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Rocky Mountain Remediation Services, L.L.C
protecting the environment

Field Implementation Plan for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111.1

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Environmental Restoration
Rocky Flats Environmental Technology Site

May 14, 1996
Revision 0

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ACRONYMS

CRZ	Contamination Reduction Zone
CSFS	Contaminated Soil Feed Stockpile
CSWTU	Consolidated Sitewide Water Treatment Unit
DOE	Department of Energy
Dyncorp	Dyncorp of Colorado Inc
EMD	Environmental Management Department
EZ	Exclusion Zone
FID	Flame Ionization Detector
FIDLER	Field Instrument for the Detection of Low Energy Radiation
FIP	Field Implementation Plan
FO	Field Operations
FSP	Field Sampling Plan
HASP	Health and Safety Plan
HEAF	High Efficiency Air Filter
HEPA	High Efficiency Particulate Air
HSS	Health and Safety Supervisor
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill
MH	McLaren Hart Environmental Engineering Corporation
OPs	Operating Procedures
OSHA	Occupation Safety and Health Administration
PAM	Proposed Action Memorandum
PPE	Personal Protective Equipment
PSI	Pounds Per Square Inch
PSZ	Project Support Zone
QA	Quality Assurance
QC	Quality Control
RCT	Radiological Control Technician
RFETS	Rocky Flats Environmental Technology Site
RMRS	Rocky Mountain Remediation Services, L L C
SCBA	Self Contained Breathing Apparatus
SEG	Scientific Ecology Group
SVE	Soil Vapor Extraction
TDU	Thermal Desorption Unit
TICs	Tentatively Identified Compounds
VOC	Volatile Organic Compounds
yd^3	Cubic Yard

1 0 INTRODUCTION

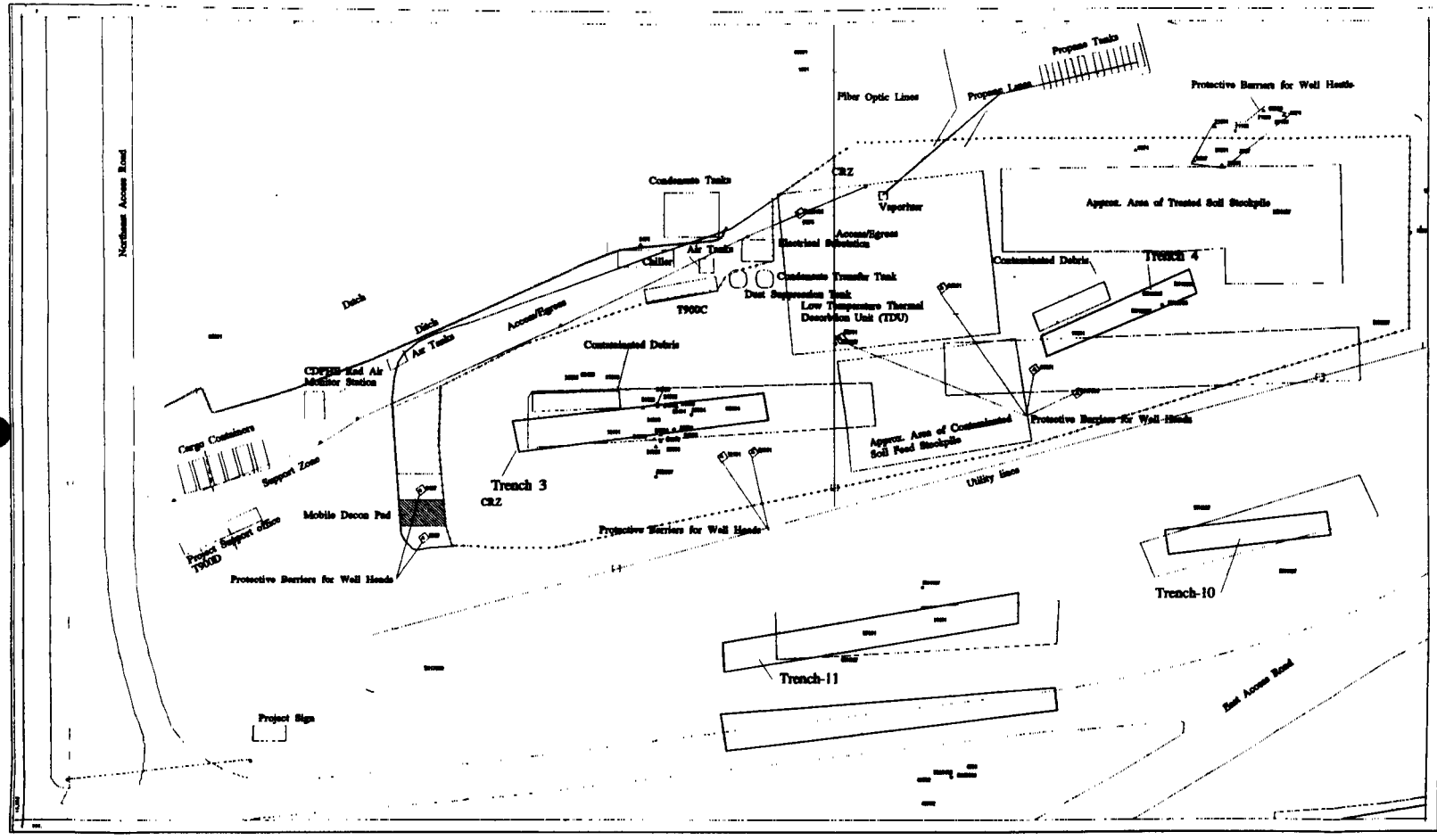
The purpose of this Field Implementation Plan (FIP) is to describe in detail the tasks and subtasks required to complete the Trenches T-3 and T-4 (Individual Hazardous Substance Sites (IHSS) 110 and 111 1) source removal by September 30 1996 The purpose of the Trenches T-3 and T-4 source removal action is to excavate and treat by low temperature thermal desorption approximately 2 200 cubic yards of volatile organic compound (VOC) contaminated soils and debris which are contributing to the degradation of groundwater Rocky Mountain Remediation Services L L C (RMRS) has planned and will manage the project, coordinate the excavation activities performed by Dyncorp of Colorado Inc (Dyncorp), and oversee the low temperature thermal desorption unit (TDU) treatment operations performed by the subcontractor McLaren Hart Environmental Engineering Corporation (MH) The Trenches T-3 and T-4 source removal project is a mission activity to reduce the human health and environmental risk associated with the trenches on behalf of Kaiser-Hill (K-H) for the U S Department of Energy (DOE) Rocky Flats Field Office

