

Unit Managers' Meeting: 300 Areas Remedial Action Unit/Source Operable Units

Owen Robertson..... DOE-RL, RP (H0-12)  
Mike Thompson..... DOE-RL, RP (H0-12)

Mike Goldstein..... EPA (B5-01)

Brenda Jentzen..... WDOE (Kennewick) (B5-18)

Wayne Soper..... WDOE (Kennewick) (B5-18)

John Price..... WDOE (Kennewick) (B5-18)

Lynn Albin..... Washington Dept. of Health

Gail Laws..... Washington Dept. of Health

John April..... BHI (L6-06)

Rich Carlson..... BHI (H0-17)

Ella Feist..... CHI (H9-03)

Frank Corpuz..... BHI (H0-17)

Larry Hulstrom..... BHI (H9-03)

Lorna Dittmer..... BHI (H0-02)

Jessica Kious..... BHI (H0-17)

Jeff Lerch..... CHI (L6-06)

Jenifer Linville..... CHI (H9-01)

Walter Remsen..... BHI (H0-17)

Jack Donnelly..... BHI (H0-17)

Andrew Rogers..... BHI (L6-06)

Michael Wetzler..... BHI (H0-17)

Joan Woolard..... BHI (H0-02)

Administrative Record..... BHI (H0-09) 2 copies

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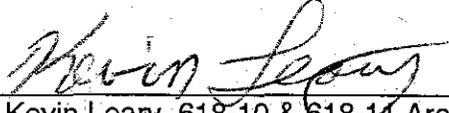
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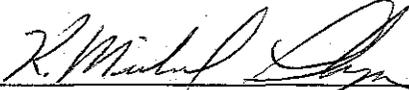
Meeting Minutes Transmittal/Approval  
300 Area Unit Managers' Meeting  
Remedial Action and Waste Disposal Unit/Source Operable Unit  
3350 George Washington Way, Richland, Washington  
July 2002

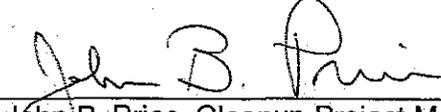
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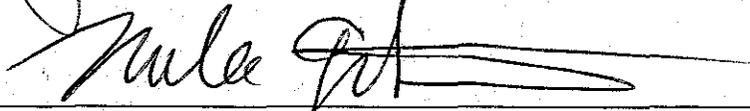
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APPROVAL:  Date 8/21/02  
Owen Robertson, 300-FF- 1 & 300-FF-2 Area Unit Managers, RL (A3-04)

APPROVAL:  Date 10/2/02  
Kevin Leary, 618-10 & 618-11 Area Unit Manager, RL (A6-38)

APPROVAL:  Date 8/21/02  
Mike Thompson, 300-FF-5 Area Unit Manager, RL (A5-13)

APPROVAL:  Date 9/12/02  
John B. Price, Cleanup Project Manager, WDOE (B5-18)

APPROVAL:  Date 8/21/02  
Mike L. Goldstein, 300 Aggregate Area Unit Manager, EPA (B5-01)

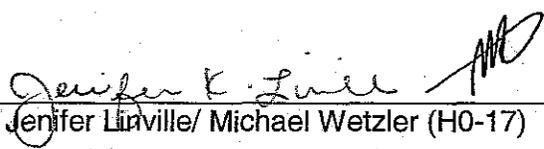
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Meeting minutes are attached. Minutes are comprised of the following:

Attachment 1 -- Agenda  
Attachment 2 -- Attendance Record  
Attachment 3 -- 300 Area Meeting Minutes – July 25, 2002  
Attachment 4 -- Previous Open Action Items List  
Attachment 5 -- Air Monitoring Plan for the 300-FF-2 Waste Sites Remedial Action  
Attachment 6 -- Map showing proposed staging pile area

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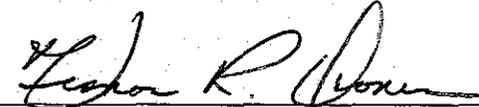
Prepared by:

  
Jennifer Linnell/ Michael Wetzler (H0-17)

Date

9/17/02

Concurrence by:

  
Vern Dronen, Project Manager  
BHI Remedial Action and Waste Disposal Project (H0-17)

Date

10/3/02

# UNIT MANAGERS MEETING AGENDA

3350 GWW 1B45

July 25, 2002, 8:00 – 11:30 a.m.

## 300 Area

### **Administrative (8:00 – 9:00)**

- Action Item List
- Meeting minutes status
- Next UMM is August 20, 2002, 1:30 – 3:30, 3350 GWW (1B45)

### **300-FF-1 Remedial Action (9:00 – 10:30)**

- 618-4 Remediation Status
- Drum
- Soil/Debris

### **300-FF-2 (10:30 – 11:00)**

- Outside The Fence Design
  - Air Monitoring Plan for inclusion in the minutes
- RDR/RAWP/SAP - issuance
- Kd/Leach Study – status
- Uranium Conceptual Site Model
- Unrestricted Land Use estimate status

### **300-FF-5 (11:00 – 11:30)**

- 300-FF-5 O&M Plan / SAP
- 300 Area Shoreline Study
- Plan for 300-FF-1 North and South Process Ponds

### **Meeting Minutes Schedule**

- Draft – 1 week
- Distribute – 1 Day
- Review – 1 week
- Incorporate – 1 week
- Finalize – Next UMM

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300 Area UMM sign In July 25, 2002

John Price	ECY	736-3029
Richard Carlson	BHI	372-9632
Mike Goldstein	EPA	<del>376</del> 376-4919
Kevin Leary	DOE/WMD	373-7285
John April	BHI	3-3008
Owen Robertson	DOE-RL	373-6295
Mike Casbon	BHI	372-9218
Frank Corpuze	BHI	531-0625
Alex Terrara	DOE/RL-CLO	376-6222
Pam Doctor	BHI	372-9107
Scott Parnell	CHI	370-9362
Ella Feist	CHI	372-9140
Roger Oviak	CHI	375-9426
K. Michael Thompson	DOE-RL	373-0750
Larry Hulstrom	FH	

