.

I.K INSPECTION AND ENTRY

I.K.1 The Permittee shall allow the Administrator, or their authorized representatives, upon the presentation of identification, credentials, or other documents as may be required by law, to:

- I.K.1.a Enter at reasonable times upon the Permittee's premises where hazardous or solid waste management units are located or corrective action activities are conducted, or where records are kept under the conditions of the RCRA permit;
- I.K.1.b Have access to and copy, at reasonable times, any records that must be kept under the conditions of the RCRA permit;
- I.K.1.c Inspect, at reasonable times, any portion of the facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under the RCRA permit; and,
- I.K.1.d Sample or monitor, at reasonable times, for the purposes of assuring permit compliance, or as

otherwise authorized by RCRA, any substances or parameters at any location.

- I.K.1.e In case of lands owned by the Permittee but leased to other parties, the Permittee shall forward any requests for access by the Agency to the Lessee. If access to land owned by the Permittee but leased to other parties is denied, the Permittee shall use its best efforts to obtain signed access agreements and to obtain access for itself, EPA, Ecology and their contractors, representatives or agents.

I.L MONITORING AND RECORDS

- I.L.1 Samples and measurements taken by the Permittee pursuant to the terms of this permit shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed must be the appropriate method from Appendix I of 40 CFR Part 261 or an equivalent method approved by the Regional Administrator. When required by regulation, laboratory methods shall be those identified in the most recent edition of Test Methods for Evaluating Solid Waste, EPA SW-846, Third Edition, November 1986, or as updated, or an equivalent method approved by the Regional Administrator.
- I.L.2 The Permittee shall retain, or ensure the retention of, at the facility, or other approved location, all records of all sampling and analysis information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), records and results of inspections, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These records shall be retained for a period of at least five (5) years from the date of the sample, measurement, report, certification or recording, unless a longer retention period for certain information is required by other conditions of this permit. This five (5) year period may be extended by the Administrator at any time by notification, in writing, to the Permittee, and is automatically extended to five (5) years after the successful conclusion of any enforcement action. Unless authorized pursuant to 40 CFR § 264.552, this requirement shall apply to other documentation

produced pursuant to 40 CFR Part 268 (land disposal restrictions) and related portions of Section 6.0 of the FFACO, as amended. The Permittee shall maintain records from all ground-water monitoring wells and associated ground-water surface elevations for the active life of the facility.

I.L.3 Records of monitoring information shall include:

- I.L.3.a The date(s), exact place, and time of sampling or measurements;
- I.L.3.b The name, title, and affiliation of the individual(s) who performed the sampling or measurements;
- I.L.3.c The date(s) analyses were performed;
- I.L.3.d The name, title, and affiliation of the individual(s) who performed the analyses;
- I.L.3.e The analytical techniques or methods used; and,
- I.L.3.f The results of such analyses, including the QA/QC summary.

I.L.4 The Permittee may substitute analytical methods which are equivalent to those specifically approved for use in this permit in accordance with the following:

- I.L.4.a The Permittee first submits to the Administrator a request for substitution of an analytical method(s) which is equivalent to the method(s) specifically approved for use in this permit. The request shall provide information demonstrating that the proposed method(s) is equal or superior to the approved analytical method(s) in terms of sensitivity, accuracy, and precision (i.e. reproducibility); and,
- I.L.4.b The Administrator notifies the Permittee in writing, by certified mail or hand delivery, that the substitution of the analytical method(s) is approved. Such approval shall not require a permit modification.

I.L.5The Permittee shall establish and maintain an information repository for the purpose of making accessible to interested parties documents, reports, and other public information developed pursuant to investigations and activities under this permit. The information repository shall be accessible to the public during reasonable hours and shall be located within a reasonable distance from the facility. The Permittee shall inform the public about this information repository through written notice to all individuals on the mailing list. The repository shall be maintained at a location approved by the Administrator. The Permittee shall also ensure that all raw data available to the Permittee is included with all corrective action reports and investigations required pursuant to this permit.

I.M REPORTING PLANNED CHANGES

I.M.1The Permittee shall give prior notice to the Administrator, as soon as possible, of any planned physical alterations or additions to the portions of the facility subject to this HSWA permit.

I.N ANTICIPATED NONCOMPLIANCE

I.N.1The Permittee shall give at least thirty (30) calendar days advance notice, in writing, to the Administrator of any activity that might result in noncompliance with permit requirements. If advance notice is not possible, then the Permittee shall give notice within twenty-four (24) hours of the time it becomes aware of the anticipated noncompliance. Such notice does not authorize any noncompliance with or modification of this permit.

I.O TRANSFER OF PERMIT

I.O.1This permit may be transferred to a new owner or operator only if it is modified or revoked and reissued pursuant to 40 CFR §§ 270.40(b) or 270.41(b)(2). Before transferring ownership or operation of the facility, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270, HSWA and the RCRA permit.

I.P TWENTY FOUR HOUR REPORTING

I.P.1The Permittee shall verbally report to the Administrator any noncompliance with this permit that might endanger human health or the environment within twenty-four (24) hours from the time the Permittee becomes aware of the noncompliance.

I.P.2Within fifteen (15) calendar days of the time the Permittee becomes aware of any noncompliance that might endanger human health or the environment, the Permittee shall provide to the Director and the Administrator a written submission. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance including exact dates and times, the anticipated time noncompliance is expected to continue if the noncompliance has not been corrected, corrective measures taken to mitigate the situation, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.Q OTHER NONCOMPLIANCE

I.Q.1The Permittee shall report to the Administrator all other instances of noncompliance with this HSWA permit not reported under HSWA Permit Condition I.N at the time of submittal of the TSD Facility Report (Form 5) required by WAC 173-303-390(2). The reports shall contain the applicable information listed in HSWA Permit Condition I.N.

I.R OTHER INFORMATION

I.R.1Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in the permit application or in any report to the Administrator, the Permittee shall promptly submit such facts or corrected information.

I.S BIENNIAL REPORT

I.S.1The Permittee shall comply with the Biennial Report requirements of 40 CFR § 264.75.

I.T SIGNATURE AND CERTIFICATION

I.T.1 All applications, reports, or other information submitted to Administrator by the Permittee pursuant to the permit shall be signed and certified in accordance with 40 CFR § 270.11.

I.T.2 All reports and other information required to be maintained by HSWA Permit Condition I.L.2 shall be signed and certified in accordance with 40 CFR §§ 270.11 and 270.30(k), and WAC 173-303-810(12).

I.U CONFIDENTIAL INFORMATION

I.U.1 Any information submitted by the Permittee to the Administrator may be claimed as confidential by the Permittee in accordance with applicable provisions of 40 CFR §§ 260.2 and 270.12.

I.V REPORTS, NOTIFICATIONS, AND SUBMISSIONS

I.V.1 All reports, notifications, and submissions which are required by this HSWA permit, for those actions not governed by the FFACO, to be sent or given to the Administrator should be sent certified mail or given to:

Director, Office of Waste and Chemicals Management
EPA Region 10, WCM-127
1200 Sixth Avenue, Seattle, Washington 98101
(206) 553-1266, and

Program Manager, Nuclear Waste Program
Washington Department of Ecology,
Post Office Box 47600,
Olympia, Washington, 98504-7600
(206) 438-7021, and

RCRA Site-Wide Permit Manager
Washington Department of Ecology
Nuclear and Mixed Waste Program
1315 W. 4th Ave.
Kennewick, WA 99336
(509) 736-3001, and

Hanford Project Manager
EPA Region 10, B5-10,
712 Swift Boulevard, Suite 5
Richland, Washington, 99352
(509) 376-6623.

All reports, notifications, and submissions which are required by this HSWA permit for activities governed by the FFACO should be sent in accordance with transmittal provisions established under Section 9.0, "Documents and Records" of the FFACO." These are the current phone numbers and addresses and are subject to change.

I.V.2 Two (2) copies of all reports, notifications and submissions which are required by this permit shall be given or sent to the Administrator and three (3) copies shall be given or sent to the Director. One (1) copy shall be placed by the Permittee in the information repository in accordance with HSWA Permit Condition I.L.5.

I.W EQUIVALENT MATERIALS/INFORMATION

I.W.1 If certain equipment, materials, procedures, and administrative information (such as names/job titles, phone numbers, addresses) are specified in this permit, the Permittee is allowed to use an equivalent or superior. Use of such equivalent or superior items shall not be considered a modification to this permit, but the Permittee must place in the operating record (prior to institution of the revision) the revision, accompanied by a narrative explanation, and the date the revision became effective. The Agency may judge the soundness of the revision during inspections and reviews, and take appropriate action. The format of tables or forms are not subject to the provisions of this permit and may be revised at the Permittee's discretion. Updates to EPA reference document SW-846 (changes made after the Third Edition, November 1986) may also be considered equivalent or superior.

PART II. GENERAL FACILITY STANDARDS

II.A OPERATION OF FACILITY

II.A.1 The Permittee shall at all times properly operate and maintain, in accordance with sound engineering and scientific practice, all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee so as to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to, effective performance, seeking adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

II.B ACCESS AND INFORMATION

II.B.1 To the extent that work required by Part III of this HSWA permit must be done on property not owned or controlled by the Permittee, the Permittee shall use its best efforts to obtain site access agreements from the present owner(s) or lessee(s) of such property no later than two weeks prior to the scheduled commencement of work in accordance with the requirements set forth in Paragraph 106 of the FFACO which are specifically incorporated into the HSWA Permit. "Best efforts" shall mean, at a minimum, a certified letter from the Permittee to the current property owner(s) or lessee(s) requesting access to such property and if a reply is received from the property owner or lessee, follow-up letters from the Permittee, as appropriate, to clarify the work contemplated and address the owner's or lessee's reasonable concerns. In the event that the Permittee cannot obtain the necessary access agreements, the Permittee shall notify the Administrator in writing. The Administrator may, consistent with his/her legal authority, assist the Permittee in obtaining such agreements.

II.C OTHER PERMITS AND APPROVALS

II.C.1 To the extent that work required by Part III of this HSWA permit must be done under permit(s) or approval(s) pursuant to other federal, state, or local regulatory authorities, the Permittee shall use its best efforts to obtain such permits. For the purposes of this permit condition the term "best efforts" shall, at a minimum, mean submittal of a complete application for the permit(s) and/or approval(s) in accordance with a schedule approved by the Agency. "Best Efforts" shall also mean submittal of the complete application for the permit and/or approval with lead time for issuance of such permit and/or approval as is typical for that action. Copies of all documents relating to such actions taken, pursuant to this permit condition, shall be kept in the information repository as specified in HSWA Permit Condition I.L.5.