The operable documents for this project are the Proposed Action Memorandum (PAM) for the Source Removal at Trenches T-3 and T-4 (RMRS, 1996a), the Field Sampling Plan (FSP) for the Source Removal at Trenches T-3 and T-4, (RMRS, 1996b) the task-specific Health and Safety Plan for the Source Removal at Trenches T-3 and T-4 (RMRS, 1996c) the Integrated Work Control Package No T0085182 and the applicable Environmental Restoration Operating Procedures (OPs)

2 0 SITE LAYOUT AND DEVELOPMENT

The Site Development Map (Figure 1 0) shows the approximate location of the following principal features

- Trenches T-3 and T-4
- Contaminated soil feed stockpile
  Contaminated debris stockpiles
- The TDU
  Treated soil stockpile
  Two 10 000 gallon dual-wall condensate storage tanks
  1 500 KVA substation
  Trailer T900D to be used as the site project/staging office
- Exclusion zone (EZ)
- Contamination reduction zone (CRZ)
- Project support zone (PSZ)
- Access and egress points



T3/T4 Removal Action Site Development Map

Figure 1.0

- Gravel Road
- Traffic Zone
- Equipment Refueling Area
- Mobile Decon Pad
- Groundwater Wells
- Borehole Well Locations
- Abandonded Groundwater Well
- Power Poles
- Individual Hazardous Substance Sites(IHSS)
- OU2 Trench System
- Buildings or other structures
- Overhead Electric
- Approximate Project Support Zone
- Approximate Contamination Reduction Zone (CRZ)
- Approximate Exclusion Zone (EZ)
- Propane Lines
- 5 Foot Contours

Scale
Inch represents feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

RMRS Rocky Mountain Remediation Services, L.L.C.
Managing Member Kaiser-Hill
Kaiser-Hill Company, L.L.C.
Kaiser-Hill Company
U.S. DOE Contractor