**MEETING MINUTES  
REMEDIAL ACTION AND WASTE DISPOSAL  
UNIT MANAGER'S - 300 AREA  
Thursday, July 25, 2002  
3350 GWW, 1B45, 8:00 - 10:30 a.m.**

**Review of Open Action Item List: No open action items. Minutes from previous meetings are awaiting signature by Mike Thompson (DOE).**

**The next UMM is Wednesday, August 21, 2002, 1:30-3:30 p.m., 3350 GWW/1B45**

**300-FF-1 OPERABLE UNIT ITEMS**

- **618-4 Burial Ground Remediation Status.** John April (BHI) described remediation activities at the 618-4 Burial Ground. The entire burial ground (except the area under the haul road) was excavated to verify that there were no more drums. The project did not encounter an additional cache of drums, but did encounter a few scattered uranium-oxide drums. The project is continuing to excavate non-native soil. The project is also continuing to dig towards the road for an indication of whether or not additional drums may be encountered.

John Price (Ecology) asked what the original design excavation was based on. Rich Carlson (BHI) replied that design excavation limits were based on ground-penetrating radar (GPR), electromagnetics (EM), aerial photography, and test pits. John Price (Ecology) asked about characterization of the area under the haul road with an EM device to see if there are any more anomalies. The project will continue to use the haul road through the end of excavation. If non-native materials are found, the area under the road will be excavated to confirm there are no more drums.

A total of 449 drums have been removed from the design location during 2002 operations. In addition, the project has filled 59 drums with waste sorted from the soil during 2002 operations. The waste streams consisted of depleted uranium chips immersed in oil, depleted uranium oxide, or other materials. Including drummed waste remaining from 1998 operations, 63 drums are currently staged within the area of concern pending characterization and/or designation. It is anticipated that most of the drums will be shipped to the Environmental Restoration Disposal Facility (ERDF) for disposal. Fifteen of the drums will be repackaged for shipment to Central Waste Complex in mid-August because the contents do not meet the ERDF waste acceptance criteria. Drummed waste will continue to be generated until the excavation and sorting process is complete at the burial ground. The target for disposal of all drummed waste is mid-September.

After excavation of the drummed waste was complete, excavation of the soil and debris was initiated. Lead processing quickly became an issue associated with the

excavation. As the excavation process was started, all lead debris (regardless of size) was removed manually during the sorting process. The remaining soil and debris was stockpiled and sampled for land disposal restricted (LDR) metals per the Sampling and Analysis Plan (SAP). Initial laboratory analysis of soil samples from the initial soil stockpiles failed total lead, then Toxicity Characteristic Leachate Procedure (TCLP) screening analysis, even after all the lead debris had been removed. As it turned out, the white powder encountered throughout the burial ground was discovered to be lead. It was recognized that soils containing white powder were going to fail TCLP and would require treatment regardless of whether or not small pieces of lead debris were hand removed. The effort required to sort and remove small lead debris was recognized as a health and safety issue for workers in Level B personal protective equipment (PPE) and high outdoor temperatures this summer. Therefore, the project requested that large lead debris be continued to be removed for macroencapsulation, but that smaller lead debris be considered as part of the soil matrix and be treated via microencapsulation.

The additional soil sorting process is described in the 300 Area Remedial Design Report/Remedial Action Work Plan (RDR/RAWP). Mike Goldstein's (EPA) concurrence is needed on 300 Area RDR/RAWP language and treatment plan for ERDF. Owen Robertson (DOE) is sending a letter to Mike Goldstein (EPA) for this approval. When concurrence is received from EPA, ERDF will begin treatment.

The project estimates approximately 5,000 tons of lead-containing material (LDR) present in the 618-4 Burial Ground. 3,600 tons of lead contaminated soil is planned to be treated this year at ERDF and 1,400 tons are expected to be treated next year. Due to the complications of processing the lead contaminated materials, completion of remediation at the 618-4 Burial Ground has been pushed to November.

With complete excavation of the entire burial ground (quick turnover of the wastes, not sorting for LDR) all unknowns that would require work in level B PPE were addressed and personnel were switched to Level D PPE. John April (BHI) commented that the burial ground turnover approach is useful and should be considered for future burial ground remediation. Mr. April also commented on negative exposure assessment for asbestos and lead. Mike Goldstein (EPA) asked if the burial ground turnover approach has been used before. John April (BHI) said no, typically debris are sorted as the site is excavated, not afterwards. With turnover, there is a dig and expose approach. The sorting issue with hazardous debris is that it takes a lot of time. John April (BHI) commented that the visual observation is the best approach and thinks photos would be helpful for the cleanup verification process (CVP) process. Mike Goldstein (EPA) discussed that CVPs do not answer all cleanup questions and that they're written to meet certain verification standards as required in the RDR/RAWP. He recommends building a record that no one will question by setting up a process to close out sites with a good record to reconstruct the process if necessary. The current CVP process is compliant with shipping requirements of the RDR/RAWP. Owen Robertson (DOE) suggested that

documentation detail follow the size or complexity of the site (i.e. large site - lots of documentation, detailed CVP).