II.D SCHEDULE EXTENSIONS

II.D.1 To the extent that activities required by Part III of this HSWA permit are not covered in the FFACO and are not completed in accordance with the schedules contained therein, 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.

II.D.1.a For the purposes of HSWA Permit Condition II.D., the term "best efforts" shall, at a minimum include performance of all activities necessary to award contract(s) no later than sixty (60) calendar days after the information necessary to award the contract(s) is available to the Permittee, or other such time as approved in advance by the Administrator. "Best efforts" shall also include, but not be limited to, adequate planning, staffing, laboratory and process controls, seeking funding, and operation of backup or auxiliary facility or similar systems as necessary to meet the required schedules.

II.D.2 The Permittee shall notify the Administrator, in writing, no later than fifteen (15) calendar days after the Permittee determines that such schedules will not be met. The Permittee shall include with the notification all information supporting its claim that it has used best efforts to meet the required schedules. If the Administrator determines that the Permittee has made best efforts to meet such schedules, 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 a revision shall not require a permit modification.

II.E DISPUTE RESOLUTION

- II.E.1 In the event the Administrator rejects, in whole or in part, any plan, report, or schedule required by Part III of this HSWA permit, the Agency or the Permittee may initiate the dispute resolution process and the following procedure will apply, except as specifically provided for under Article XV of the FFACO for solid waste management units covered by the FFACO.
- II.E.1.a The Administrator will notify the Permittee in writing of the acceptance, rejection, or proposed modification to, the plan, schedule, or submittal. Such notice shall:
- II.E.1.a.(i) Identify the problem(s) and, where appropriate, suggest the change(s) which need to be made to the plan, schedule or submittal;
- II.E.1.a.(ii) Provide an explanation and supporting documentation or data of why modification is needed; and,
- II.E.1.a.(iii) In the event the Administrator proposes a modification, the notice will provide a date by which comments on the proposed modification must be received from the Permittee. Such date will not be less than thirty (30) calendar days from the date of the Permittee's receipt of the notice under HSWA Permit Condition II.E.1.a.

- II.E.1.b If the Administrator receives no written comments on the proposed modification from the Permittee, the modification will become effective five (5) calendar days after the close of the comment period specified under HSWA Permit Condition II.E.1.a.(iii). The Administrator will promptly notify the Permittee that the modification has become effective.
- II.E.1.c If the Permittee submits written comments on the proposed modification, the Administrator shall make a final determination concerning the modification within thirty (30) calendar days after the end of the comment period, if practicable. The Administrator shall then notify the Permittee in writing of the final decision. Such notification shall:
- II.E.1.c.(i) Indicate the effective date of the modification, which shall be not later than fifteen (15) calendar days after the date of notification of the final modification decision;
- II.E.1.c.(ii) Include an explanation of how comments were considered in developing the final modification; and,
- II.E.1.c.(iii) Provide a copy of the final modification.
- II.E.1.d The following dispute resolution procedures apply only to Agency revisions of the Permittee's interim submissions, which generally consist of proposals and reports that carry out general obligations for an RFI, CMS or interim measures specified in the HSWA Permit. These procedures shall be followed before the Permittee shall comply with an Agency revision to an interim submission:
- II.E.1.d.(i) The Administrator will provide the Permittee a notice which details the Agency's reasons for proposing to revise or require revision of an interim submission.
- II.E.1.d.(ii) The Permittee may submit written comments to, and meet with, the EPA staff responsible for making the revisions.

- II.E.1.d.(iii) The Permittee may submit written arguments and supporting evidence to the EPA Region 10 Hazardous Waste Division Director ("Division Director").
- II.E.1.d.(iv) The Division Director shall make the final decision on interim submissions required under the HSWA permit.
- II.E.1.d.(v) The Division Director shall provide the Permittee a statement of the reasons explaining the final decision and a response to the Permittee's arguments. This response shall be based on the administrative record for the HSWA Permit.
- II.E.2 Modifications initiated and finalized by the Administrator using the procedure specified in HSWA Permit Condition II.E.1 are not subject to administrative appeal. Judicial review is available in accordance with applicable federal law.
- II.F WASTE MINIMIZATION**
- II.F.1 In accordance with 40 CFR § 264.73(b)(9), and Section 3005(h) of RCRA, 42 U.S.C. § 6925(h), the Permittee must place a certification in the operating record on an annual basis that:
- II.F.1.a A program is in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and,
- II.F.1.b The proposed method of treatment, storage or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment.
- II.F.2 The Permittee shall maintain each such certification of waste minimization in the operating record as required by 40 CFR § 264.73(b) until closure of such facility.

II.G LAND DISPOSAL RESTRICTIONS

II.G.1 The Permittee shall comply with all applicable requirements of the land disposal restrictions (LDR) of 40 CFR Part 268, and applicable requirements of Section 6.0 of the FFACO Action Plan, as amended. The Permittee shall develop and implement treatment technologies necessary to achieve full compliance with LDR requirements for mixed wastes at the facility in accordance with the LDR provisions and schedule specified in Appendix D of the FFACO. The Permittee shall comply with the LDR requirements specified in the unit-specific waste analysis plans developed for the units identified in Part III of the Dangerous Waste Permit.

PART III. CORRECTIVE ACTION

III.AINTEGRATION WITH THE FFACO

III.A.1 Section 3004(u) of RCRA, 42 U.S.C. § 6924(u) (Section 206 of HSWA), and regulations promulgated at 40 CFR § 264.101 require corrective action, as necessary, be included in all permits issued after November 8, 1984, to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU) at a facility seeking a RCRA permit.

The corrective action for the Hanford Federal Facility will be satisfied as specified in the FFACO, as amended, except as otherwise provided herein. For those solid waste management units not covered by the FFACO, RCRA corrective action requirements will be addressed by HSWA Permit Conditions III.B through III.J.

III.A.2 RCRA Past Practice Units

III.A.2.a Except as otherwise provided herein, all RCRA Past Practice (RPP) Unit work plans shall be conducted in accordance with schedules for completion of investigations and corrective actions, developed pursuant to the FFACO, as amended, for RCRA Past Practice units identified in Appendix C of the FFACO. The remedies and schedules for implementation for RCRA past practice actions established pursuant to the FFACO shall be incorporated through permit modifications.

III.A.2.b The Permittee shall conduct corrective action under RCRA for RCRA Past Practice Units which have the potential for release or have released hazardous waste or hazardous constituents as specified in the FFACO for corrective action, regardless of the date waste was received at or released from the unit, as necessary to protect human health and the environment.

- III.A.2.c The Permittee shall follow the dispute resolution process for RPP Units in accordance with Article XV of the FFACO.
- III.A.2.d The Permittee shall maintain an information repository for RPP Units covered under the FFACO in accordance with HSWA Permit Condition I.L.5. and Sections 9.0 and 10.0 of the FFACO Action Plan.
- III.A.2.e Following approval of the proposed remedy, the Administrator shall initiate a major permit modification to this permit, pursuant to HSWA Permit Condition I.C.3.
- III.A.2.f The modification shall specify the selected remedy and include, at a minimum the following:
- III.A.2.f.(i) Description of all technical features of the remedy that are necessary for achieving the standards for remedies established under HSWA Permit Condition III.D. and Attachment D, including the length of time for which compliance must be demonstrated at specified points of compliance;
 - III.A.2.f.(ii) 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;
 - III.A.2.f.(iii) All requirements for achieving compliance with these concentrations;
 - III.A.2.f.(iv) All requirements for complying with the standards for management of wastes;
 - III.A.2.f.(v) Requirements for removal, decontamination, closure, or post-closure of units, equipment, devices or structures that will be used to implement the remedy;
 - III.A.2.f.(vi) A schedule for initiating and completing all major technical features of the remedy; and,

III.A.2.f.(vii) Requirements for submission of reports and other information.

III.A.2.g For RCRA past practice corrective action under the FFACO, the RFI/CMS shall be the basis for the revision of the HSWA portion of the permit in accordance with HSWA Permit Condition I.C.3. For RCRA past practice actions taken pursuant to the provisions of the FFACO, as amended, public participation will be provided in accordance with the provisions of the FFACO and the permit modification procedures of 40 CFR §§ 270.41 and 270.42, to incorporate the CMS report into the HSWA portion of the permit (in accordance with Section 7.4.3 of the FFACO Action Plan, as amended). The CMI shall be conducted in accordance with the schedule of compliance specified in the work schedule in Appendix D of the FFACO, and incorporated into the HSWA Permit in accordance with HSWA Permit Condition I.C.3.

III.A.2.h Interim Measures for RCRA past practice units covered under the FFACO shall be developed and implemented by the Permittee in accordance with the FFACO.

III.A.2.i Notification of newly identified solid waste management units within these areas of the facility covered by the FFACO shall be in accordance with Section 3.0 of the FFACO Action Plan.

III.B. CORRECTIVE ACTION REQUIREMENTS

III.B.1 The following solid waste management units require further investigation to determine whether releases of hazardous wastes or hazardous constituents are occurring or have occurred which threaten human health and the environment:

III.B.1.a **US Ecology, Inc.**

III.B.1.a.(i) SWMU 1: Chemical Trench

III.B.1.a.(ii) SWMUs 2-13: Low-Level Radioactive Waste Trenches
1 through 11A.

III.B.1.a.(iii) SWMU 17: Underground Resin Tank

III.B.1.b The following RCRA Past Practice (RPP) units on the Hanford site require further investigation as described in Attachment G of this Permit¹.

