DOE/ID-10764
December 2000
Revision 0

U.S. Department of Energy
Idaho Operations Office

Tank Farm Soil Field Sampling Plan for the Phase I Operable Unit 3-14 Remedial Investigation/Feasibility Study

IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LABORATORY

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ABSTRACT

This Waste Area Group 3, Operable Unit 3-14, Field Sampling Plan (FSP) describes the Phase I Tank Farm Soil characterization investigation activities that will be performed for the OU 3-14 remedial investigation/feasibility study (RI/FS) of the Idaho Nuclear Technology and Engineering Center (INTEC) Tank Farm. INTEC is located at the Idaho National Engineering and Environmental Laboratory (INEEL), which is a government-owned facility managed by the U. S. Department of Energy.

Historically the INTEC served as a nuclear fuel reprocessing facility, a research facility, and a facility for storage of spent nuclear fuel. Liquid waste generated from the reprocessing activities is stored in the Tank Farm, which consists of 22 underground stainless steel tanks. Currently INTEC manages the treatment and storage of high-level waste generated during past spent nuclear fuel reprocessing and low-level waste generated from ongoing operations at the INEEL.

The Tank Farm soil has been contaminated by radioactive liquids due to spills and pipeline leaks from plant and transfer operations. Several known high-level and low-level contamination areas are suspected to exist at varying locations and depths throughout the Tank Farm subsurface. No evidence has been found to indicate that any of the tanks themselves have leaked. Characterization of the Tank Farm soil will take place in two phases. This Field Sampling Plan details Phase I of this effort.

Phase I characterization investigation activities will be performed to delineate the horizontal and lateral extent of contaminated soil in the Tank Farm. The characterization will (1) provide site-specific data to determine the needs to support fate and transport modeling for the evaluation of remedial alternatives, (2) provide site-specific data to support Phase II characterization investigation activities, and (3) provide technical data to support the feasibility study phase of the OU 3-14 RI/FS. Soil contamination distribution within the Tank Farm soil will be investigated using in situ radiation measurement methods and limited soil sampling. The in situ radiation measurements will be performed by surface gamma survey and downhole radiation detection methods per the Field Sampling Plans for these efforts. The downhole logging will take place in cased probeholes pushed into the Tank Farm soil.

Surface and subsurface radiation mapping will be performed throughout the Tank Farm investigation area as a means to evaluate soil contamination. Surface radiation measurements will be compiled and used to develop maps showing the spatial distribution of radiation fields throughout the Tank Farm. Subsurface radiation logging will also be conducted to produce log plots showing variations in gamma-ray flux at depth. Correlation between log plots will be used as a basis to estimate the combined horizontal and vertical extent of soil contamination zones.

CONTENTS

ABSTRACT v

ACRONYMS AND ABBREVIATIONS xii

1. INTRODUCTION 1-1

1.1 Field Sampling Plan 1-1

1.2 Health and Safety Plan 1-4

1.3 Project Organization and Responsibilities 1-4

1.3.1 Environmental Restoration Program Director 1-4
1.3.2 Waste Area Group 3 Manager 1-4
1.3.3 INEEL Project Manager 1-6
1.3.4 INEEL Project Engineer 1-7
1.3.5 The INTEC Site Area Director 1-7
1.3.6 Environmental Restoration, Environmental Safety, and Health/Quality Assurance Manager 1-7
1.3.7 ER Field Construction Coordinator 1-8
1.3.8 INTEC ES&H/QA Manager 1-8
1.3.9 Health and Safety Officer 1-8
1.3.10 Industrial Hygienist 1-8
1.3.11 Radiological Engineer 1-9
1.3.12 Radiological Control Technician 1-9
1.3.13 Field Team Leader 1-10
1.3.14 Engineering Survey Team 1-10
1.3.15 Surface Gamma Radiation Survey Team 1-10
1.3.16 Vacuum Excavation Team 1-10
1.3.17 Direct Push Drilling Team 1-10
1.3.18 Downhole Gamma Radiation Logging Team 1-11
1.3.19 Subcontractor Job Site Supervisor 1-11
1.3.20 Subcontractor Task Site Personnel 1-11
1.3.21 Quality Engineer 1-11
1.3.22 Environmental Compliance Coordinator 1-11
1.3.23 Waste Generator Services 1-12
1.3.24 Nonworkers 1-12
1.3.25 Visitors 1-12