### 300-FF-2 OPERABLE UNIT ITEMS

- ***Outside the Fence Design.*** Scott Parnell (CHI) announced that 12 sites are in the design process. The final design will be complete in the middle of August. The remediation approach is to excavate, sort, stockpile, sample, and dispose. Scott Parnell (CHI) will talk to John April (BHI) about the turnover approach. Mike Goldstein (EPA) has an issue with contaminant dilution in characterization by digging/mixing. He mentioned that bucket-by-bucket analysis leads to better characterization. Scott Parnell (CHI) also described the 618-5 Burial Ground staging pile locations as previously discussed with EPA. However, formal documentation of approval by EPA is required to use the staging piles. The area of contamination (AOC) for 618-5 Burial Ground will be the limits of the excavation. The limit for 618-4 Burial Ground is the Waste Information Data System boundary.

Rich Carlson (BHI) described the staging area – part of it is located over the 300 Area Process Trenches, which were transferred to Fluor Hanford (FH). He recommended using the identified area south of the burial grounds as the staging area in lieu of the original plan. Staging pile locations must be agreed upon by EPA. Meeting minutes will serve as approval for staging pile location. Mike Goldstein (EPA) wanted to keep the staging pile location as small as possible, and asked how verification and AOC boundaries would be affected. The AOC would be extended into an area that needs to be verified clean when all is done. Mike Goldstein (EPA) wanted brief documentation resolving his two issues and an explanation on how verification will be performed. A sampling mechanism is not defined at this time. Rich Carlson (BHI) and Scott Parnell (CHI) will define a procedure for siting staging piles in coordination with Jeff Lerch (CHI) and present it at a future UMM. An Air Monitoring Plan was included with meeting minutes.

- ***618-10 and 618-11 Burial Ground Status.*** The 618-10 and 618-11 Burial Grounds have been transitioned to FH. Dick Wilde (FH) should be notified of next UMM. Kevin Leary (DOE) described last month's meeting with the Hanford Waste Board in The Dalles. DOE is submitting an acquisition strategy - a new approach for EM 50. Four million dollars are expected from DOE Headquarters to do work on 618-10 and 618-11 Burial Grounds. Work will consist of investigating/deploying excavation technologies and caisson retrieval at the cold test facility. The project will go to an open bid contract and is a two year funded project. The project may entail hot spot removal at the 618-10 Burial Ground tritium and lithium targets. The general location of the hot spots has been determined by the Pacific Northwest National Laboratory (PNNL). The project could be awarded \$8-10M in the next five years. A request for proposal will originate from DOE next fall. John Price (Ecology) inquired about the status on the wells near the 618-10 Burial Ground. Mike Thompson (DOE)

reported that soil gas work would start in the coming weeks and that a report would be prepared by December.

A workshop will be scheduled to determine the best approach for a more refined path forward for site remediation at the 618-10 and 618-11 Burial Grounds. Mike Goldstein (EPA) recommended an appendix to the RDR/RAWP that will address more detailed milestones. Revision to the RDR/RAWP is scheduled for FY03.

- ***Unrestricted Land Use Estimate Status.*** A separate meeting will be organized to discuss unrestricted land use cost estimates. Mike Goldstein (EPA) needs to be briefed. The meeting is scheduled for Thursday, August 1, at 2:00 p.m. Mike Goldstein (EPA) gave an update regarding EPA's meeting with Richland and Benton County Planners. Mr. Goldstein (EPA) met with Pam Brown, the City of Richland representative to the Hanford Advisory Board (HAB). Mr. Goldstein provided the following feedback from his meeting with Pam Brown. There was confusion about 300 Area land use designation. Apparently, the City misunderstood that some of the 300 Area facilities are impeding remediation, will be demolished, and there will be no reuse of some of the existing facilities. There may be changes in the land use north of the Battelle campus; the City is considering rezoning the 300 Area accordingly. If the land use designation changes, the Tri-Parties may have to reconsider the cleanup end points.
- ***RDR/RAWP/SAP.*** The RDR/RAWP and SAP were signed off and sent to Owen Robertson (DOE) on July 24, 2002. Copies are in production and will be sent to EPA.
- ***Kd Leach Study.*** PNNL issued a draft Kd Leach Study for internal review, which is scheduled to go to DOE, the regulatory agencies, and independent technical reviewers in mid-August for review and comment.
- ***Uranium Conceptual Site Model.*** Mike Goldstein (EPA) requested a meeting to get the status on the conclusion of the hydraulic analysis and site dimensions analysis. Owen Robertson (DOE) may also need to be briefed. Mike Goldstein (EPA) wanted a status on the conceptual model in August before the results of the study are released and discuss the path forward (meeting scheduled for Thursday August 1, 1:30 p.m. to status conceptual model).

### **300-FF-5 OPERABLE UNIT ITEMS**

- ***300-FF-5 O&M Plan/SAP.*** Both documents are in place. Soil-gas work should happen within the next two weeks. Money will be carried over until next fiscal year. Bob Peterson (PNNL) is the lead on the 300-FF-5 O&M Plan.

- ***300 Area Shoreline Study.*** Most of the comments on the 300 Area Shoreline Study were addressed, but the results will raise more questions about what it means to have contaminated groundwater. The SAP will be developed by PNNL.

### 300 Area Unit Manager Meeting Action Items Log

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Date Complete	Status
02-01	Ted Poston (PNNL) Presentation on current 300 Area Shoreline Study for April UMM	Mike Thompson	April UMM	03/19/2002	04/16/2002		05/14/02	Presentation given by Ted Poston. Closed
02-02	Send draft Sitewide Institutional Controls Plan comments to RL to forward to EPA.	Ella Coenenberg	Mike Goldstein	04/16/2002				ERC provided to DOE. Ella Coenenberg (ERC) sent the draft of the comments on the Sitewide Institutional Controls Plan to John Sands (DOE), who will forward to Mike Goldstein (EPA). Rich Carlson (ERC) to do follow-up.
02-04	Send 618-4/5 Readiness Assessment presentations to RL to forward to EPA.	John April	Mike Goldstein Bob McLeod	04/16/2002			5/14/02	Closed. Readiness Assessment presentations for 618-4 and 618-5 Burial Grounds sent to Bob McLeod (DOE) and Mike Goldstein (EPA) via email on 5/1/2002.
02-05	Spill Reporting White Paper requires review by Mike Goldstein (EPA).	Mike Goldstein	Jeff Lerch	04/16/2002				
02-06	EPA Response to State of Oregon	Bryan Foley	Mike Goldstein	04/16/2002			5/14/02	EPA Response to State of Oregon – Bryan Foley (DOE) forwarded to Mike Goldstein (EPA); Mike Thompson (DOE) also has a groundwater related response that he will provide to Mike Goldstein (EPA).