III.B.1.b.(i) 100-NR-1 Operable Unit (Attachment G, Chapter 1)

III.B.1.b.(ii) 100-NR-2 Operable Unit (Attachment G, Chapter 2)

III.B.2 RCRA corrective action requirements for SWMUs identified in HSWA Permit Condition III.B.1.a. will be deferred for one calendar year from the effective date of the HSWA Permit pending evaluation of progress made on SWMU investigation and/or remediation under the Washington State Department of Health and/or the Washington State Department of Ecology authorities contained in Chapters 43.21A, 43.70, 70.98, 70.105 and 70.105D of the Revised Code of Washington, and MTCA Regulations, Chapter 173-340 Washington Administrative Code. If, within one calendar year, the SWMUs identified in the HSWA Permit Condition III.B.1.a. have not either been:

- (a) remediated to cleanup standards suitable for RCRA corrective action purposes;
- (b) determined appropriate for no further action by means of comparison of residual concentrations of contaminants with MTCA cleanup standards and RCRA corrective action cleanup standards; or
- (c) administratively addressed by either: (1) an amendment to US Ecology's Radioactive Materials License (pursuant to WAC 246-232-070 and WAC 246-250-100(7)); (2) a filed Department of Health order (pursuant to WAC 246-232-070(1) and WAC 246-250-100(4)); (3) a filed MTCA consent decree (pursuant to WAC 173-304-520); (4) a final MTCA Agreed Order (pursuant to WAC 173-340-530); or (5) a MTCA Enforcement Order (pursuant to WAC 173-540);

¹Permit condition III.B.1.b added via permit modification dated September 17, 1998.

the Administrator will, in consultation with the Director of the Department, either extend the schedule for completion of activities listed in (a) through (c) above, or provide written notification to the Permittee that RCRA corrective action for SWMUs identified in HSWA Permit Condition III.B.1.a. will no longer be deferred and activate HSWA Permit Conditions III.C. through III.J. If the schedule is extended, the written notification from the Administrator will specify the duration of the extension and the specific milestones or dates at which the decision to defer RCRA corrective action will be revisited.

III. RCRA FACILITY INVESTIGATION

III.C.1 Within one hundred and eighty (180) calendar days of the Permittee's receipt of a written request by the Administrator, the Permittee shall submit a RCRA Facility Investigation (RFI) workplan to determine the nature and extent of potential releases from SWMUs identified in HSWA Permit Condition III.B.1.

The RFI workplan shall include the information specified in Attachments A and B and shall also include the following tasks:

- III.C.1.a Identify the disposition of any wastes generated as a result of the investigation (e.g., decontamination rinse water), including an Individual Investigative Derived Waste Management Plan as required;
 - III.C.1.b Identify the disposition of purgewater generated as a result of the investigation in a Purgewater Management Plan; and
 - III.C.1.c Include the general description of the contractor performing or directing the investigations and the overall management of the RFI.
- III.C.2 The Permittee shall implement this RFI workplan in accordance with its terms and schedules upon acceptance or modification of the workplan by the Agency. Upon

conclusion of the RFI and in accordance with approved schedules, the Permittee shall submit an RFI report which shall include an analysis and summary of all facility investigations and the results of such investigations including quality assured results of all analytical tests, and laboratory detection limits achieved for each constituent.

- III.C.3 The Agency will review, and then approve, modify, or disapprove in whole or in part the RFI workplan and RFI report. The Agency will distribute review comments and determinations to the Permittee and appropriate Lessee(s). If disapproved, the Permittee will be directed to modify the RFI workplan and/or RFI report to meet the Agency's concerns.
- III.C.4 Final acceptance of the RFI workplan and the RFI report shall not require a permit modification.
- III.C.5 The Permittee shall maintain the final RFI report in the information repository as required by HSWA Permit Condition I.L.5 during the life of the permit, including the term of any reissued permits.

III.DCORRECTIVE MEASURES STUDY AND IMPLEMENTATION

- III.D.1 If the Administrator determines, on the basis of the RFI report and appropriate action levels described in HSWA Permit Condition III.G, that corrective measures to remediate releases of hazardous waste or hazardous constituents from units identified in HSWA Permit Condition III.B.1 are necessary to protect human health and the environment, the Administrator will advise the Permittee and appropriate Lessee(s) of this determination, and the reasons therefore, in writing.
- III.D.1.a Within one hundred and eighty (180) calendar days of receipt of the Administrator's notification of a determination, the Permittee shall submit a corrective measures study (CMS) workplan to evaluate the effectiveness of various technologies. Such a CMS plan must include thorough procedures for testing and

verification of test results, as well as a schedule for CMS completion and submittal of a CMS report. The Corrective Measure Study (CMS) workplan and report shall include the information specified in Attachment C.

Alternatively the Permittee may submit a corrective measures implementation (CMI) workplan to remediate releases documented by the RFI report. The CMI workplan shall include a description of the proposed corrective measures, proposed cleanup standards, contaminant containment measures, a sampling program to confirm the extent of each corrective measure, and a schedule for implementation of these corrective measures and the monitoring program. The Corrective Measures Implementation (CMI) workplan shall address the full scope of work described in Attachment D.

- III.D.1.b The Agency will review, and then approve, modify, or disapprove, the CMI or CMS workplan (or CMS report). If disapproved, the Permittee will be directed to modify the CMI or CMS workplan (or CMS report) to meet the Agency's concerns. The Agency will distribute review comments and determinations to the Permittee and appropriate Lessee(s).
- III.D.1.c Should the Permittee choose to submit a CMS workplan for all or part of the remediation needs, the Permittee shall, upon Agency acceptance of the CMS report, commence the CMI workplan approval process described under HSWA Permit Condition III.D.1.a. for that portion, or all of the remediation.
- III.D.1.d Upon notification by the Agency of tentative approval of the CMI workplan, the Permittee shall request a permit modification pursuant to 40 CFR § 270.42 to implement the workplan.
- III.D.2 Upon the effective date of the permit modification required by HSWA Permit Condition III.D.1.d, the CMI workplan shall be implemented by the Permittee according to its terms and schedule set forth in the revised permit.

III.E. INTERIM MEASURES

- III.E.1 If the Administrator or the Permittee determine, on the basis of information submitted by the Permittee pursuant to HSWA Permit Condition III.C., or any other information, that interim measures are necessary to protect human health and the environment from a release of hazardous waste or hazardous constituents from a solid waste management unit which is not subject to the FFACO, the Permittee may be required to implement interim measures. Such interim measures may be included in this permit pursuant to 40 CFR §§ 270.41 or 270.42.
- III.E.2 The Permittee shall, when directed by the Administrator, implement interim measures without prior approval of an Interim Measures Plan or revisions to an approved Interim Measures Plan where such actions have been deemed necessary by the Administrator to protect human health and the environment.
- III.E.3 When directed to implement interim measures by the Administrator, the Permittee shall implement the specified actions in accordance with the schedule specified by the Administrator.
- III.E.4 Upon written request by the Administrator and in accordance with the schedules specified in such requests, the Permittee shall submit an interim measures plan which shall identify specific action(s) to be taken to implement the interim measures and a schedule for implementing the required measures. At a minimum, the interim measures plan shall include the information specified in Attachment E, and shall contain information which will allow the Administrator to make an informed decision regarding the interim measures plan, taking into account the following factors:
- III.E.4.a Time required to develop and implement a final remedy;
- III.E.4.b Actual and potential exposure of human and environmental receptors;

- III.E.4.c Actual and potential contamination of drinking water supplies and sensitive ecosystems;
 - III.E.4.d The potential for further degradation of the medium absent the interim measures;
 - III.E.4.e Presence of hazardous waste in containers that may pose a threat of release;
 - III.E.4.f Presence and concentration of hazardous waste including hazardous waste constituent(s) in soils that have the potential to migrate to ground or surface water;
 - III.E.4.g Weather conditions that may affect the current levels of contamination;
 - III.E.4.h Risks of fire, explosion, or accident; and
 - III.E.4.i Other situations that may pose threats to human health and the environment.
- III.E.5 Interim measures and schedules for implementation of the Interim Measures Plan may be incorporated into this HSWA permit through permit modification initiated by the Administrator in accordance with 40 CFR § 270.41, or by the Permittee in accordance with 40 CFR § 270.42, as appropriate.

III.F. DISCOVERY OF NEW SOLID WASTE MANAGEMENT UNITS

- III.F.1 The Permittee shall notify the Administrator in writing of any newly-identified SWMU within all areas of the facility not covered by the FFACO no later than thirty (30) calendar days after the date of discovery. The notification shall include, but not be limited to, the following information as required by 40 CFR § 270.14(d):
 - III.F.1.a A description of the SWMU's type, function, dates of operation, location (including a map), design criteria, dimensions, materials of construction, capacity, ancillary systems (e.g., piping), release

controls, alterations made to the unit, engineering drawings, and all closure and post-closure information available, particularly whether wastes were left in place;

- III.F.1.b A description of the composition and quantities of solid wastes processed by the units with emphasis on hazardous wastes and hazardous constituents;
- III.F.1.c A description of any release (or potential release) of hazardous waste or hazardous constituents originating from the unit. Include information on the date(s) of release, type of hazardous waste or hazardous constituents, quantity released, nature of the release, extent of release migration, and cause of release (e.g., overflow, broken pipe, tank leak, etc.). Also, provide any available data which would quantify the nature and extent of environmental contamination, including the results of soil and/or groundwater sampling and analysis efforts. Likewise, submit any existing monitoring information that indicates releases of hazardous waste or hazardous constituents have not occurred or are not occurring; and
- III.F.2 The additional solid waste management units may be added to those listed in HSWA Permit Condition III.B.1. based upon additional information received by the Permittee, the Administrator, or any other knowledgeable source. Additional solid waste management units subject to corrective action under the FFACO may also be added in accordance with HSWA Permit Condition III.A.1 for corrective action.
- III.F.3 Upon receipt of the notification of any newly-identified SWMU, the Administrator may require the Permittee to submit a RFI or interim measures workplan and/or perform interim or corrective measures in accordance with the specifications contained in HSWA Permit Conditions III.C through III.E.

III.F.4 In lieu of a new RCRA Facility Investigation, the Permittee may propose either to incorporate any newly-identified SWMU into an ongoing RCRA Facility Investigation or to submit a proposal for the performance of corrective measures at such newly-identified SWMU in accordance with the provisions of HSWA Permit Condition III.D., or interim measures in accordance with the provisions of HSWA Permit Condition III.E. Any such proposal shall be submitted to the Administrator along with, or subsequent to, the notification of the discovery of the SWMU(s).

III.G.ACTION LEVELS

III.G.1 The Permittee shall consider the Washington State Model Toxics Control Act Standards, and Federal regulatory requirements including EPA health-based values ², in all recommendations for investigatory/corrective actions conducted pursuant to the terms of this permit.