MAP ID: "T3/T4" May 15, 1998

- Project area access - requires Trench T-3/T-4 employee training and access badge with training expiration date
- TDU fuel storage tanks - eight 1 000 gallon liquid propane gas tanks
- 5 000 gallon potable water storage tank for dust suppression
- 7 500 gallon condensate storage tank with oil/water separator
- 300-ton chiller
- Additional equipment as necessary

3 0 SITE PREPARATION

Site preparation consists of the following tasks

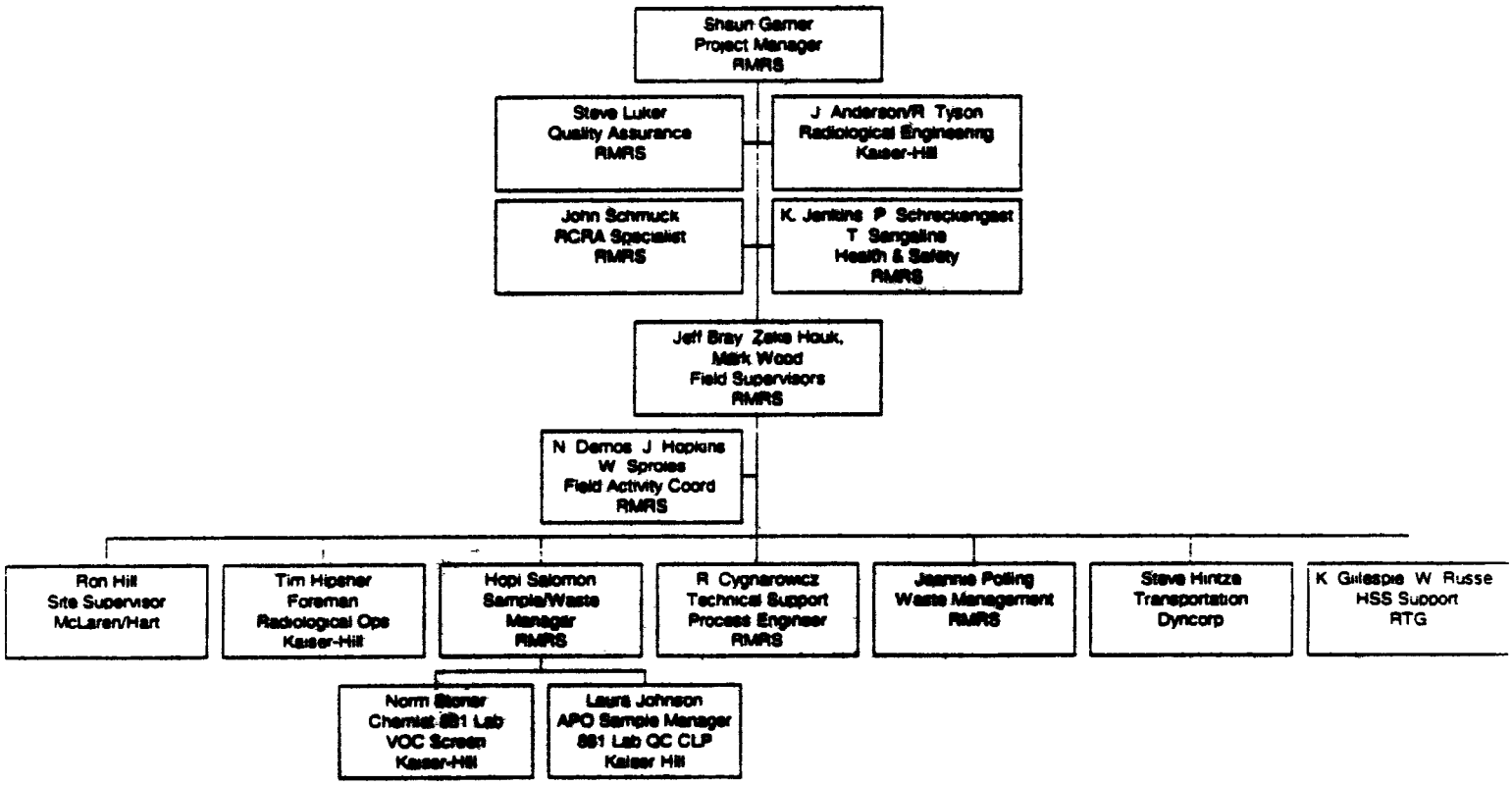
- Abandon the five vadose zone soil vapor extraction (SVE) wells adjacent to T-3
- Drill out the inner grout from the conductor casing of the four previously abandoned SVE bedrock wells
- Clear site of all unnecessary equipment SVE trailer, miscellaneous equipment, relocate MH equipment as necessary, consolidate Conex s and relocate contents to Field Operations Yard, as necessary
- Relocate T900D and the two 10,000 gallon SVE groundwater storage tanks
- Lockout/tagout cut the leads and ground the overhead power lines to the SVE unit
- Stake trench boundaries and locate trench reference points in order to relocate the trench boundaries after site preparation
- Establish 1500 KVA mobile substation
- Establish power and phone to relocated T900D
- Grade TDU area and other areas as necessary to improve TDU operation preserve topsoil and facilitate site access/egress
- Prepare debris and contaminated soil feed stockpile areas as necessary
- Perform pre-work Field Instrument for the Detection of Low Energy Radiation (FIDLER) surveys, 50 foot grid of entire area, and 2-3 foot grid for areas in contact with potential radiologically contaminated soil (traffic zone)