## AIR MONITORING PLAN FOR THE 300-FF-2 WASTE SITES REMEDIAL ACTION

### 1.0 INTRODUCTION

The remedial action (i.e., cleanup) of twelve (12) 300-FF-2 waste sites has the potential-to-emit (PTE) radionuclides. This remedial action is being conducted under *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Records of Decision (RODs)* (EPA, 1996 and EPA 2001). Quantification of radioactive emissions, implementing best available radionuclide control technology (BARCT), and air monitoring have been identified as substantive requirements (i.e., applicable or relevant and appropriate requirements) for the remedial action. A BARCT compliance demonstration is determined by the regulatory agency on a case-by-case basis. These substantive requirements are according to *Washington Administrative Code (WAC) 246-247-040*. This plan presents compliance with those requirements.

### 1.1 PLANNED ACTIVITIES

The work scope includes remediation of three separate waste site groups consisting of burial grounds, dump sites, test facilities, and/or cribs (Table 1).

**Table 1. Summary of Waste Site Groups.**

Group	Waste Sites	General Location
1	300-8, 300-18, 600-47, 618-1, 618-2, 618-3, 618-8	Within and north of the 300 Area.
2	300-VTS, 618-7, 618-13	West of the 300 Area across Route 4.
3	316-4, 600-259	North of the 300 Area

General remedial action operations include excavating, sampling, sorting, size reducing, stockpiling, containerizing, loading, and transport of materials from the waste sites. Materials may include a wide range of chemically and/or radiologically contaminated soil, miscellaneous debris, buried equipment, and structural materials. In addition, this work scope includes performance of all operations and incidentals for the handling, processing, and staging of buried drums that may be encountered. Also included is test pitting and trenching that may be performed during remediation to further characterize the buried waste and/or determine the limits of the waste sites.

Excavated material will be sent primarily to the Environmental Restoration Disposal Facility (ERDF) for disposal. On a case-by-case basis, other approved disposal facilities may be used based on the specific waste stream designation.

#### **Soil and Miscellaneous Debris Excavation**

Scattered debris within some of the waste sites will be picked up by hand; however, standard construction equipment will be used for excavation, loading, and hauling. The loading of

contaminated material into waste containers may result in soil spilled on the waste containers and/or haul trucks. Haul trucks with loaded containers will enter a survey area where they will be screened to detect exterior contamination. A decontamination station will be established to decontaminate containers and haul trucks, as required. Waste containers and/or haul trucks will be decontaminated by conventional means such as brushing or wiping. Decontaminated trucks and containers will then proceed to the container transfer area where the transportation subcontractor will pick up the containers for transport to the ERDF.

### Drum Handling

It is not known whether drums are in the 618-1, 618-2, 618-3, and 618-7 Burial Grounds. To address the potential emission contributions from drummed waste handling at these sites, a conservative estimate was made that approximately 1008 drums will be encountered during remediation activities. The material contained in a cache of drums unearthed from the 618-4 Burial Ground (depleted uranium oxide powder and depleted uranium chips immersed in oil) was used as the basis for subsequent drummed waste evaluations in this AMP. Of the estimated total, 232 drums are assumed to contain depleted uranium oxide powder and 776 drums are assumed to contain depleted uranium chips immersed in oil). There are also an estimated 430 drums containing Zircaloy-2 in the 618-7 Burial Ground BHI (2002a). The information available on the zircaloy drums indicates there is little or no radiological constituents in the chips. Based on this information, it was determined that there would be little or no contribution to the TEDE and the chips were not analyzed.

If drums containing depleted uranium oxide or depleted uranium chips immersed in oil are encountered during excavation, they will be placed in an overpack at the dig face if their contents appear to be leaking. Otherwise, they will be moved to a drum inspection station for sampling and overpacking. To support physical characterization and sampling of the contents, all drum lids will be pierced and drum contents sampled in the inspection area. The drummed waste will subsequently be moved to a control area within the burial ground Area of Contamination (AOC), loaded onto flatbed trailers, and transported to the ERDF for interim staging or disposal. Table 2 presents the anticipated configuration of these two waste streams prior to and during transport to the ERDF.

**Table 2. 618-1, 618-2, 618-3, and 618-7 Burial Grounds Depleted Uranium Drummed Waste Summary.**

Item	Depleted Uranium Oxide	Depleted Uranium Chips/Oil
Count	232	776
Anticipated Configuration	Retrieved drum containing oxide powder will be pierced (to support inspection and sampling) and put into a larger steel overpack (unvented) after excavation.	Retrieved drums containing chips and oil will be pierced (to support inspection and sampling) and put into larger steel overpacks Nukfil™ vented or equivalent) Clean mineral oil will be added to the inner drum and overpack as needed to ensure chips are immersed. Overpack and inner drum will subsequently be put into a secondary steel overpack drum (unvented) for loading and transport.

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During the overpacking, a Nucfil™ vent or equivalent may be inserted into the middle overpack. The potential emissions from this activity are negligible compared with potential emissions from sampling and overpacking of approximately 1,008 drums. This activity (venting drums) assumes a release fraction of 2E-09 (A.W. Conklin 1999) resulting in a calculated potential-to-emit several orders of magnitude below that associated with sampling and overpacking the drums. Therefore, the venting of drums activity is accounted for in the sampling/overpacking potential-to-emit.