III.H.TECHNICAL IMPRACTICABILITY

III.H.1 The Agency may determine, based on information developed by the Permittee, that compliance with a requirement(s)

² The EPA-health based concentration levels for hazardous wastes and constituents are derived in a manner consistent with guidelines set forth in 51 Fed. Reg. 33992, 34006, 34014, and 34028. The health-based level for carcinogens represents a concentration associated with an excess upper bound lifetime risk of 0.000001 due to a continuous as well as constant lifetime exposure. The level for systemic toxicants represents a concentration to which the human population, if exposed on a daily basis, will be unlikely to suffer an appreciable risk of deleterious effects during the course of a lifetime. Any constituent values, accepted and formally published by EPA, and using these criteria, may be considered EPA health-based levels. Tables of these values are available in the Proposed Rule for "Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities," 55 FR 30798-30884, (July 27, 1990). Sources may be revised at any time. The Permittee should contact EPA before consulting such sources to verify that the most recent editions are being used.

for a remedy is not technically practicable. The Permittee shall submit the following information to the Agency:

- III.H.1.a The Permittee's efforts to achieve compliance with the requirement(s); and
- III.H.1.b Whether other currently available or new and innovative methods or technologies could practicably achieve compliance with the requirements.
- III.H.2 If the Agency determines that compliance with a remedy requirement is not technically practicable, the HSWA Permit shall be modified to include schedules of compliance to specify as necessary and appropriate the following information:
 - III.H.2.a Further measures that may be required of the Permittee to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment; and
 - III.H.2.b Alternate levels or measures for cleaning up contamination media, controlling the source(s) of contamination, or for the removal or decontamination of equipment, units, devices, or structures required to implement the remedy.

III. ICORRECTIVE ACTION MANAGEMENT UNIT(S) AND TEMPORARY UNITS.

- III.I.1 The Permittee may submit a Class 3 permit modification request for either a CAMU and/or a TU to the Agency during the corrective action process. If the permit modification request is determined by the Administrator to be consistent with 40 CFR §§ 264.552 and 264.553, and EPA's draft Subpart S rule [see draft 40 CFR Part 264, Subpart S (55 Fed. Reg. 30,798, July 27, 1990)], the Administrator may approve the modification request in accordance with permit modification procedures in 40 CFR § 270.42. Upon Agency approval and designation, such units must be operated in accordance with all operating requirements specified in the permit modification by the Administrator,

federal regulations, and applicable state and local laws and regulations.

III.JCONFIRMATORY SAMPLING

- III.J.1 Within ninety (90) calendar days of receipt of the Administrator's notification of determination, the Permittee shall prepare and submit to the Agency a Confirmatory Sampling (CS) Workplan to determine whether a release of hazardous waste or constituents has occurred from SWMUs identified in HSWA Permit Condition III.B. The CS workplan shall include schedules of implementation and completion of specific actions necessary to confirm a release. It should also address applicable requirements and affected media.
- III.J.2 The CS Workplan must be approved by the Agency, in writing, prior to implementation. The Agency shall specify the start date of the CS Workplan schedule in a letter approving the CS Workplan. If the Agency disapproves the CS Workplan, the Agency shall either (1) notify the Permittee in writing of the CS Workplan's deficiencies and specify a due date for submission of a revised CS Workplan, or (2) revise the CS Workplan and notify the Permittee of the revisions.
- III.J.3 The Permittee shall implement the confirmatory sampling in accordance with the approved CS Workplan.
- III.J.4 The Permittee shall prepare and submit to the Agency, in accordance with the approved CS Workplan schedule but in any case no later than one hundred and eighty (180) days from the date of EPA approval of the CS Workplan, a Confirmatory Sampling (CS) Report. The CS Report shall identify those SWMUs listed in HSWA Permit Condition III.B. that have released hazardous constituents into the environment. The CS Report shall include all data, including raw data, and a summary and analysis of the data, that supports the determination in the CS Report that a release has or has not occurred.

III.J.5 Based on the results of the CS Report, the Agency shall determine the need for further investigations at the SWMUs covered in the CS Report. If the Agency determines that such investigations are needed, the Permittee shall be required to prepare a plan for such investigations as outlined in HSWA Permit Condition III.C. The Agency will notify the Permittee in writing of any further corrective action decisions regarding the SWMUs covered in the CS Report.

PART IV. CONTAINER STORAGE

IV.A Container Storage of Toxicity Characteristic Wastes

IV.A.1 The Permittee is authorized to manage hazardous waste exhibiting the toxicity characteristic (waste codes D018 through D043) in containers subject to provisions of Part III of the Dangerous Waste Portion of the RCRA Permit for the Hanford Federal Facility.

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**PART V. UNIT-SPECIFIC CONDITIONS FOR UNITS
UNDERGOING CLOSURE**

V.A. Closure of Units Managing Toxicity Characteristic Wastes

V.A.1 The Permittee is authorized to conduct closure activities for units managing wastes exhibiting the toxicity characteristic (waste codes D018 through D043) subject to provisions of Part V of the Dangerous Waste Portion of the RCRA Permit for the Hanford Federal Facility.

ATTACHMENT A - RFI WORK PLAN REQUIREMENTS

The RFI Work Plan shall meet the following requirements, in addition to the specific requirements and deadlines set forth in the HSWA permit. Deviations from these requirements may be made only with prior Agency approval:

1. The RFI Guidance in Volume I, Section 2 of Agency Document Number Agency 530/SW-89-031, "RCRA Facility Investigation (RFI) Guidance," (May 1989) shall be followed when developing the RFI Work Plan.
2. The RFI Work Plan shall include a Project Management Plan which will include schedules and a description of the technical approach.
3. The RFI Work Plan shall include a Data Collection Quality Assurance Plan and a Data Management Plan, developed as per the requirements set forth in Attachment "B" of the HSWA permit.
4. The RFI Work Plan shall include a Sampling and Analysis Plan. This plan shall address the sampling techniques, analytical parameters, and analytical methods to be used for characterization of all media. Rationale shall be provided to support the selection of each technique, parameter and method.
5. The RFI Work Plan shall include a Public Involvement Plan, to be developed in consultation with the Agency, for the dissemination of information to the public regarding RFI activities and results. The Community Relations Plan shall specify the information repositories and other approved locations for all submittals and reports required by the HSWA permit. The Public Involvement Plan shall also specify the methodology for identifying interested members of the Public who will be notified of the placement of any information in the repository. Interested members of the Public shall include, but not be limited to, the owners and operators of adjacent properties.
6. The RFI Work Plan shall include provisions for carrying out investigations necessary to characterize geology, stratigraphy

and hydrogeology beneath the Facility, define the sources, nature and extent of contamination, and identify actual or potential receptors. The investigations must result in data of adequate technical quality to support the development and evaluation of corrective measures in a Corrective Measures Study (CMS), and must assure that the full extent of each hazardous waste and/or hazardous constituent released at or from the Facility has been identified in each media to the Agency's satisfaction. Detailed workplans and technical specifications for specific investigative activities within the RFI may be submitted and implemented in a phased manner, and may utilize information obtained during prior phases of investigation. The RFI Work Plan shall include provisions for characterizing the following:

A. Environmental Setting

The RFI Work Plan shall include provisions to collect information to supplement and verify existing information on the environmental setting at the Facility. Such characterization shall extend, at a minimum, as necessary to confirm that the full extent of each hazardous waste and/or hazardous constituent released at or from the Facility has been identified. The RFI Work Plan shall provide for characterization of the following:

(1) Hydrogeology

The following shall be provided:

- a. A description of regional and Facility-specific geologic and hydrogeologic characteristics affecting ground water flow and contaminant migration beneath and from the Facility. This description shall include, but not be limited to, the following information:
 - i) Regional and Facility-specific stratigraphy. At a minimum, this shall include a detailed lithologic description of the Facility from the surface to the base of the upper most aquifer, which may

include the upper basalt confining aquifer system ("Rattlesnake Ridge interbed aquifer"). All soil borings shall be logged continuously or at intervals approved by the Agency. Lithologic descriptions shall include, but not be limited to, items such as grain size and sorting, depositional environment, and classification according to the Unified Soil Classification System.

- ii) An identification of areas of groundwater recharge and discharge, their location and characteristics.
 - iii) An evaluation of the continuity of stratigraphic units within the Facility, and a correlation of these units and those of adjacent Facilities.
- b. A description of each hydrogeologic unit which may serve as a contaminant migration pathway at or from the Facility. This description shall be based upon, at a minimum, field studies, soil and aquifer tests, and soil borings and cores. The description shall identify all distinct water bearing zones and/or systems and any intervening saturated or unsaturated units at the Facility. The description shall include, but not be limited to, the following information:
- i) Hydrogeologic cross sections, indicating the location and extent of each hydrogeologic unit;
 - ii) An identification of each geologic formation, group of formations, or part of a formation in all water bearing zones capable of yielding a significant amount of ground water to wells or springs. This shall include, at a minimum, all water-

bearing zones that may serve as a pathway for contaminant migration, including perched saturated zones;

- iii) Hydraulic conductivity and porosity (total and effective) of each hydrogeologic unit as necessary to characterize the impact of each such unit on groundwater flow and potential contaminant transport;
 - iv) An identification of zones of contrasting hydraulic conductivity that may affect the migration of contaminants as necessary to characterize groundwater flow and potential contaminant transport;
- c. A description of the regional and Facility-specific hydrogeologic flow for each hydrogeologic unit pursuant to Section 6.A.1.b. of this Attachment, and any other contaminant migration pathways identified pursuant to this HSWA permit. At a minimum, the hydrogeologic flow description shall include the following information:
- i) Water level contour and/or potentiometric surface maps using measurements from existing and newly installed wells. These maps shall meet the following requirements:
 - A) Contour maps shall incorporate data obtained from twelve monthly rounds of water level or fluid pressure measurements from all ground water monitoring wells used to fulfill the requirements of this HSWA permit.
 - B) Contour maps shall be prepared for each water bearing zone identified.

- C) Contour maps shall reflect the influence of barometric pressure, if any, on water level measurements. Barometric pressure shall be recorded at the beginning and end of every period during which ground water levels are measured to fulfill the requirements of this HSWA permit.
 - D) Contour maps shall reflect the presence and influence of any non-aqueous phase liquids. Any measurements necessary to correct water levels for the presence of these liquids shall be taken at the time of water level measurements.
- ii) Hydrogeologic cross sections showing the magnitude of vertical gradients;
 - iii) The flow system, including the vertical and horizontal components of flow, as described through flow vectors or the construction of flow nets, as necessary to identify and characterize potential contaminant transport pathways;
 - iv) Any changes in the hydraulic flow regime due to seasonal influences;
 - v) An identification and interpretation of any hydraulic interconnections within and between saturated zones at the Facility and all downgradient areas potentially impacted by releases from the Facility, including quantification to these aquifers;
 - vi) Hydrographs depicting the variation of water levels in each well over the period of water level measurements.