2. SITE DESCRIPTION AND BACKGROUND 2-1

2.1 Site Background 2-1

2.2 Source, Nature, and Extent of Contamination 2-3

2.2.1 Site CPP-15 2-3
2.2.2 Site CPP-16 2-5
2.2.3 Site CPP-20 2-5
2.2.4 Site CPP-24 2-6

2.2.5 Site CPP-25 2-6
2.2.6 Site CPP-26 2-6
2.2.7 Site CPP-27 and CPP-33 2-7
2.2.8 Site CPP-28 2-8
2.2.9 Site CPP-30 2-9
2.2.10 Site CPP-31 2-10
2.2.11 Site CPP-32 (E and W) 2-10
2.2.12 Site CPP-58 (E and W) 2-11
2.2.13 Site CPP-79 2-11

3. FIELD SAMPLING PLAN OBJECTIVES 3-1

3.1 Data Needs 3-1

3.2 Sampling Methods 3-2

3.3 Quality Assurance Objectives for Measurements 3-3

3.3.1 Precision 3-4
3.3.2 Accuracy 3-4
3.3.3 Representativeness 3-4
3.3.4 Completeness 3-4
3.3.5 Comparability 3-5
3.3.6 Sample Prioritization 3-5

3.4 Data Validation 3-6

3.5 Quality Assurance/Quality Control Samples 3-6

4. CHARACTERIZATION METHODS 4-1

4.1 Existing Borehole Locations 4-1

4.2 Surface Radiation Mapping 4-1

4.3 Predrilling Using Vacuum Excavator 4-1

4.4 Direct Push Drilling in Tank Farm Soil 4-5

4.4.1 Direct Push Probehole Installation 4-6

4.5 Downhole Radiation Logging 4-8

4.5.1 Downhole Logging Limitations 4-8

4.6 Drum Sampling and Analysis 4-12

4.7 Cold Test Demonstration 4-12

5. MEASUREMENT METHODS 5-1

5.1 Surface Radiation Mapping 5-1

5.1.1 Site Survey 5-1
5.1.2 Mobilize Survey Instrument 5-2
5.1.3 Conduct Field Survey 5-2
5.1.4 Processing, Analysis, and Final Report 5-2

5.2 Subsurface Radiation Logging 5-3

5.2.1 Site Survey 5-3
5.2.2 Mobilize Survey Instrument 5-3
5.2.3 Conduct Field Survey 5-4
5.2.4 Processing, Analysis, and Final Report 5-4