4 0 PROJECT ORGANIZATION AND PLANT SUPPORT

The project organization is presented in Figure 2 0 and shows the responsible project personnel subcontractors and plant support contacts

RMRS will coordinate support of this accelerated source removal action through the appropriate Rocky Flats Environmental Technology Site (RFETS) contractor or subcontractor Specifically Dyncorp - Transportation will assist with heavy equipment operators laborers, heavy equipment fuel for the heavy equipment, and transportation on-site of materials and supplies

Figure 2
Trenches T 3 and T-4 Source Removal
Organization Chart



Dyncorp -Traffic will assist with approval to bring on-site specific supplies required to complete the project Dyncorp - Gas Services and K-H Engineering will assist with procurement of propane fuel for the TDU Approximately 60 000 gallons of propane will be used based on an assumed 90 gallons per hour consumption rate for the six TDUs K-H will assist with safety inspections of subcontractor equipment brought on-site K-H Radiological Engineering will assist with technical support and oversight and has provided direction for radiological controls required for the excavation and treatment of Trench T-3 and Trench T-4 materials K-H Radiological Operations will prepare a radiological work permit, if needed and provide radiological control technicians (RCTs) in support of the excavation activities K-H Engineering will assist with electrical and lighting requirements to support the project Union personnel will be utilized where required to complete specific hookups or mobilizations per the scope of their contract

5 0 HEALTH AND SAFETY

RMRS will be responsible for the health and safety of all workers at the site The RMRS Health and Safety Plan (HASP) for the Source Removal at Trenches T-3/T-4 (RMRS 1996c) is the lead document for worker safety This includes all union subcontractor and RMRS personnel RMRS will conduct training specific to the supplied air equipment utilized at the site before initiation of field activities Activity Hazard Analyses are being prepared to supplement the HASP with more task specific hazards analysis These analyses will be incorporated to the project as an attachment to the HASP The treatment vendor MH, will be the subcontractor operating the low temperature TDUs In addition to the RMRS HASP, MH has prepared a HASP to cover the specific TDU processes conducted by their staff This HASP has been reviewed by the appropriate RMRS personnel

Figure 1 0 shows the approximate layout of the EZ the CRZ and PSZ per the site specific HASP (RMRS, 1996c) The EZ is defined as the area of the project site requiring the most restrictive Personal Protective Equipment (PPE) for access The CRZ is defined as the area for access to and egress from the EZ The CRZ will be utilized for equipment and material staging, the mobile decontamination pad, and equipment refueling The PSZ is defined as the project area requiring site specific training for unescorted access or escorted access if lacking site specific training

Project personnel will be required to utilize the sign in/out log at T900D prior to site access and obtain a project access pass Visitors requiring access to the PSZ may obtain a visitors pass from T900D The visitor will be required to be escorted while in the PSZ if all the site specific training requirements have not been met Access to the EZ will require completion of all applicable training and entry authorization by the project manager or field supervisor

The following personnel and equipment have been identified within the EZ Some personnel mav have multiple roles (e g., RMRS Field Supervisors, supervising both TDU and excavation activities)