- vii) An evaluation and investigation of any possible groundwater mounding at the Facility which may affect transport pathways.
 - viii) An identification of the location and amount of groundwater recharge and discharge, including any discharges of groundwater that flows at or from the Facility to the surface in drainage ditches.
- d. A description of human influences, including off-facility structures and conditions, that may affect the hydrogeology of and migration of any contaminants at or from the facility, identifying:
- i) Active and inactive local water withdrawal wells with the potential to affect groundwater flow at the Facility, and approximate pumping schedules;
 - ii) Structures including, but not limited to, gas and electric utilities, pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, sewer pipes, stormwater drains, and retention areas etc.;

(2) Soils

The RFI shall include characterization of the soil and fill units in the vicinity of known and suspected contaminant releases. Such characterization shall include all factors necessary and appropriate to define the potential for contaminant migration and to evaluate contaminant fate and transport in the soil system. Examples of the descriptions and measurements which may be required include:

- a. Soil descriptions in accordance with the Unified Soil Classification system;
- b. Surface soil distribution;
- c. Hydraulic conductivity (saturated);
- d. Bulk density;
- e. Porosity;
- f. Cation exchange capacity (CEC);
- g. Soil organic matter content;
- h. Soil Ph;
- i. Particle size distribution based on sieve analyses;
- j. Moisture content;
- k. Presence of stratification or soil structures that may affect unsaturated flow;
- l. Infiltration;
- m. Evapotranspiration;
- n. Storage capacity;
- o. Mineral content;
- p. Contaminant attenuation or absorption capacity and mechanisms;
- q. Color photographs of all sample intervals, with a size scale present in each photograph.

All soil borings conducted under the RFI Work Plan shall be logged continuously or at intervals approved by Agency, for a detailed lithologic description from the ground surface to the base of the Uppermost Aquifer which may include the upper basalt confining aquifer system ("Rattlesnake Ridge interbed aquifer"). Soil characterization shall occur for each distinct soil type in all soil borings. All soil borings shall be abandoned using bentonite or bentonite grout, unless such a soil boring is completed as a groundwater monitoring well under the HSWA permit.

B. Contamination Characterization

The RFI Work Plan shall include requirements to collect analytical data on ground water, soils, air, surface water, and sediment contamination at and from the Facility

and other areas affected by Facility operations. This data shall be sufficient to define the origin, nature and extent, direction and rate of contaminant migration. Data shall include time and location of sampling, environmental conditions during sampling, media sampled, contaminant concentrations, and the identity of the individuals performing the sampling and analysis. Analytical methods must be those specified in Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, U.S. EPA Publication No. SW-846, 3rd Edition, September 1986, methods for Chemical Analysis of Waster and Wastes, Agency Report 600/4-79-020, March 1983; or alternate methods approved by the Agency and which have been demonstrated will perform equal or better than SW-846 methods under conditions expected in the investigation.

The following types of contamination shall be addressed at and from the Facility:

(1) Ground Water Contamination:

- a. The RFI Work Plan shall include requirements to characterize any groundwater contamination at or from the Facility. This investigation shall, at a minimum, provide the following information:
 - i) A description of the horizontal and vertical extent of any immiscible or dissolved contaminants originating from the Facility, including concentration profiles of all parameters identified in Section 6.B.1.d.(i) of this Attachment;
 - ii) The rate of contaminant migration;
 - iii) An evaluation of factors influencing the migration of contaminants;
 - iv) A prediction of future contaminant migration, and a justification of any

assumptions, calculations or models used to develop the prediction;

The RFI Work Plan shall document the procedures to be used in making the above determinations (e.g., well design, well construction, geophysical investigative methods, groundwater modeling, etc.).

- b. The RFI Work Plan shall include provisions for installation of all groundwater monitoring wells needed to delineate the nature and extent of any contamination at or from the Facility. These requirements shall define the criteria for placement of wells, and the design and installation procedures to be used. The RFI Workplan shall include provisions to extend the groundwater monitoring well system as necessary, both horizontally and vertically, to determine the full extent of groundwater contamination. The proposed groundwater monitoring system and monitoring well network shall meet the following requirements:
- i) The network shall contain upgradient wells or functional equivalents capable of yielding samples representative of background water quality in each hydrogeologic unit identified pursuant to Section 6.A.1.b. of this Attachment. These upgradient wells or functional equivalents cannot be affected by releases of hazardous waste and/or hazardous constituents from any solid waste management unit at the Facility. The number and location of the wells must be sufficient to characterize the spatial variability of background water quality.
 - ii) The network shall contain downgradient wells capable of detecting any release of hazardous waste and/or hazardous

constituents from the solid waste management units at the Facility to groundwater in each hydrogeologic unit identified pursuant to Section 6.A.1.b of this Attachment. The number and location of these wells must be sufficient to characterize the nature and extent of any such releases, including any such releases which may have migrated off-facility.

- iii) The network shall be capable of operating for a period of time sufficient to provide representative groundwater samples during the RFI and the evaluation and implementation of any corrective measures required at the Facility.
- iv) Any existing wells at the Facility included in the monitoring network that cannot meet these requirements shall be replaced and/or abandoned, or supplemented by new monitoring wells.
- v) The groundwater monitoring system shall include provisions to evaluate results of sampling and analysis throughout the investigation, and to modify the groundwater monitoring network and the sampling and analysis plan as necessary, based on this evaluation, to meet the objectives of the investigation.

The guidelines and specifications in the RCRA Groundwater Monitoring: Draft Technical Guidance (Agency/530-R-93-001, November, 1992), and the Technical Enforcement Guidance Document (Agency OSWER #9950.1, September 1986) ("TEGD") shall be followed.

- c. The RFI Work Plan shall include provisions to provide the following information for all

groundwater monitoring wells used to meet the RFI requirements:

- i) A description and map showing well locations, including each well's surveyed surface reference point and vertical reference point elevation. Wells shall be surveyed using, or existing well elevations converted to, the National Geodetic Vertical Datum (NGVD), 1929, to an accuracy of within 0.01 foot in accordance with the TEGD. Horizontal surveying accuracy shall be within 1.0 foot;
- ii) The boring and casing diameter and depth of each well;
- iii) Specification of well intake design, including screen slot type, size and length, filter pack materials, and method of filter pack emplacement;
- iv) Specification of the well casing and screen materials. Well construction materials shall be chosen based on parameters to be monitored, and the nature of contaminants that could potentially migrate from the Facility. Well materials shall: (1) minimize the potential of adsorption of constituents from the samples, and (2) not be a source of sample contamination. Wells shall be constructed for the purpose of long term monitoring in accordance with all applicable federal, state, and local laws;
- v) Documentation of methods used to seal the well from the surface to prevent infiltration of water into the well and downward migration of contaminants through the well annulus;

- vi) Description of well development methods and procedures;
 - vii) Documentation of all well design and installation parameters specified in Section 3.5 of the TEGD; and
 - viii) Documentation that all boring, well installation, and well abandonment procedures comply with all applicable federal, state, and local laws, and were conducted by a licensed driller.
- d. The RFI Work Plan Sampling and Analysis Plan shall include the following elements specific to the groundwater monitoring network:
- i) Parameters for chemical analysis of groundwater samples. Selected samples from the initial round of sampling shall be analyzed for all constituents specified in Appendix IX of 40 C.F.R. Part 264. Parameters for subsequent sampling events shall be selected, subject to Agency review and approval, based on the results of initial ground water sampling and analysis, and upon the composition of wastes that are or have been managed at the Facility. The rationale for selection of all parameters shall be provided.
 - ii) A sampling schedule for groundwater monitoring. At a minimum, this schedule shall include collection of groundwater samples for chemical analysis from each well on a quarterly basis to characterize temporal trends and variations in groundwater contaminant concentration.
 - iii) Provisions for sampling and reporting of the occurrence, amount, thickness, and composition of any non-aqueous phase

liquids encountered in any monitoring wells.

(2) Soil Contamination

- a. The RFI Work Plan shall include requirements to characterize the contamination of the soil and fill materials at and from the Facility and any contaminant releases. The Work Plan shall include provisions to extend this characterization as necessary, both vertically and horizontally, to determine the full extent of soil contamination. Soil sampling shall occur at the following locations, and where necessary to meet the RFI objectives:
 - i) From all soil borings, from the surface as necessary to determine the full extent of contamination, and specify the intervals and depths of the soil borings.
 - ii) At all stratigraphic unit contacts;
 - iii) At the location of any preferred routes of contaminant migration;
 - iv) Where field observation or testing indicate greater concentration of contaminants relative to the nearest strata that would otherwise be sampled.
- b. The RFI Work Plan Sampling and Analysis Plan shall document the following for soil sampling:
 - i) The sampling techniques and equipment to be used;
 - ii) The parameters for chemical analysis. Selected samples from the initial round of sampling shall be analyzed for all constituents specified in Appendix IX of 40 CFR Part 264. Parameters for

subsequent sampling events shall be selected, subject to Agency review and approval, based on the results of initial soil sampling and analysis, and upon composition of the wastes that are or have been managed at the Facility. The rationale for selection of all parameters shall be provided.

- c. The RFI Work Plan shall provide for documentation of the following information, including any associated calculations, derivations or assumptions:
- i) A description of the vertical and horizontal extent of contamination for all 40 C.F.R. Part 264, Appendix IX contaminants detected in soil at the Facility.
 - ii) A description of contaminant properties and contaminant/soil interactions within the contaminant source area and plume. Examples of properties and interactions which may be required include contaminant solubility, speciation, adsorption, leachability, retardation coefficients, biodegradability, hydrolysis, photolysis, oxidation, soil cation exchange capacity, and other factors that might affect contaminant migration and transformation. This information shall be presented in sufficient detail to fulfill the objectives of the RFI.
 - iii) Concentrations of each contaminant in all soil samples.
 - iv) The rate and direction of contaminant migration and a prediction of future contaminant migration rate, including

consideration of releases of contamination from soils and fill to groundwater.

- d. The RFI Work Plan may allow submittal of existing information on soil contamination at the Facility as part of the Investigation, if the Permittee can determine and certify that the existing data meets the technical, representativeness, and quality assurance/quality control requirements of the RFI Work Plan.

