



INEEL/EXT-98-01097

Revision 0

April 1999

**Treatability Study Work Plan for the
Segmented Gate System Technology
Deployment**

LOCKHEED MARTIN



Treatability Study Work Plan For The Segmented Gate System Technology Deployment

Richard P. Wells


Published April 1999

**Prepared for Lockheed Martin Idaho Technologies Company
by Parsons Infrastructure and Technology Group, Inc.
Under Subcontract No. C95-175008
and for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-94ID13223**

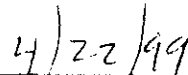
INEEL/EXT-98-01097
Revision 0
April 1999

Treatability Study Work Plan for the Segmented Gate System Technology Deployment

Approved by:



Frank Webber
LMITCO Project Manager



Date

ABSTRACT

This treatability study work plan details the activities associated with the demonstration of the segmented gate system technology to effectively remediate radionuclide-contaminated soils at the Idaho National Engineering and Environmental Laboratory. The Thermo NUtech segmented gate system will be deployed to test the system on radionuclide-contaminated surface soils from selected sites at the Idaho National Engineering and Environmental Laboratory. The ultimate goal is to determine the effectiveness of the segmented gate system to remove radionuclide-contaminated soils from nonradionuclide-contaminated soils. Soils below the treatability standard for a specific site will be returned to that site, while soils exceeding the treatability standard will be dispositioned appropriately.

CONTENTS

ABSTRACT.....	v
ACRONYMS.....	xi
1. INTRODUCTION.....	1-1
1.1 Purpose.....	1-1
1.2 Objectives.....	1-1
1.3 Specific Treatability Study Objectives.....	1-2
1.4 Background.....	1-3
1.4.1 Regulatory Framework.....	1-3
1.4.2 Site Selection Criteria.....	1-6
1.5 Work Site Description.....	1-6
1.5.1 ARA-12: ARA-III Radioactive Waste Leach Pond.....	1-7
1.5.2 ARA-23: Radionuclide-Contaminated Surface Soils Around ARA-I and ARA-II.....	1-7
1.5.3 BORAX-02: Boiling Water Reactor Experiment-I.....	1-10
1.5.4 ARA-06: Stationary Low-Power Reactor-1.....	1-12
1.5.5 CPP-10: Idaho Nuclear Technology and Engineering Center.....	1-14
1.5.6 CPP-03: Idaho Nuclear Technology and Engineering Center.....	1-16
1.5.7 ARA-25: Contaminated Soils Under the ARA-I Hot Cell.....	1-17
2. SITE BACKGROUND.....	2-1
2.1 Scope of Work.....	2-1
2.2 Volume Summary.....	2-1
2.3 Soil Segregation.....	2-1
2.3.1 System Description.....	2-1
2.3.2 Segmented Gate System Set Points.....	2-2
2.3.3 Sample Size Determination.....	2-2
2.3.4 Data Quality Objectives.....	2-4
2.3.5 Operating Procedures.....	2-12
3. TREATABILITY STUDY.....	3-1
3.1 System Efficiency for Sediment and Spill Type Deposits.....	3-1
3.2 System Efficiency for Windblown-Type Deposits.....	3-3

3.2.1	Excavation Methods.....	3-3
3.3	Vegetation Treatment Efficiency	3-4
3.4	Treatment Cost Estimate Validation	3-4
4.	SOIL EXCAVATION	4-1
4.1	Premobilization	4-1
4.2	Site Preparation and Mobilization	4-1
4.3	Soil Separation	4-2
4.3.1	Project Briefing and Work Permit Requirements.....	4-2
4.3.2	Excavation.....	4-3
4.3.3	Preoperational Tests	4-3
4.3.4	Soil Handling and Loading Equipment	4-4
4.3.5	Stockpile Covering.....	4-4
4.3.6	Dust Suppression.....	4-4
4.3.7	Inclement Weather	4-4
4.3.8	Contaminated Soil Hauling	4-5
4.3.9	Department of Transportation Regulated Shipments	4-5
4.3.10	Transportation of Segregated Soils	4-6
4.4	Site Closure	4-6
4.4.1	Clearing Areas.....	4-6
4.4.2	Backfilling and Grading	4-6
4.4.3	Decontamination	4-7
4.4.4	Revegetation.....	4-7
4.5	Demobilization	4-7
5.	REGULATORY REQUIREMENTS.....	5-1
5.1	Applicable or Relevant and Appropriate Requirements.....	5-1
5.2	Air Emissions Calculations	5-5
5.3	Water Quality	5-5
5.4	Transportation	5-5
6.	ADMINISTRATIVE REQUIREMENTS	6-1
6.1	Organization	6-1
6.2	Waste Minimization	6-1