Excavation Support Personnel
- RMRS Excavation Field Supervisor
- Excavator Operator
- Front-end Loader Operator
- Excavation Spotter
- Radiological Control Technicians - radiological monitoring of excavated soil
- RMRS Industrial Hygiene - air monitoring

Excavation Equipment·
- one 1 34 cubic yard (yd^3) bucket tracked excavator or equivalent
- One 4 yd^3 bucket front end loader

TDU Support Personnel
- RMRS TDU Field Supervisor
- MH Quality Assurance (QA) Technician
- One to two MH HSS - air monitoring
- Two MH Equipment Operators
- Five MH technicians
- One shift supervisor in CRZ or PSZ as needed

TDU Equipment or Equivalent
- Six IRV-100 TDUs
- Three centrifugal blowers
- Three High Efficiency Air Filters (HEAF)
- Three High Efficiency Particulate Air (HEPA) filters
- Three granular activated carbon units
- Associated piping and electrical system
- One power screen
- Two front end loaders
- Miscellaneous equipment

The following air equipment or equivalent will be utilized by RMRS in support of the excavation and TDU operations
- Eight MSA Quickfill Self Contained Breathing Apparatus (SCBA) units
- Eight MSA Supplied Air Respirators
- Eight Face piece-ultra view
- Three or four high pressure regulators, one each for equipment operators, one for the cascade system

- Two high pressure pigtails
- Three 1/4-inch bv 50 foot (ft) high pressure refill hose
- Two 1/4 bv 50 ft airline hose
- One manifold airline assemblv
- One cascade fitting
- Two 16 cvlinder breathing air pallets with cvlinders or equivalent
- Four 3500 pounds per square inch (psi. 310 cf) or equivalent air cylinders mounted on the heavv equipment
- Four low pressure alarms one each for equipment operators and one for the cascade svstem
- Miscellaneous connections and equipment

The following personnel and equipment are expected to be used within the CRZ

- One union RCT for the screening of RMRS and union personnel out of the EZ
- One MH HSS for the screening of subcontractor personnel out of the EZ
- On a part-time basis. one RMRS support personnel providing assistance with the supplied air quick connects
- On a limited basis union personnel will be in the CRZ to refuel and repair the heavv equipment
- Gross decontamination of personnel and equipment and change out of PPE will take place in the CRZ

The following personnel and equipment or equivalent are expected to be used within the Project Support Zone (PSZ)

- One RMRS Site Field Supervisor
- On a part-time basis. one RMRS support personnel
- On an as-needed basis subcontractor or vendor personnel delivering equipment. propane potable water and picking up condensate and storm water
- One MH project superintendent
- MH will stage one 300-ton chiller and two containers (one for potable water for dust suppression and one for condensate and the oil/water separator in the PSZ or the CRZ
- MH will stage additional equipment as necessarv in the PSZ or the CRZ
- RMRS will stage two 10,000 gallon tanks for storage of condensate and storm water
- RMRS will stage one 1500 KVA skid mounted substation in the PSZ for electrical power
- RMRS will stage a 24 cvlinder air trailer in the PSZ
- RMRS will stage eight 1 000 gallon Liquid Propane Gas storage tanks in the PSZ
  RMRS will stage two liquid propane vaporizers in the PSZ
- RMRS will stage additional above ground storage tanks in the PSZ as needed

Radiological high volume air monitoring equipment will be supplied by K-H Radiological Engineering in support of the removal action Approximately four high-volume air sampling stations will be set up downwind of the source removal project site

6 0 PUBLIC AND MEDIA RELATIONS

The public and media relations will be coordinated through Ann Tyson, RMRS and Ann Sieben. K-H A project sign will be installed at the southwest corner of the project site RMRS T-3/T-4 project personnel will coordinate with the on-site subcontractor for photographic support and documentation Access control to the site will be in accordance with Section 5 0 of this FIP

7 0 SOURCE REMOVAL ACTION

The source removal action at Trenches T-3 and T-4 will consist of two interdependent tasks The first is to excavate the soils and debris and the second is to treat the soils and debris with the TDU The Trench T-3 material will first be excavated treated, and dispositioned and then the Trench T-4 material will follow The estimated project duration is from May 15, 1996 to September 30, 1996, with the source removal activities completed by July 31, 1996 Excavation activities are scheduled to operate between 0600 and 1800, military time, Monday through Friday TDU activities are estimated to operate between 0600 Monday through 0600 Saturday, until completion of the treatment portion of the project Appendix A presents a number of forms/checklists that will be used to support the management of the source removal These forms include