C. Reporting

The RFI Work Plan shall specify the outline and format for the RFI Report to present the findings of the investigation. The RFI Work Plan shall specify groundwater data reporting procedures which are consistent with Agency Region 10 Ground-Water Data Management System. These specifications shall include, but are not limited to, the following:

1. Construction of contour maps of groundwater concentrations for all parameters selected based on the results of the initial round of sampling, or subsequent sampling, and subject to Agency review and approval. Contoured parameters will include the most abundant and representative constituents from each group including volatile organic, semi-volatile organic, metals, and pesticides, if detected. Additional constituents may be selected for contouring due to their high mobility or high toxicity. All contour maps shall be presented at a scale of one inch equals 50 feet or other such scale approved by Agency, and shall show facility cultural features sufficient for clear representation of any plume, and all affected down-gradient areas. All wells in the sampling program shall be accurately located on the map, and the concentrations of each constituent shall be clearly visible. Data manipulation, such as kriging, is not to be employed. Contour intervals shall be selected to clearly

indicate changes in concentration within any plume, and are subject to Agency review and approval.

2. Construction of flow nets, maps and cross sections showing surface discharges of groundwater that flows beneath the Facility, and delineating the extent of discharge of contaminated groundwater, and showing areas of groundwater discharge that may become contaminated due to continued migration of contaminants in the subsurface;
3. Maps and cross sections depicting the estimated migration rates for contaminants in groundwater, considering advection, dispersion, adsorption, and degradation processes.

The RFI report shall describe all input data algorithms, estimates, assumptions, boundary conditions, sensitivity analyses, and model calibration procedures used to derive these predictions of groundwater contaminant migration.

**ATTACHMENT B - SAMPLING AND ANALYSIS AND DATA MANAGEMENT PROGRAM
REQUIREMENTS**

Each RCRA Facility Investigation Work Plan shall include a plan to document all monitoring procedures (including all sampling, field measurements, and sample analysis performed during the investigation to characterize the environmental setting, source of contamination, and concentration of contaminants) so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The plan shall include the following:

A. Data Quality Assurance Plan

1. Data Collection Strategy

The strategy section of the Data Collection Quality Assurance Plan shall include, but not be limited to, the following:

- a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses; and
- b. Description of methods and procedures to be used to assess the precision, accuracy, and completeness of the measurement data;

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall discuss:

- a. Sampling methods including, identification of sampling equipment, purging procedures, and decontamination procedures to be used;
- b. Criteria for selecting appropriate sampling locations, depths, etc.;

- c. Criteria for providing a statistically sufficient number of sampling sites;
- d. Methods for measuring all necessary ancillary data;
- e. Criteria for determining conditions under which sampling should be conducted;
- f. Criteria for identifying which parameters are to be measured, and criteria for determining where specific parameters will be measured;
- g. Criteria for identifying the type of sampling (e.g., composites vs. grabs) and number of samples to be collected;
- h. Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;
- i. Methods and documentation of field sampling operations and procedures, including:
 - (1) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters and adsorbing reagents);
 - (2) Procedures and forms for recording the exact location, sampling conditions, sampling equipment and visual condition of samples;
 - (3) Documentation of specific sample preservation method;
 - (4) Calibration of field devices;
 - (5) Collection of replicate samples;
 - (6) Submission of field-biased blanks, where appropriate;

- (7) Potential interferences present at the facility;
 - (8) Field equipment listing and sample containers;
 - (9) Sampling order; and
 - (10) Decontamination procedures.
- j. Selection of appropriate sample containers;
 - k. Sample preservation methods; and
 - l. Chain-of-custody procedures, including:
 - (1) Standardized field tracking reporting forms to establish sample custody in the field prior to and during shipment; and
 - (2) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

- a. Selecting appropriate field measurement locations, depths, etc.;
- b. Providing a statistically sufficient number of field measurements;
- c. Measuring all necessary ancillary data;
- d. Determining conditions under which field measurements should be conducted;
- e. Determining which media are to be addressed by appropriate field measurements (e.g., ground water, air, soil, sediment, etc.);

- f. Determining which parameters are to be measured and where;
- g. Selecting the frequency of field measurement and length of field measurements period; and
- h. Documenting field measurement operations and procedures, including:
 - (1) Procedures and forms for recording raw data and the exact location, tidal conditions, time, and sampling conditions;
 - (2) Calibration of field devices;
 - (3) Collection of replicate measurements;
 - (4) Submission of field-biased blanks, where appropriate;
 - (5) Potential interferences present at the facility;
 - (6) Field equipment listing; and
 - (7) Decontamination procedures.

4. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

- a. Chain-of-custody procedures, including:
 - (1) Certification that all samples obtained pursuant to this Order for analysis will be delivered to a responsible person at the recipient laboratory who is authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;

- (2) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracing report sheets; and
 - (3) Specification of chain-of-custody procedures for sample handling, storage, and dispersement for analysis.
- b. Sample storage procedures and storage times;
 - c. Sample preparation methods;
 - d. Analytical procedures, including:
 - (1) Scope and application of the procedure;
 - (2) Sample matrix;
 - (3) Potential interferences;
 - (4) Precision and accuracy of the methodology; and
 - (5) Method detection limits.
 - e. Calibration procedures and frequency;
 - f. Data reduction, validation, and reporting;
 - g. Internal quality control checks, laboratory performance, and systems audits and frequency, including:
 - (1) Method blank(s);
 - (2) Laboratory control sample(s);
 - (3) Calibration check sample(s);
 - (4) Replicate sample(s);
 - (5) Matrix-spiked sample(s);

- (6) "Blind" quality control;
- (7) Control charts;
- (8) Surrogate samples;
- (9) Zero and span gases; and
- (10) Reagent quality control checks.

B. Data Management Plan

A Data Management Plan shall be developed and initiated to document and track investigation data and results. This plan shall identify and establish data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation.

1. Data Record

The data record shall include the following:

- a. Unique sample or field measurement code;
- b. Sampling or field measurement location including surveyed horizontal coordinates and elevation of the sample location, and sample or measurement type;
- c. Sampling or field measurement raw data;
- d. Laboratory analysis ID number;
- e. Result of analysis (e.g., concentration);
- f. Elevations of reference points for all ground water level measurements, including water level elevation, top of casing elevation, and ground surface elevation; and

- g. Magnetic computer records of all ground water, soil, surface water, and sediment analytical data meeting the format specifications of the US EPA Region 10 groundwater data management system.

2. Tabular Displays

The following data shall be presented in tabular displays, as appropriate:

- a. Unsorted (raw) data;
- b. Results for each medium and each constituent monitored;
- c. Data reduction for statistical analysis;
- d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and
- e. Summary data.

3. Graphical Displays

At a minimum, the following data shall be presented in graphical formats (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three dimensional graphs, etc.):

- a. Displays of sampling location and sampling grid;
- b. Identification of boundaries of sampling area and areas where more data are required;
- c. Displays of concentrations of contamination at each sampling location;
- d. Displays of geographical extent of contamination;
- e. Areal and vertical displays of contamination concentrations, concentration averages, and concentration maxima, including isoconcentration maps

for contaminants found in environmental media at the Facility;

- f. Illustrations of changes in concentration in relation to distance from the source, time, depth, or other parameters;
- g. Identification of features affecting intramedia transport and identification of potential receptors;
- h. For each round of groundwater level measurements, maps showing the distribution of head measurements in each aquifer at a scale of one inch equals 50 feet and a contour interval of one-half foot; and
- i. For each well, provide a hydrograph that shows the distribution of water level measurements taken during the RFI for the time interval of the investigation.

C. Data Reporting

Permittee shall provide notification of availability to EPA and Ecology of all data obtained pursuant to this HSWA permit within thirty (30) days of receipt by Permittee, or after completion of quality assurance/quality control activities, if applicable. This notification requirement shall also apply to any other information obtained from activities conducted, or data obtained, that may influence activities pursuant to this HSWA permit.

ATTACHMENT C - SCOPE OF WORK FOR CORRECTIVE MEASURE STUDY

PURPOSE

The purpose of this Corrective Measure Study (CMS) is to develop and evaluate corrective action alternatives and to recommend corrective measure(s) to be taken at the Facility.

SCOPE

The scope of the CMS will depend on the needs at the Facility as determined by the RFI; EPA may determine that an abbreviated CMS is sufficient for the Facility. Deviations from this scope of work may be made only with prior Agency approval, based on the findings of the RFI. In general, the CMS will consist of the following four tasks:

TASK 1: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVES

Based on the results of the RFI, Permittee shall identify, screen, and develop the alternatives for removal, containment, treatment, and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Permittee shall submit an update to the information describing the current situation at the Facility and the known nature and extent of the contamination as documented by the RFI. The Permittee shall also make a Facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and identify technologies which are applicable at the Facility. The Permittee shall screen corrective measure technologies and any supplement technologies to eliminate those that may prove

infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and Facility-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Facility, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Facility Characteristics

Facility data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by Facility characteristics should be eliminated from further consideration.

2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by waste characteristics at the Facility may be eliminated from consideration. Waste characteristics particularly affect the feasibility of on-facility methods, direct treatment methods, and land disposal.

3. Technology Limitations

During the screening process the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process.

C. Identification of Corrective Measure Alternatives

The Permittee shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of corrective measure technologies. The Permittee shall rely on engineering practice to determine which of the identified technologies appear most suitable for the facility. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all facility problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies.

TASK 2: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes through the initial screening in Task 1 and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health, and institutional concerns. The Permittee shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each corrective measure alternative which includes, but is not limited to, an evaluation of the following factors:

1. Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability, and safety.

a. The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:

i) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as

containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or facility characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technologies, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:

i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activity should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The

Permittee should evaluate: whether the technologies have been used effectively under similar conditions; whether the combination of technologies have been used together effectively; whether failure of any on technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the Facility.

- c. Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response;
 - i) Constructability is determined by conditions both internal and external to the Facility conditions and include such items as location of underground utilities, depth to water table, heterogeneity of subsurface materials, and location of the Facility (e.g., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-facility treatment or disposal facilities; and
 - ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure; and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.
- d. The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

The Permittee shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the Facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short and long-term beneficial and adverse effects of the response alternative; adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

The Permittee shall assess each alternative in terms of the extent of which it mitigates short and long-term exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-facility, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and their reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to the Agency.

4. Institutional

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative shall be assessed.

B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative (including estimates for each

phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

TASK 3: JUSTIFICATION AND RECOMMENDATION OF CORRECTIVE MEASURES

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Agency will select the corrective measure(s) to be implemented based on the results of Tasks 2 and 3. At a minimum, the following criteria will be used to justify the final corrective measure(s).