## 2.0 AIRBORNE SOURCE INFORMATION

There is a potential for radioactive airborne emissions to result from remediation activities and drum venting and sampling. Uranium is the primary isotope of at the waste sites included in the scope of this AMP. Other radiological isotopes may include cesium-137, cobalt-60, and strontium-90. Other isotopes may also be encountered during remedial actions. However, it is expected that the isotopic concentrations listed in Attachment 1 represent the upper bound of what will actually be found during remedial actions, and that the estimates provided here are conservative.

### 2.1 INVENTORY

The radionuclide annual possession quantities and subsequent potential emission calculations for the 300-FF-2 Burial Grounds are summarized in Attachment 1.

The drum inventory was developed based on sampling data obtained from the drums that have already been excavated from the 618-4 Burial Ground. It is assumed that 1% of the drums containing depleted uranium oxide will be breached (the entire drum contents is available for release). Also assumed is that 5% of the depleted uranium chips/oil drums will be breached. The inventory for the remainder of the drums is based on the volume of material to be sampled assuming that all the drums that are not breached are sampled.

The inventory of waste site material not contained in drums was based on subtracting the volume of the anticipated drums from the total volume of the burial ground. Due to unknown debris contents of the burial grounds, it was assumed that what were not drums was soil. The total waste site volumes used in this report were based on estimates in BHI Calculation No. 0300F-CA-N0003, Rev 0. The radionuclide concentration was developed based on previous soil sampling activities. It is conservatively assumed that the sites where no soil sampling occurred, the soil inventory is based on the earlier excavation activities in 618-4 Burial Ground (BHI 2002a).

To determine the potential-to-emit, the inventories were multiplied by release fractions according to the requirements from WAC 246-247-030 (21)(a). A release fraction of 1E-03 (for particulates and liquid) was applied to all soils, the uranium oxide powder samples, and the oil

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samples from the drums. A release fraction of  $1E-06$  (solids) was used for the uranium metal and tailings samples as previously agreed in meeting minutes dated April 16, 1998 (Woolard, 1998). A release fraction of 1.0 was used for gases.

The CAP88-PC model was used to determine the total effective dose equivalent, or annual unabated offsite dose for each group. The potential-to-emit (curies per year) were the input for the computer model, and the model generated the annual unabated dose. The CAP88-PC model summary and synopsis are presented in BHI Calculation No. 0300X-CA-V0014, Rev. 0 (BHI 2002b). The calculated total annual unabated offsite doses for the remedial actions of Groups 1, 2, and 3 are 2.80 mrem/yr., 5.06 mrem/yr., and  $5.31E-03$  mrem/yr. respectively. The distances to the maximally exposed individual, for Groups 1, 2, and 3 respectively, are 1,164 m East-Northeast (offsite), 1218 m East-Northeast (offsite), and 4720 m Southeast (offsite) of the remediation sites. There are no public receptors within the 300 Area at this time.

### **3.0 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY**

The following is the BARCT to be implemented during the 300-FF-2 Burial Grounds remedial action.

#### **3.1 DRUM VENTING FILTERS**

The venting filters that will be inserted in drums will be a Nucfil<sup>TM</sup> filter or equivalent that are considered BARCT for radioactive emissions at the Hanford Site.

#### **3.2 SAMPLING AND OVERPACKING**

The sampling activities will be conducted utilizing as low as reasonably achievable (ALARA) practices during the sampling/overpacking campaign. These practices include isolating each drum prior to sampling, ensuring each drum is stabilized (mineral oil added to the drum to cover the uranium chips) and utilizing safety precautions such as grounding equipment and non-sparking tools.

#### **3.3 APPLICATION OF DUST SUPPRESANTS**

The following describes the controls to be implemented during the excavation, sorting, size reduction, stockpiling, and bulk material loading:

- Water will be applied during excavation, sorting, size reduction, container loading, stockpiling, and backfilling processes to minimize airborne releases.
- Soil fixatives will be applied to any contaminated soils and debris(including stockpiles) that will be inactive for more than 24 hours.

- Fixatives will be applied to contaminated soils and debris (including stockpiles) that will be inactive less than 24 hours at the end of work operations, if the sustained windspeed is predicted overnight to be greater than 32.2 kph (20 mph) based on the Hanford Meteorological Station morning forecast. This will allow the project enough time, if necessary, to prepare for the application of dust control measures. If a soil fixative has already been applied and the soil will remain undisturbed, further uses of fixatives will not be needed. The fixatives or other controls will not be applied when the contaminated soils are frozen, or if it is raining, snowing, or other freezing precipitation is falling at the end of work operations.
- An entry will be made in the project logbook or equivalent when the forecast predicts sustained wind speeds of greater than 32.2 kph (20 mph) and dust control is to be applied at the end of the work shift.
- The haul trucks transporting bulk materials will be covered to contain the materials while in transit to the ERDF

#### 4.0 MONITORING

Air monitoring locations are dependent on configuration of the groups.

##### Group 1 (Figure 1):

During remediation of the waste sites 300-8, 618-1, 618-2, 618-3 and 618-8, monitoring activities will consist of using air monitoring stations N486, N487, N489, N527, and 300 Trench and one proposed new air monitoring station location. A new monitoring station, which is also used for Group 2, will be located Northeast of waste site 618-7. Three thermoluminescent dosimeters (TLDs) (2, 3, and 306) will be used.

For 600-47 the air monitoring stations to be used are N130 and two proposed new air monitoring stations located north of the site. In addition one proposed new TLD will be used.

Based on potential dose, size of the site, and the duration of remediation, monitoring activities for 300-18 will consist of using air monitoring stations N527 and N130. TLD 301 will also be used.