- T-3/T-4 Soil Treatment Record
- Compliance Related Organic Monitoring Checklist
- Supervisor Inspection Checklist (Blue card)
- Sign in Sheet

7 1 Excavation

This section discusses the excavation activities and procedures associated with the source removal action Excavation activities consist of site preparation, excavation, transport, staging the excavated material in the contaminated soil feed stockpile (CSFS), and segregation procedures. Site preparation consists of stripping the upper 4-6 inches of uncontaminated top soil from the CSFS and debris stockpile areas and stripping the upper 2 feet of uncontaminated top soil and overburden from each trench and stockpiling the material near each trench boundary RMRS will coordinate the excavation of approximately 1,100 cubic yards of material from each trench The material will be excavated with a tracked excavator (John Deere 790E, or equivalent) The soil will be moved to the CSFS with a front end loader (Catapiller 966. or equivalent)

The tracked backhoe or excavator will proceed from west to east on trench T-3 The excavated material will be brought up on the north side of the trench and deposited into the 4 yd^3 bucket of the front end loader or placed on the ground near the trench perimeter for pickup and transport to the CSFS Gross segregation of debris will be performed as described in the FSP (RMRS,

1996b) in the trench and on the north side of the trench as the excavation progresses to the east Additional debris segregation will be conducted by MH in an area established next to the CSFS The same procedure will be used on Trench T-4 Before excavation groundwater water levels from the nearby monitoring wells will be monitored to establish the depth to the upper hydrostratigraphic unit's piezometric surface (unconfined water table)

Soil segregation will be performed on the basis of radiological measurements greater than three times background per OP FO 16 and the FSP (RMRS. 1996b) Soil exhibiting greater than three times background radiological measurements will be segregated, treated, and tracked separately per the FSP Debris segregation will be performed per the waste management procedures described in Section 8 0 and per the FSP Dust suppression monitoring activities will be performed in accordance with FO 01, Air Monitoring and Dust Control

A health and safety restricted zone of 6 feet from the edge of the trench excavation will be maintained for fall protection per Occupation Safety and Health Administration (OSHA) regulations and the site specific HASP (RMRS 1996c) If personnel are required to get closer than 6 feet to the edge of the trench excavation personnel restraints using a full body harness and appropriate hookups to a jersey barrier or equivalent fixed body will be used Project personnel will maintain a safe distance of 20 feet from the excavator during operation Project personnel can approach the excavator after eye contact the appropriate hand signals have been given and/or radio communication and the operator has placed the bucket on the ground

7 2 Excavation Verification Sampling

On the basis of the existing site data the Trenches T-3 and T-4 depth is estimated at 10 feet (RMRS 1996a and 1996b) Excavation activities will continue until VOC concentrations in soils are below cleanup standards or the excavation encounters bedrock or groundwater (RMRS, 1996a) Visual observations, flame ionization detector (FID) readings (per OP F0 15 Photoionization Detectors and Flame Ionizing Detectors), and radiological monitoring will guide initial excavation activities Upon completion of the excavation operations per the PAM (RMRS. 1996a) trench verification samples will be collected per the sampling grid and procedures outlined in the FSP (RMRS, 1996b) If a trench verification sample fails to meet the cleanup standard, additional soil will be excavated from that grid until the cleanup standard is achieved or bedrock or groundwater is encountered

7 3 Spill Response and Containment

This section discusses the RFETS incidental release response actions and occurrence reporting requirements (DOE Order 5000 3) The excavation and treatment activities will cause incidental spills of contaminated soil and or debris This plan addresses the potential for spills of contaminated soil or debris by preplanning On the basis of the site data as summarized in the PAM (RMRS 1996a) the hazardous constituents are known and their approximate

concentrations are known Traffic zones are shown in Figure 1 0 The areas of the contaminated and treated soil stockpiles, the TDU operational area, and traffic zones are expected to have incidental spills of contaminated soil and or debris during transport and handling The following procedures will be performed to contain, control, and cleanup these areas First, the areas will have preliminary radiological surveys performed with a FIDLER at a grid spacing of 2 to 3 feet to establish a radiological baseline In the event of an incidental release of grossly contaminated soil, debris, hydraulic fluid, or motor oil, the material will be excavated with the front end loader and placed in the CSFS or contaminated debris stockpile, whichever is appropriate At the close of the project, in a phased sequence, the entire traffic zone will be scraped with the front end loader to pickup any soil that was spilled and the soil will be treated in the TDU Upon completion of the project a visual and FID survey for potential hydrocarbon contaminated soil will be performed in the TDU area, CSFS, and contaminated debris screening stockpile In addition a final radiological survey will be performed using the same grid spacing as the preliminary survey Any remaining soil which appears to be impacted will be removed characterized and disposed of before regrading and site reclamation activities