A. Technical

1. Performance -- Corrective measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
2. Reliability -- Corrective measures which do not require frequent or complex operation and maintenance activities, and have been proven effective under waste and Facility conditions similar to those anticipated will be given preference;
3. Implementability -- Corrective measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
4. Safety -- Corrective measures which pose the lowest threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

Corrective measures must comply with existing Agency criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure over time are preferred.

C. Environmental

Corrective measures posing the lowest adverse impact (or greatest improvement) to the environment over the shortest period of time will be favored.

TASK 4: REPORTS

The Permittee shall prepare a Corrective Measure Study Report presenting the results of Tasks 1 through 3 and recommending a corrective measure alternative.

A. The Report shall, at a minimum, include:

1. A description of the Facility
 - a. Facility topographic map and preliminary layouts
2. A summary of the corrective measure(s):
 - a. Description of the corrective measure or measures and rationale for selection;
 - b. Performance expectations, including an evaluation of the overall protectiveness of human health and the environment, ability to attain the corrective action objectives, ability to control the source(s) of release(s), and an assessment of short-term and of long-term reliability and effectiveness including, but not limited to, the methodology used to estimate the short-term and long-term reduction of toxicity, mobility, or volume of waste and the resulting estimate;
 - c. Preliminary design criteria and rationale, including an estimate and analysis of quantity, volume, and/or toxicity of the waste generated including, but not

- limited to, contaminated soil, sludge, and groundwater, and methods to minimize the volume, toxicity, and/or mobility of the waste to be generated;
- d. General operation and maintenance requirements; and
 - e. Long-term monitoring requirements.
3. A summary of the RFI and impact on the selected corrective measure or measures:
- a. Field studies (groundwater, surface water, soil, air); and
 - b. Treatability studies (bench scale, pilot scale).
4. Design and Implementation Precautions:
- a. Special technical problems;
 - b. Additional engineering data required;
 - c. Permits and regulatory requirements, including an assessment of how institutional and legal requirements including federal, State, or local environmental or public health standards, regulations, and/or ordinances will affect the design, operation, and timing of each corrective measure studied;
 - d. Access, easement, right-of-way;
 - e. Health and safety requirements; and
 - f. Community relations activities.
5. Cost Estimates and Schedules:
- a. Capital cost estimate;
 - b. Operation and maintenance cost estimate; and
 - c. Project schedule (design, construction, operation).

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6. A recommendation as to which corrective measure(s), in the Permittee's opinion, are the most appropriate and the rationale for such recommendation.

**ATTACHMENT D - SCOPE OF WORK FOR THE CORRECTIVE MEASURE
IMPLEMENTATION**

PURPOSE

The purpose of the Corrective Measure Implementation (CMI) program is to design, construct, operate, maintain, and monitor the performance of the corrective measure(s) selected to protect human health and the environment.

SCOPE

The scope of the Corrective Measure Implementation Workplan will depend on the needs of the Facility. Deviations from this Scope of Work may be made only with prior Agency approval, based on the nature of the selected Corrective Measure. In general, the Corrective Measure Implementation program will consist of the following four tasks:

TASK 1: CORRECTIVE MEASURE IMPLEMENTATION PLAN

The Permittee shall prepare a Corrective Measure Implementation Plan. This plan will include the development and implementation of several plans, which require concurrent preparation. It may be necessary to revise plans as the work is performed to focus efforts on a particular problem. The Program Plan includes the following:

A. Program Management Plan

Permittee shall prepare a Program Management Plan which will document the overall management strategy for performing the design, construction, operation, maintenance, and monitoring of corrective measure(s). The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation. The Program Management Plan will also include a description of qualifications of key personnel directing the Corrective Measure Implementation program, including contractor personnel.

B. Community Relations Plan

The Permittee shall revise the Community Relations Plan to include any changes in the level of concern or information needs of the community for design and construction activities.

1. Specific activities which must be conducted during the design stage include the following:
 - a. Revise the Public Involvement Plan to reflect knowledge of citizen concerns and involvement at this stage of the process; and
 - b. Prepare and distribute a public notice and an updated fact sheet at the completion of engineering design.
2. Depending on citizen interest, specific activities to be conducted during the construction stage could range from group meetings to fact sheets on the technical status of the project.

TASK 2: CORRECTIVE MEASURE DESIGN

A. Design Plans and Specifications

The Permittee shall develop clear and comprehensive design plans and specifications which include, but are not limited to, the following:

1. Discussion of the design strategy and the design basics, including:
 - a. Compliance with all applicable or relevant environmental and public health standards; and
 - b. Minimization of environmental and public impacts.
2. Discussion of the technical factors of importance including:
 - a. Use of currently accepted environmental control measures and technology;
 - b. The constructability of the design; and

- c. Use of currently acceptable construction practices and techniques.
3. Description of assumptions made and detailed justification for these assumptions;
4. Discussion of the possible sources of error and references to possible operation and maintenance problems;
5. Detailed drawings of the proposed design;
6. Tables listing equipment and specifications;
7. Appendices including:
 - a. Sample calculations (one example presented and explained clearly for significance of unique design calculations);
 - b. Results of laboratory or field tests.

B. Operation and Maintenance Plan

The Permittee shall prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the corrective measure. The plan shall be composed of the following elements:

1. Description of potential operating problems:
 - a. Description of analysis of potential operation problems;
 - b. Sources of information regarding problems; and
 - c. Common and/or anticipated remedies.
2. Description of alternate operation and maintenance:
 - a. Should systems fail, alternate procedures to prevent undue hazard; and

- b. Analysis of vulnerability and additional resource requirements should a failure occur.
3. Safety Plan:
 - a. Description of precautions, or necessary equipment, etc., for facility personnel; and
 - b. Safety tasks required in event of systems failure.
4. Description of equipment; and
 - a. Equipment identification;
 - b. Installation of monitoring components;
 - c. Maintenance of facility equipment; and
 - d. Replacement schedule for equipment and installed components.
5. Records and reporting mechanisms required.
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Records for operating costs;
 - d. Mechanism for reporting emergencies; and
 - e. Personnel and maintenance records.

A Draft Operation and Maintenance Plan shall be submitted simultaneously with the Prefinal Design Document required by Task II.F.6 of this Attachment, and the Final Operation and Maintenance Plan shall be submitted simultaneously with the Final Design Documents.

C. Project Schedule

The Permittee shall develop a Project Schedule for construction and implementation of the corrective measure(s) which identify timing for initiation and completion of all critical path tasks. The Permittee shall specifically identify dates for completion of the project and major interim milestones. An Initial Project Schedule shall be submitted simultaneously with the Prefinal Design Document submission and the final Project Schedule with the Final Design Document.

D. Construction Quality Assurance Objectives

The Permittee shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to, the following: responsibility and authority, personnel qualifications, inspection activities, sampling requirements, and documentation.

E. Health and Safety Plan

The Permittee shall develop the Health and Safety Plan to address the activities to be performed at the Facility to implement the corrective measure(s).

F. Design Phases

The design of the corrective measure(s) should include the phases outlined below.

1. Preliminary Design

The Permittee shall submit the preliminary design when the design effort is approximately 30 percent complete. At this stage, Permittee shall have field verified the existing conditions of the Facility. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide operable and usable corrective measure(s). Supporting data and documentation shall be provided with the design documents, defining the functional aspects of the program. The preliminary construction drawings by the Permittee shall reflect organization and

clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. The Permittee shall include with the preliminary submission, the design calculations which reflect the same percentage of completion as the designs they support.

2. Intermediate Design

Complex project design may necessitate review of the design documents between the preliminary and the prefinal/final design. At its discretion, EPA may require design review at 60 percent completion of the project. The intermediate design submittal should include the same elements as the prefinal design.

3. Correlating Plans and Specifications

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the Permittee shall:

- a. Coordinate and cross-check the specifications and drawings; and
- b. Complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

These activities shall be completed prior to the 95 percent prefinal submittal to EPA.

4. Equipment Start-up and Operator Training

The Permittee shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up, and operation of the treatment systems, and training covering appropriate operations procedures once the start-up has been successfully accomplished.

5. Additional Studies

Corrective Measure Implementation may require additional studies to supplement the available technical data. At the direction of the Agency for any such studies required, the Permittee shall furnish all services, including field work as required, materials, supplies, plant, labor, equipment, investigations, studies and supervision. Sufficient sampling, testing, and analysis shall be performed to optimize the required treatment and/or disposal operations and systems. There shall be an initial meeting of all principal personnel involved in the development of the program. The purpose will be to discuss objectives, resources, communication channels, roles of personnel involved, orientation of the facility, etc. The interim report shall present the results of the testing with the recommended treatment or disposal systems (including options). A review conference shall be scheduled after the interim report has been reviewed by all interested parties. The final report of the testing shall include all data taken during the testing and a summary of the results of the studies.

6. Prefinal and Final Design

If required by Agency, the Permittee shall submit the prefinal/final design documents in two parts. The first submission shall be at 95 percent completion of design (i.e., prefinal). After approval of the prefinal submission, the Permittee shall execute the required revisions and submit the final documents 100 percent complete with reproducible drawings and specifications.

The prefinal design submittal shall consist of the Design Plans and Specifications, Operation and Maintenance Plan, Capital and Operating and Maintenance Cost Estimate, Project Schedule, Quality Assurance Plan, and Specifications for the Health and Safety Plan.

The final design submittal consists of the Final Design Plans and Specifications (100 percent complete), the Permittee's Final Construction Cost Estimate, the final

Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan specifications. The quality of the design documents should be such that the Permittee would be able to include them in a bid package and invite contractors to submit bids for the construction project.

TASK 3: CORRECTIVE MEASURE CONSTRUCTION

Following Agency approval of the final design, the Permittee shall develop and implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that the completed corrective measure(s) meets or exceeds all design criteria, plans, and specifications. The CQA plan is a facility specific document which must be submitted to the Agency for approval prior to the start of construction. At a minimum, the CQA plan should include the elements summarized below. Upon Agency approval of the CQA plan, the Permittee shall construct and implement the corrective measure in accordance with the approved design, schedule, and the CQA plan. The Permittee shall also implement the elements of the approved Operation and Maintenance plan.

A. Responsibility and Authority

The responsibility and authority of all organizations (e.g., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measure(s) shall be described fully in the CQA plan. The Permittee must identify a CQA officer and the necessary supporting inspection staff.

B. Construction Quality Assurance Personnel Qualifications

The qualifications of the CQA officer and supporting inspection personnel shall be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

C. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the

corrective measure(s) shall be summarized in the CQA plan. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with all environmental requirements and include, but not be limited to, air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, the Permittee shall conduct the following activities.