In summary, a total of 5 near facility air monitoring station locations (N130, N486, N487, N489, and N527), 3 proposed new near facility air monitoring station locations, and 1 Pacific Northwest National Laboratory air monitor (300 Trench) will be used for Group 1. These air monitors will be located upwind and downwind of the burial grounds. In addition 4 thermoluminescent dosimeters (TLDs), (2, 3, 301, and 306) and 2 proposed new TLDs located throughout the 300 Area will be utilized to supplement the air monitoring data.

Group 2 (Figure 1): Monitoring activities will consist of using a total of 4 proposed new near facility air monitoring stations that are located upwind and downwind of the burial grounds. In addition, 4 proposed new TLDs located around the waste sites will be utilized to supplement the air monitoring data.

Group 3 (Figure 2): Based on minimal potential dose, small size of waste sites, and the short duration of remediation, monitoring activities will consist of using a total of 2 proposed new near facility air monitoring stations that are located downwind of the burial grounds. In addition, 1 proposed new TLD located near the waste sites will be utilized to supplement the air monitoring data.

These air monitors/TLDs are the means/methods to measure emissions. The operation of these monitors/TLDs will follow the protocol established for these programs. The data from these monitors/TLDs will be included in the annual reports prepared for the Hanford Site.

Air monitor downtime will be minimized. If any one of the near facility air monitor stations for each group is out of operation for more than 48 hours during normal work operations (excluding weekends and holidays), the regulatory agency will be notified. A minimum number of air monitors must be operating for normal work operations, excavation and loading activities to continue at the site (see Table 3).

Group (Waste sites)	Total Number of Monitors	Minimum Number of Monitors*
1 (300-8, 618-1, 618-2, 618-3 and 618-8)	6	3
1 (600-47)	3	2
1 (300-18)	2	1
2 (300-VTS, 618-7 and 618-13)	4	3
3 (316-4 and 600-259)	2	1

\*Operations must cease if the number of operating monitors drops below this minimum number for greater than 48 hours.

## 5.0 REFERENCES

BHI, 2002a, *Determination of MAR for 300-FF-2 OU Sites*, No. 0300F-CA-N0003, Rev. 0, Bechtel Hanford Inc., Richland, Washington.

BHI, 2002b, *Air Emissions Calculation for Removal of Contaminant Material from 300-FF-2 OU Sites*, No. 0300X-CA-V0014, Rev. 0, Bechtel Hanford Inc., Richland, Washington.

EPA, 1996, *Record of Decision for the 300-FF-1 and 300-FF-5 Operable Units*, July 1996, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2001, *Interim Action Record of Decision for the 300-FF-2 Operable Unit*, April 2001, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

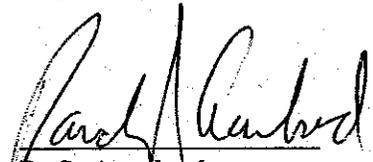
WAC 246-247-030, "Radiation Protection—Air Emissions," *Washington Administrative Code*, as amended.

WAC 246-247-040, "Radiation Protection—Air Emissions," *Washington Administrative Code*, as amended.

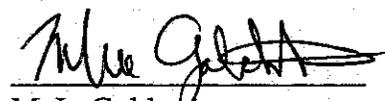
Washington Department of Health, Letter AIR 99-1006, from A.W. Conklin to J.E. Rasmussen, October 18, 1999.

Woolard, J. G., 1998, *Drummed Material Excavated at the 618-4 Burial Ground*, ERC Meeting Minutes, CCN 059033, dated April 16, 1998, Bechtel Hanford Inc., Richland Washington.