In the event of any release of a hazardous material, specifically propane or a material with NFPA Ratings of 3 or 4, an unknown hazardous waste, or unknown radioactive material, the following actions should be taken

- Personnel should warn others, and try and stop the release at the source if it can be done safely,
- If not possible, evacuate the area
- Notify supervision
- Call 2911 and report the release
- Isolate the area to prevent traffic through the release
- Minimize personnel exposure to the hazards.

Note Personal safety is paramount, individuals are responsible for their own safety first

Occurrence reporting requirements per DOE Order 5000 3 states that DOE and DOE contractor line management are kept fully and currently informed of all events which could

- Affect the health and safety of the public
- Seriously impact the intended purpose of DOE facilities
- Have a noticeable adverse effect on the environment
- Endanger the health and safety of workers
- Adversely affect the national security or the security interests of the DOE

If any of the above occur, personnel should notify supervision, fire and emergency at extension 2911, and the shift superintendent at extension 2914 The individual will report their name,

organization, phone or radio number location of occurrence time of event, and the nature and seriousness of the event Table 7-1 presents a list of emergency contacts

7 4 Treatment

The contaminated material soil and debris, from Trenches T-3 and T-4 will be treated for VOCs by MH using six IRV-100 TDUs Each TDU consists of a low-temperature low-vacuum extraction chamber and a cover containing an infrared heat source The base of the unit contains a series of well screens and steel tracks Contaminated soil and debris will be loaded into the vacuum chamber with a front end loader to a depth of 12-18 inches The infrared carriage is rolled into position over the chamber and produces hot air and radiant heat which raises the temperature of the top few inches of soil which then becomes a convection emitter of heat A centrifugal blower pulls the heated air downward through the soil increasing the temperatures of the lower layers of soil The downward air flow and temperature differential between the soil surfaces determines the rate of radiant energy transfer and creates reduced pressure in the extraction chamber

The schedule of operation of the TDU treatment will be from 0600 Monday through 0600 Saturday The estimated production rate for the six TDUs is 100 cubic yards per 24 hour day MH will be responsible for material size reduction material transport to the TDUs, material treatment material transport from TDUs to the treated soil stockpile, and dust suppression during transport and treatment MH will reduce the size of the soil/debris feed stock to less than 8 inches with a power screen located proximal to the CSFS Initial treatment operation will begin with a shakedown run to optimize treatment times and to establish process baseline sample results (RMRS, 1996b) TDU operations will be performed by MH in accordance with their operating procedures for the system and per their contractual agreement with RMRS

7 5 Process Verification Sampling

After treatment process verification samples will be collected as described in RMRS 1996B In addition, before soil is placed back in the excavation samples will be collected to evaluate attainment of radiological "Put Back" levels described in the FSP

8 0 MANAGEMENT OF SOIL STOCKPILES

Soil excavated from the trench will be managed according to the following two sections These sections correlate to different management requirements established for the management of soils pre- and post-treatment