6. SAMPLE DESIGNATION 6-1

6.1 Sample Identification Code 6-1

6.2 Sampling and Analysis Plan Table/Database 6-1

6.2.1 General 6-1
6.2.2 Sample Description Fields 6-1
6.2.3 Sample Location Fields 6-2
6.2.4 Analysis Types 6-2

7. SAMPLING EQUIPMENT, PROCEDURES, AND WASTE MANAGEMENT 7-1

7.1 Sampling Requirements and Field Work 7-1

7.2 Vacuum Extraction Equipment 7-1

7.3 Push Probe Equipment 7-1

7.4 Personal Protective Equipment 7-2

7.5 Pushing and Sampling Equipment Decontamination 7-2

7.6 Sampling Location Surveys 7-2

7.7 Shipping Screening 7-2

7.8 Management of Sampling Waste 7-3

7.8.1 Waste Management 7-3

8. DOCUMENT MANAGEMENT AND SAMPLE CONTROL 8-1

8.1 Documentation 8-1

8.1.1 Sample Container Labels 8-1
8.1.2 Field Guidance Form 8-1
8.1.3 Field Logbooks 8-1

8.2 Sample Handling 8-2

8.2.1 Sample Preservation 8-3
8.2.2 Chain of Custody Procedures 8-3
8.2.3 Transportation of Samples 8-3

8.3 Document Action Requests 8-3

9. REFERENCES 9-1

Appendix A—Sample and Analysis Plan Tables

Appendix B—Logging Plans of Existing Boreholes

Appendix C—Locations for Planned Probeholes

Appendix D—Data Quality Objectives

Appendix E—CPP-MCP-P7.5-A1 Tank Farm Load Limitations

FIGURES

1-1. Map of the INTEC at the INEEL (topography adapted from USGS Circular Butte 3SW, contour interval 10 ft, scale 1:24000) showing the Tank Farm. 1-2

1-2. Known OU 3-14 Tank Farm soil release sites. 1-3

1-3. Organizational structure for OU 3-14 field sampling activities. 1-5

2-1. Physical layout of the Idaho Nuclear Technology and Engineering Center showing the Tank Farm. 2-2

4-1. Locations of release sites and existing Tank Farm boreholes used in the first gamma survey. 4-3

4-2. Map of planned probehole locations. 4-4

4-3. Schematic of probehole installation. 4-7

4-4. Detailed map of probe locations within Sites CPP-16 and CPP-31.(critical locations in red). 4-9

4-5. Detailed map of probe locations within Sites CPP-28 and CPP-79.(critical locations in red . 4-10

4-6. Detailed map of probe locations within Sites CPP-27 and CPP-33 (critical locations in red). 4-11

TABLES

3-1. Principal study questions relevant to Tank Farm Soil data needs and extent to which these needs are addressed by Phase I and Phase II FSPs. 3-2

3-2. Prioritized sample collection strategy for Phase I. 3-5

3-3. Field quality control samples for Tank Farm characterization. 3-6

4-1. Specific analyte list and sample requirements for Tank Farm soil samples. 4-13

ACRONYMS AND ABBREVIATIONS

ARDC	Administrative Records and Document Control
bgs	below ground surface
BRA	baseline risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chain of custody
CPP	Chemical Processing Plant
CSSF	Calcined Solids Storage Facilities
DOE	Department of Energy
DOE-ID	Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
DQOs	data quality objectives
EPA	Environmental Protection Agency
ER	Environmental Restoration
ES&H	environment, safety, and health
ES&H/QA	environment, safety, and health/quality assurance
FCC	field construction coordinator
FFA/CO	Federal Facility Agreement and Consent Order
FS	feasibility study
FSP	Field Sampling Plan
FTL	field team leader
HASP	Health and Safety Plan
HLW	high-level waste
HSO	health and safety officer
ICPP	Idaho Chemical Processing Plant

ID	inside diameter
IDW	investigation-derived waste
IH	industrial hygienist
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
ISMS	Integrated Safety Management System
JRC	job requirements checklist
JSS	job site supervisor
MCP	management control procedure
NEPA	National Environmental Policy Act
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
OU	operable unit
PEW	process equipment waste
PM	project manager
PPE	personal protective equipment
PRD	program requirements document
PSQ	principal study questions
QA	quality assurance
QAPjP	Quality Assurance Project Plan
QC	quality control
RADCON	radiological control
RCT	radiological control technician
RI	remedial investigation
RI/BRA	remedial investigation/baseline risk assessment
RI/FS	remedial investigation/feasibility study

ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
SAD	site area director
SAR	Safety Analysis Report
SAP	Sampling and Analysis Plan
SMO	Sample Management Office
SNF	spent nuclear fuel
SRPA	Snake River Plain Aquifer
SVOC	semivolatile organic compound
TLD	thermoluminescent dosimeter
TPR	technical procedure
VOC	volatile organic compound
VPP	Voluntary Protection Program
WAG	Waste Area Group