**Concurrence:**

  
R. S. Acselrod  
Washington State Department of Health

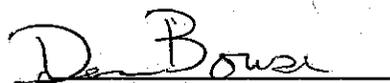
7/9/02  
Date

  
M. L. Goldstein  
Environmental Protection Agency

7/16/00  
Date

  
O. Robertson Jr.  
U.S. Department of Energy,  
Richland Operations Office

4/28/02  
Date

  
Dr. P. Larsen  
U.S. Department of Energy,  
Richland Operations Office

4/28/02  
Date

**Attachment 1**

<b>Groups 1, 2, and 3 Annual Unabated Dose</b>				
<b>PTE (Ci/yr)<sup>1</sup></b>				<b>Annual Unabated Dose<sup>2</sup>, mrem/yr</b>
<b>Radionuclide</b>	<b>Drums</b>	<b>Soil</b>	<b>Total</b>	
<b>Group 1</b>				
Co-60	N/A	6.27E-6	6.27E-6	1.57E-5
Zn-65	N/A	1.25E-5	1.25E-5	6.09E-6
Sr-90	N/A	2.23E-4	2.23E-4	3.77E-4
Y-90	N/A	2.23E-4	2.23E-4	8.96E-7
Cs-137	N/A	2.93E-5	2.93E-5	1.75E-5
Ba-137m	N/A	2.77E-5	2.77E-5	5.84E-5
Ra-226	N/A	2.92E-5	2.92E-5	2.36E-4
Th-228	N/A	5.95E-5	5.95E-5	6.15E-3
U-234	3.00E-4	2.38E-2	2.41E-2	1.37E+00
U-235	1.97E-5	2.12E-3	2.14E-3	1.15E-1
U-238	1.77E-3	2.37E-2	2.54E-2	1.29E+00
Pu-239	N/A	1.24E-4	1.24E-4	1.87E-2
<b>Total</b>				<b>2.80E+00</b>
<b>Group 2</b>				
Co-60	N/A	5.09E-5	5.09E-5	1.18E-04
Zn-65	N/A	2.81E-5	2.81E-5	1.27E-05
Sr-90	N/A	3.35E-4	3.35E-4	5.24E-04
Y-90	N/A	3.35E-4	3.35E-4	1.24E-06
Ru-106	N/A	1.74E-5	1.74E-5	4.58E-06
Cs-137	N/A	2.31E-4	2.31E-4	1.28E-04
Ba-137m	N/A	2.18E-4	2.18E-4	4.26E-04
Ra-226	N/A	6.03E-5	6.03E-5	4.51E-04
Th-228	N/A	1.33E-4	1.33E-4	1.27E-02
U-234	2.00E-4	4.76E-2	4.78E-2	2.52E+00
U-235	1.35E-5	4.38E-3	4.40E-3	2.19E-01
U-238	1.17E-3	4.76E-2	4.88E-2	2.29E+00
Pu-238	N/A	2.01E-7	2.01E-7	2.60E-05
Pu-239	N/A	6.25E-5	6.25E-5	8.73E-03
Am-241	N/A	4.96E-5	4.96E-5	1.07E-02
<b>Total</b>				<b>5.06E+00</b>
<b>Group 3</b>				
H-3	N/A	1.11E-2	1.11E-2	8.87E-07
Mn-54	N/A	4.45E-5	4.45E-5	1.04E-06
Co-60	N/A	7.53E-4	7.53E-4	2.75E-04
Cs-134	N/A	6.39E-5	6.39E-5	1.28E-05
Cs-137	N/A	1.47E-4	1.47E-4	1.29E-05
Ba-137m	N/A	1.39E-4	1.39E-4	4.28E-05
U-234	N/A	3.2E-4	3.2E-4	2.60E-03
U-235	N/A	1.5E-5	1.5E-5	1.16E-04
U-238	N/A	3.1E-4	3.1E-4	2.25E-03
<b>Total</b>				<b>5.31E-03</b>

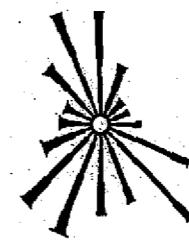
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Notes:

<sup>1</sup> Radionuclide PTE values are presented in ERC Calculation 0300X-CA-V0014, *Air Emissions Calculation for Removal of Contaminant Material from 300-FF-2 OU Sites*, Rev. 0.

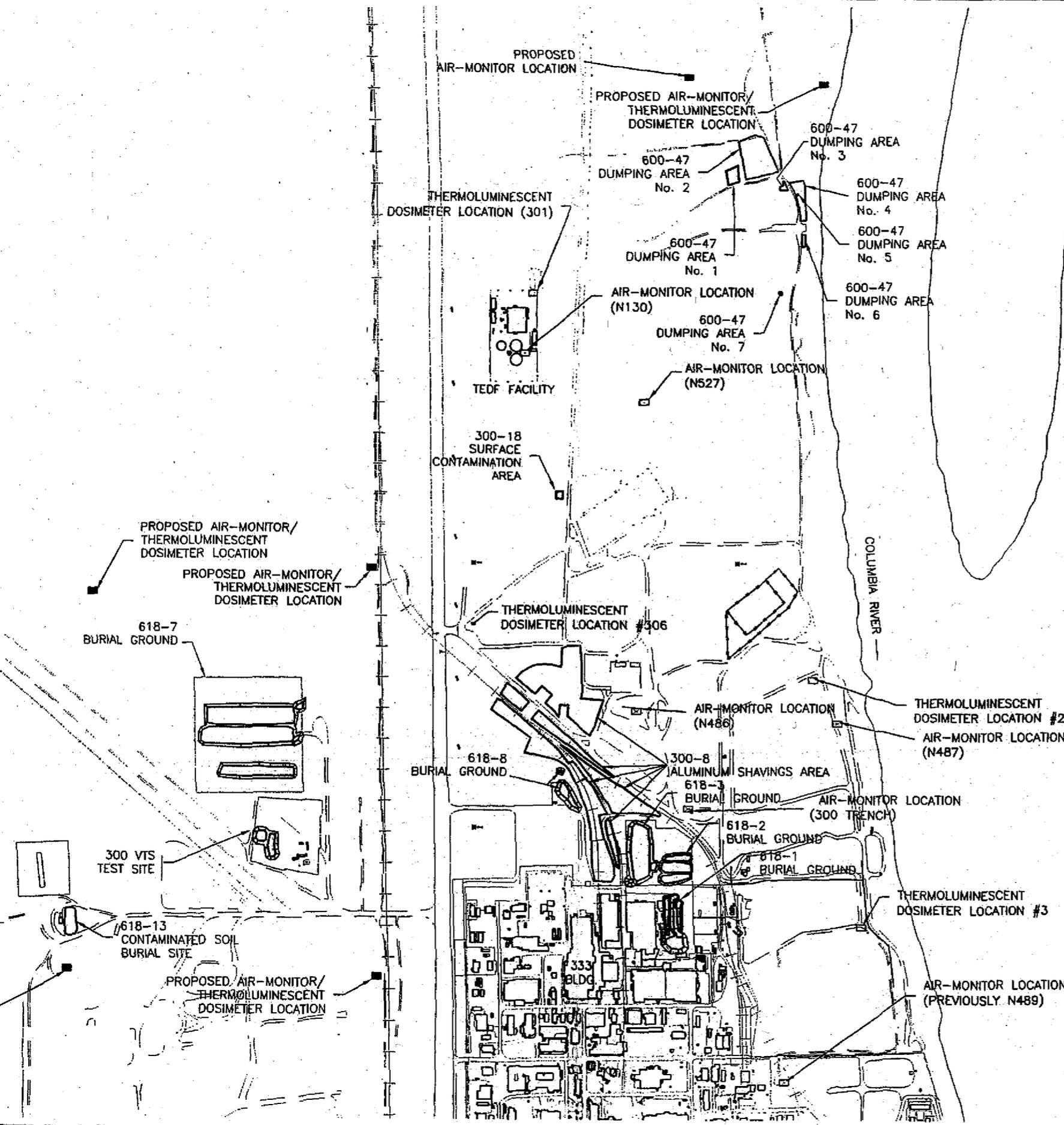
<sup>2</sup> The annual unabated dose was determined using the CAP88-PC, Version 2 Model. The PTE was the input for the model, and the model generated the annual unabated dose. The CAP88-PC model summary and synopsis is presented in Attachment C of ERC Calculation 0300X-CA-V0014, *Air Emissions Calculation for Removal of Contaminant Material from 300-FF-2 OU Sites*, Rev. 0.