1. Preconstruction Inspection and Meeting

Permittee shall conduct a preconstruction inspection and meeting to:

- a. Review methods for documenting and reporting inspection data;
- b. Review methods for distributing and storing documents and reports;
- c. Review work area security and safety protocol;
- d. Discuss any appropriate modifications of the construction quality assurance plan to ensure that facility-specific considerations are addressed; and
- e. Conduct a facility walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting shall be documented by a designated person and minutes of this meeting should be transmitted to all parties.

2. Prefinal Inspection

Upon preliminary project completion, the Permittee shall notify the Agency for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project facility. The

inspection is to determine whether the project is complete and consistent with the contract documents and the Agency-approved corrective measure(s). Any outstanding construction items discovered during the inspection will be identified and noted. Treatment equipment will be operationally tested by the Permittee. The Permittee will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final Inspection

Upon completion of any outstanding construction items, the Permittee shall notify the Agency for the purpose of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project facility. The prefinal inspection report will be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

D. Sampling Requirements

The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the project specifications should be presented in the CQA plan.

E. Documentation

Reporting requirements for CQA activities shall be described in detail in the CQA plan. This should include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records also should be presented in the CQA plan.

TASK 4: REPORTS

The Permittee shall prepare plans, specifications, and reports as set forth in Tasks 1 through 3 to document the design, construction, operation, maintenance, and monitoring of the corrective measure. The documentation shall include, but not be limited to, the following:

A. Progress

The Permittee shall provide EPA and Ecology with quarterly progress reports during the design and construction phases, and for operation and maintenance activities, containing:

1. A description and estimate of the percentage of the CMI completed;
2. Summaries of all findings;
3. Summaries of all changes in the CMI during the reporting period;
4. Summaries of all contacts with representatives of the local community, public interest groups or state government during the reporting period;
5. Summaries of all problems or potential problems encountered during the reporting period;
6. Actions being taken to rectify problems;
7. Changes in personnel during the reporting period;
8. Projected work for the next reporting period; and
9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

The Permittee shall provide the Agency with quarterly progress reports during implementation of the selected corrective measure(s), demonstrating the effectiveness of the corrective action program in accordance with the final Facility-specific

performance standards, and describing all operation and maintenance activities performed during the reporting period. This progress report shall include items 3 through 9 specified above in Task 4.A.

B. Draft

1. The Permittee shall submit a draft Corrective Measure Implementation Plan as outlined in Task 1.
2. The Permittee shall submit draft Construction Plans and Specifications, Design Reports, Cost Estimates, Schedules, Operation and Maintenance plans, and Study Reports as outlined in Task 2.
3. The Permittee shall submit a draft Construction Quality Assurance Program Plan and Documentation as outlined in Task 2.

C. Final

The Permittee shall finalize the Corrective Measure Implementation Plan, Construction Plans and Specifications, Design Reports, Cost Estimates, Project Schedule, Operation and Maintenance Plan, Study Reports, Construction Quality Assurance Program Plan/Documentation, and the Corrective Measure Implementation Report incorporating comments received on draft submissions.

1. At the completion of the construction of the project, Permittee shall submit a Corrective Measure Implementation Report to EPA and Ecology. The Report shall document that the project is consistent with the design specifications, and that the corrective measure is performing adequately. The Report shall include, but not be limited to, the following elements:
 - a. Synopsis of the corrective measure(s) and certification of the design and construction;
 - b. Explanation of any modifications to the plans and why these were necessary for the project;

- c. Listing of the criteria, established before the corrective measure was initiated, for judging the functioning of the corrective measure and also explaining any modification to these criteria;
- d. Results of Facility monitoring, indicating that the corrective measure will meet or exceed the performance criteria; and
- e. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report should include all of the inspection summary reports, inspection data sheets, problem identification and corrective measure reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specification (with justifying documentation), and as-built drawings.

ATTACHMENT E - INTERIM MEASURES REQUIREMENTS

The following conditions shall apply to the performance of interim measures at the Facility:

1. The Permittee shall continuously consider and evaluate information regarding releases at the Facility, and the nature and extent of contamination from hazardous wastes and/or hazardous constituents at or from the Facility, as learned in connection with performance of the RFI or other investigations. In the event the Permittee identifies an imminent and substantial endangerment to human health or the environment based on such information, the Permittee shall immediately notify EPA and Ecology orally, and shall notify EPA and Ecology in writing within seven (7) days, summarizing the immediacy and magnitude of such identified threats.
2. If the Agency determines that any release or threat of release of hazardous wastes, hazardous constituents, or hazardous substance(s) at or from the Facility presents an imminent and substantial endangerment to human health or the environment, then the Permittee shall formulate a set of interim or stabilization measures. This determination will be based on the Permittee's evaluation, and/or an independent evaluation by the Agency, of information indicating an imminent and substantial endangerment to human health or to the environment. Interim or stabilization measures shall be those which, when implemented, will mitigate the release or threat of release, or which can effectively mitigate the impact on receptors affected by such releases. To the maximum extent practicable, interim and stabilization measures should be consistent with and capable of being integrated into long term corrective measures at the Facility. The Permittee shall prepare and submit within twenty-one (21) days, or by such earlier or later date as may be required by the Agency, an interim measures ("IM") workplan to address the release or threat of release that presents an imminent and substantial endangerment to human health or the environment. This workplan shall include:
 - (a) Interim Measure Objectives;
 - (b) A Health and Safety Plan;
 - (c) A Public Involvement (or Community Relations) Plan;

- (d) A Data Collection Quality Assurance Plan;
 - (e) A Data Management Plan;
 - (f) Design and Specifications;
 - (g) An Operation and Maintenance Plan;
 - (h) A Project Schedule;
 - (i) An Interim Measure Construction Quality Assurance Plan;
- and
- (j) Reporting Requirements.
3. Upon acceptance or modification by the Agency of an IM Work Plan, the Permittee shall commence work and implement the tasks required by the IM Plan according to the Project Schedule included therein. The Permittee shall implement these tasks in accordance with the requirements and specifications stated in the IM Work Plan as accepted or modified by the Agency.
4. Within thirty (30) days after the effective date of this HSWA permit, or by such earlier or later date as may be required by the Agency, the Permittee shall submit to the Agency for its review and approval, and to Ecology, a plan to ensure that all trucks loaded with hazardous wastes that are parked on the Permittee's property will be parked within secondary containment. The Permittee may comply with this requirement through operational controls or construction projects, or both. This plan shall provide the design and construction specifications and operation and maintenance requirements and schedules for any design, construction and maintenance that will be implemented to fulfill this requirement.
5. If the Permittee elects to perform an interim or stabilization measure, and the Agency has not determined that a release or threat of release of hazardous wastes or hazardous constituents at or from the Facility may present an imminent and substantial endangerment to human health or the environment, then the Permittee shall submit a written request to the Agency for review and approval of the proposed action, unless emergency action is required. Any interim or stabilization measures must be in the public interest and, to the maximum extent practicable, be consistent with future corrective actions. The Permittee shall secure prior written Agency approval to perform any interim or stabilization measure or other work at the Facility, unless emergency action is required. This requirement

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shall not apply to normal maintenance and operations activities, to the extent that these activities do not affect interim, stabilization or corrective measures, or investigations carried out pursuant to this HSWA permit.

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ATTACHMENT F - FACILITY LEGAL DESCRIPTION

This Attachment describes the Hanford Federal Facility which covers parts of Benton, Franklin, Adams and Grant Counties in southeastern Washington State. Included in this attachment is a map of the facility and description of the Hanford Federal Facility within the four-county area.

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**ATTACHMENT G³ -
Corrective Action Requirements for
RCRA Past Practice Units**

CHAPTER 1

100-NR-1 Operable Unit

The 100-NR-1 Operable Unit (OU) includes solid waste management units and one time spill sites which are undergoing corrective action. These units are subject to corrective action pursuant to 40 CFR 264.101. As prescribed by condition III.B.3.a of this permit, this Chapter sets forth the corrective action requirements for the 100-NR-1 OU.

G.1.A FINAL REMEDY - COMPLIANCE WITH APPROVED CORRECTIVE MEASURES STUDY

The Permittees shall complete corrective action at these units by compliance comply with all sections set forth in the approved Corrective Measures Study (CMS) for the 100-NR-1 Operable Units, DOE/RL-95-111, Rev. 0. Enforceable portions of the CMS are listed below, and hereby incorporated by reference into this permit; all subsections, figures, and tables included in these portions are also enforceable unless stated otherwise;

Section 7.0	Comparative Analysis of Remedial Alternatives
Section 9.0	Recommended Corrective Measures
Section 9.1	RCRA Corrective Action Performance Standards
Section 9.2.	Corrective Measure for NR-1
Section 9.2.1	Recommended Action and Justification
Section 9.2.2	Cleanup Standards
Section 9.2.3	Cost
Section 9.2.4	Schedule
Section 9.2.5	Personnel Training

³Attachment G added via permit modification dated September 17, 1998.

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Appendix A Applicable or Relevant and Appropriate Requirements
Appendix B Cost Estimates
Appendix C Integration of Decommissioning and Remedial Activities
for the 100-N Area

CHAPTER 2

100-NR-2 Operable Unit

The 100-NR-2 Operable Unit (OU) is the groundwater below 100-NR-1 OU which has been contaminated as a result of past intentional disposal operations and unintentional spills of hazardous substances. As prescribed by condition III.B.3.b of this permit, this Chapter sets forth the corrective action requirements for the 100-NR-2 OU.

G.2.A FINAL REMEDY - COMPLIANCE WITH APPROVED CORRECTIVE MEASURES STUDY

The Permittees shall comply with all sections set forth in the Corrective Measures Study (CMS) for the 100-NR-2 Operable Units, DOE/RL-95-111, Rev. 0. Enforceable portions of the CMS are listed below; all subsections, figures, and tables included in these portions are also enforceable unless stated otherwise;

Section 7.0	Comparative Analysis of Remedial Alternatives
Section 9.0	Recommended Corrective Measures
Section 9.1	RCRA Corrective Action Performance Standards
Section 9.3	Corrective Measure for NR-2
Section 9.3.1	Recommended Action and Justification
Section 9.3.2	Cleanup Standards
Section 9.3.3	Cost
Section 9.3.4	Schedule
Section 9.3.5	Personnel Training
Appendix A	Applicable or Relevant and Appropriate Requirements
Appendix B	Cost Estimates
Appendix C	Integration of Decommissioning and Remedial Activities for the 100-N Area

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