6.3	Waste Management	6-1
6.3.1	CERCLA Areas of Contamination	6-3
6.3.2	Waste Characterization, Handling, and Tracking	6-3
6.4	Reports	6-4
6.5	Treatability Study Schedule	6-4
7.	DATA CONTROL.....	7-1
7.1	Data Management.....	7-1
7.2	Data Analysis and Interpretation.....	7-2
7.3	Reports	7-2
7.3.1	Weekly Reports	7-2
7.3.2	Monthly Reports.....	7-2
7.3.3	Occurrence Reporting.....	7-3
7.3.4	Postjob Review.....	7-3
7.3.5	Final Treatability Study Report.....	7-4
8.	COMMUNITY RELATIONS	8-1
9.	REFERENCES	9-1

Appendix A—Results of the OU 2-10 Air Modeling

FIGURES

1-1.	Treatability study objectives flow diagram.....	1-4
1-2.	Physical location of sites within the INEEL.....	1-5
1-3.	ARA-III radioactive waste leach pond, Site ARA-12.....	1-8
1-4.	ARA-I and ARA-II contaminated soils and subsurface structures, Site ARA-23.....	1-9
1-5.	BORAX-I Burial Grounds.....	1-11
1-6.	SL-1 Burial Grounds.....	1-13
1-7.	Operable units within WAG 3.....	1-15
4-1.	Lincoln Boulevard pit location.....	4-8
6-1.	Activity schedule.....	6-5

TABLES

1-1. ARA-25 unvalidated data summary.....	1-18
2-1. Treatability study data quality objectives.	2-5
5-1. Applicable or relevant and appropriate requirements.	5-2

ACRONYMS

ARA	Auxiliary Reactor Area
ARAR	applicable or relevant and appropriate requirement
BORAX	Boiling Water Reactor Experiment
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	contaminant of potential concern
CWA	Clean Water Act
D&D	decontamination and dismantlement
DMP	data management plan
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
EDF	engineering design file
EM	Environmental Management
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
FFA/CO	Federal Facility Agreement and Consent Order
FR	Federal Register
FSP	field sampling plan
FTL	field team leader

GPRS	Global Positioning Radiometric Scanner
HASP	health and safety plan
IDAPA	Idaho Administrative Procedures Act
IDHW	Idaho Department of Health and Welfare
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IWTS	INEEL Waste Tracking System
LMITCO	Lockheed Martin Idaho Technologies Company, Inc.
M&WCP	Material and Waste Characterization Profile
MCP	management control procedure
NPL	National Priorities List
NRTS	National Reactor Testing Station
OU	operable unit
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PRD	program requirements document
PVC	polyvinyl chloride
QAPjP	quality assurance project plan
RADCON	radiation control
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RI/FS	remedial investigation/feasibility study

ROD	Record of Decision
RWMC	Radioactive Waste Management Complex
SDWA	Safe Drinking Water Act
SL	Stationary Low-Power Reactor
TCLP	toxicity characteristic leaching procedure
TRA	Test Reactor Area
TRU	transuranic
TSCA	Toxic Substance Control Act
TSDF	Treatment, Storage, and Disposal Facility
WAG	waste area group
WGS	Waste Generator Services
WROC	Waste Reduction Operations Complex
WWP	Warm Waste Pond