N/A = Not applicable



N  
 Station #11 - 300A  
 Period: 1/2001 - 12/2001

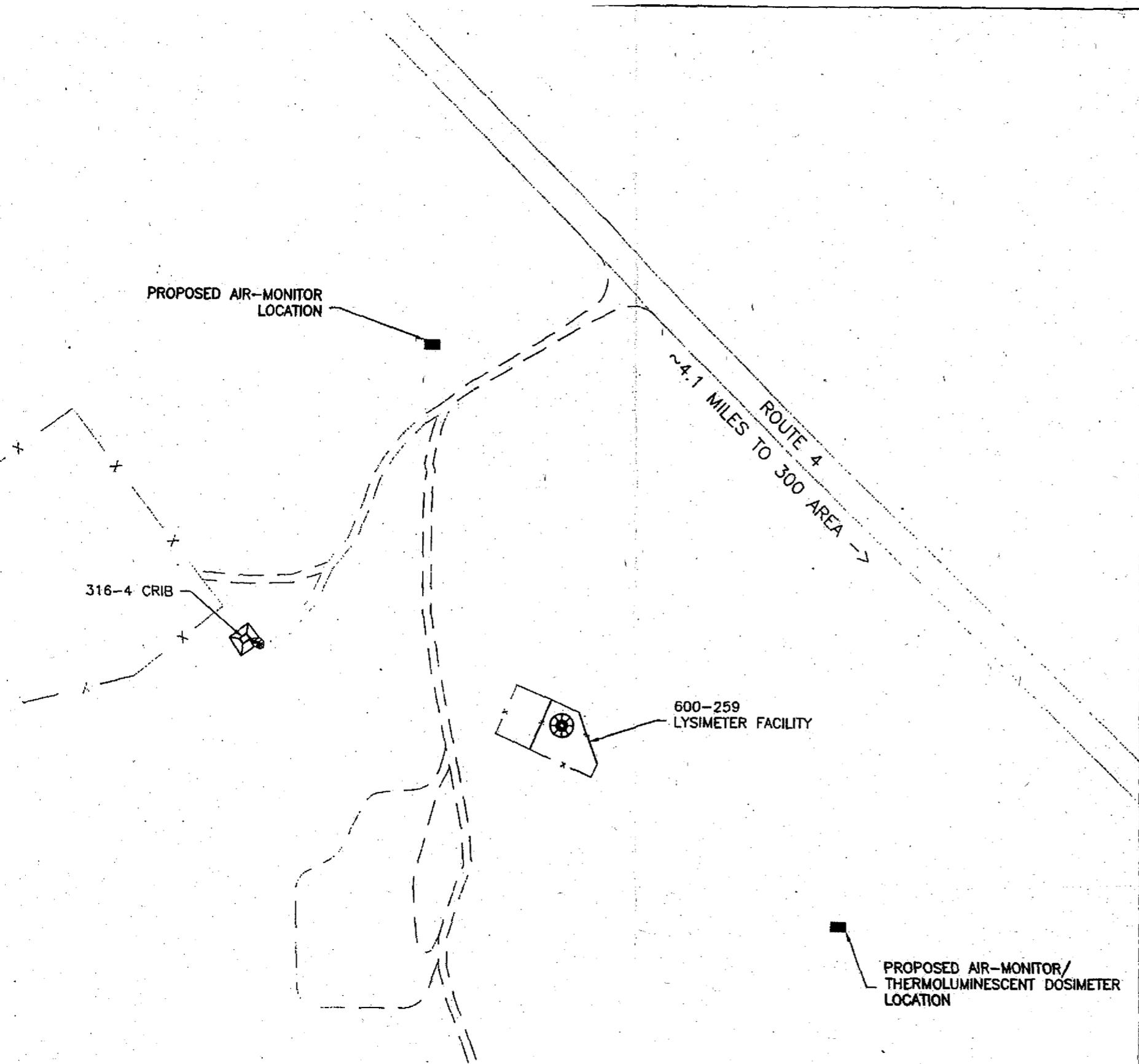
(a) Wind Rose



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 DOE FIELD OFFICE, RICHLAND  
 RICHLAND ENVIRONMENTAL RESTORATION PROJECT

BECHTEL HANFORD INC. CH2M HILL HANFORD INC.  
 RICHLAND, WASHINGTON RICHLAND, WASHINGTON

FIGURE 1  
 300 AREA  
 300-FF-2 REMEDIAL ACTION DESIGN  
 300-8 300-18 600-47 618-1 618-2 618-3 & 618-8 GROUP 1 &  
 300 VTS 618-7 618-13 GROUP 2 - AIR MONITOR LOCATIONS



(a) Wind Rose

N  
↑  
Station 99 - FFTF

Period: 1/2001 - 12/2001

U.S. DEPARTMENT OF ENERGY DOE FIELD OFFICE, RICHLAND RICHLAND ENVIRONMENTAL RESTORATION PROJECT	
BECHTEL HANFORD INC. RICHLAND, WASHINGTON	CH2M HILL HANFORD INC. RICHLAND, WASHINGTON
<p align="center"><b>FIGURE 2</b></p> <p align="center">300 AREA 300-FF-2 REMEDIAL ACTION DESIGN</p>	

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