Table 7 1
T3/T4 Project Personnel Phone List

On-Site Project Trailer (T900D) 4319

Name	Company/Title	Phone	Pager	Radio
Aldridge Steve	RMRS/Contractor HSS	4816	508-2137	3719
Anderson Jerry	KH Rad Eng	6438	7336	3242
Barnes Dave	RTG HSS			
Bray Jeff	RMRS Field Supervisor	6698	6143	3780
Coyne Dan	RMRS Maintenance	8177	7223	3411
Cygnarowicz, Ciggy	RMRS Project Engineer	2390	7477	3783
Decker Janet	RMRS Site Access Coordinator	4162	5209	
Demos Nick	RMRS Field Activity Coordinator	4605	3842	3810
DeWitt, Paul	RMRS Maintenance	3443	1667	3151
Garner Shaun	RMRS Project Manager	6586	4620	3718
Gillespie Ken	RTG HSS	5356		3733
Hill, Ronnie D	M/H Field Supervisor	4310	1-800-759-7243/ 22797	
Hirsch Rebecca	RMRS Data Manager	5756	4589	
Hintze Steve	Dyncorp Transportation Supervisor	4530	4269	4106
Hipsher Tim	KH Rad Operations Supervisor	6697	3369	3271
Hopkins John	RMRS Field Activity Coordinator	4974	1577	
Houk, Zeke	RMRS Field Supervisor	3148	7454	3720
Howell Lee	M/H Site Safety Officer	4310	1-800-759-7243/107519	
Jenkins Ken	RMRS Health and Safety Manager	2833	7455	3773
Kropewnicki Joyce	RMRS Procurement	8744		
Laborde Bob	K-H Excavation Specialist	2538	0719	0032
Lester Carey	M/H Project Manager	704-587-0003		
Luker Steve	RMRS Quality Assurance	4455	7451	3783
Mallatarro, Mel	Dyncorp Gas Services	6624	5233	2711
Parker Alan	RMRS ER Vice President	4163	6150	
Parker Lonnie	M/H Alternate Site Safety Officer	4310		
Parsons Gary	K-H Excavation Specialist	4197	1899	4533
Poling, Jeannie	RMRS Waste Ops Coordinator	8107	7107	
Robinson Henry G	M/H IH Review	1 908-647 81 1		
Salomon, Hugi	RMRS Sample/Waste Manager	6627	5129	3779
Sangaline, Tonya	RMRS HS Supervisor	5392	3052	3359
Schmuck, John	RMRS RCRA Specialist	6926	7933	
Schreckengast, Peggy	RMRS HS Supervisor	6790	3059	3702
Sieben Ann	K-H Project Manager	9886		
Sproles Wayne	RMRS Field Activity Coordinator	5790	1245	
Tyson Ann	RMRS Accelerated Actions	4829	1011	
Tyson Randall	KH Radiological Engineering	81 2	7982	3243
Waddle Tom	Tierra HSS	4752		3729
Wood Mark	RMRS Field Supervisor	6689	5904	3796

8-May-98

8 1 Management of the Soil Feed Stockpile

Contaminated soil excavated from the trenches will be placed in the CSFS as shown in Figure 1 0 The CSFS will have dimensions of approximately 40' x 40' established by Jersey barriers Figure 3 0 depicts a plan view of the CSFS while Figure 4 0 depicts a portion of the cross section of the structure as it is to be maintained with a tarpaulin cover Features of the stockpile include the following

- Jersey barriers installed around three sides to contain the contaminated soil which will minimize the commingling of storm water run-on with contaminated soil and minimize the wind blown dispersion of soil

- A custom fit water resistant tarpaulin stretched across the jersey barriers to minimize accumulation of storm water and minimize the wind blown dispersion of soil

- A plastic-lined gravel-filled trench surrounding the Jersey barriers Accumulated storm water will be collected from a sump located at Northeast corner of the trench using a trash pump or equivalent This trench will be installed to collect surface run-on/run-off including that which has a likely potential of contamination due to generation near the loading/unloading end of the CSFS Storm water collected from this trench will be used to control dust on soils awaiting treatment in the TDU, any extra will be collected for on-site treatment at Building 891

Soil within the CSFS will be tarped when soil is not being actively added to or removed from the active portion of the CSFS Care will be taken to avoid contact between the top side of the tarpaulin and the contaminated soil within the CSFS Because of the weight of the tarpaulin (approximately 200 pounds dry) care will be taken when covering/uncovering the CSFS Rope lines may be placed through the grommets at the front end of the tarpaulin These lines can be used to pull the tarp on and off the CSFS

After completing the treatment of soils from the trenches, soil beneath the CSFS will be scraped up as necessary, and run through the TDU

8 2 Management of the Treated Soil Stockpile

Following treatment of soils in the TDU treated soil will be staged next to and within the Treated Soil Stockpile (TSS) as shown in Figure 1 0 Staging of treated soil next to the TSS will be done to facilitate the analysis and evaluation of analytical results, prior to the placement of treated soil in the TSS This evaluation will be used to verify attainment of VOC treatment performance standards stated in the PAM

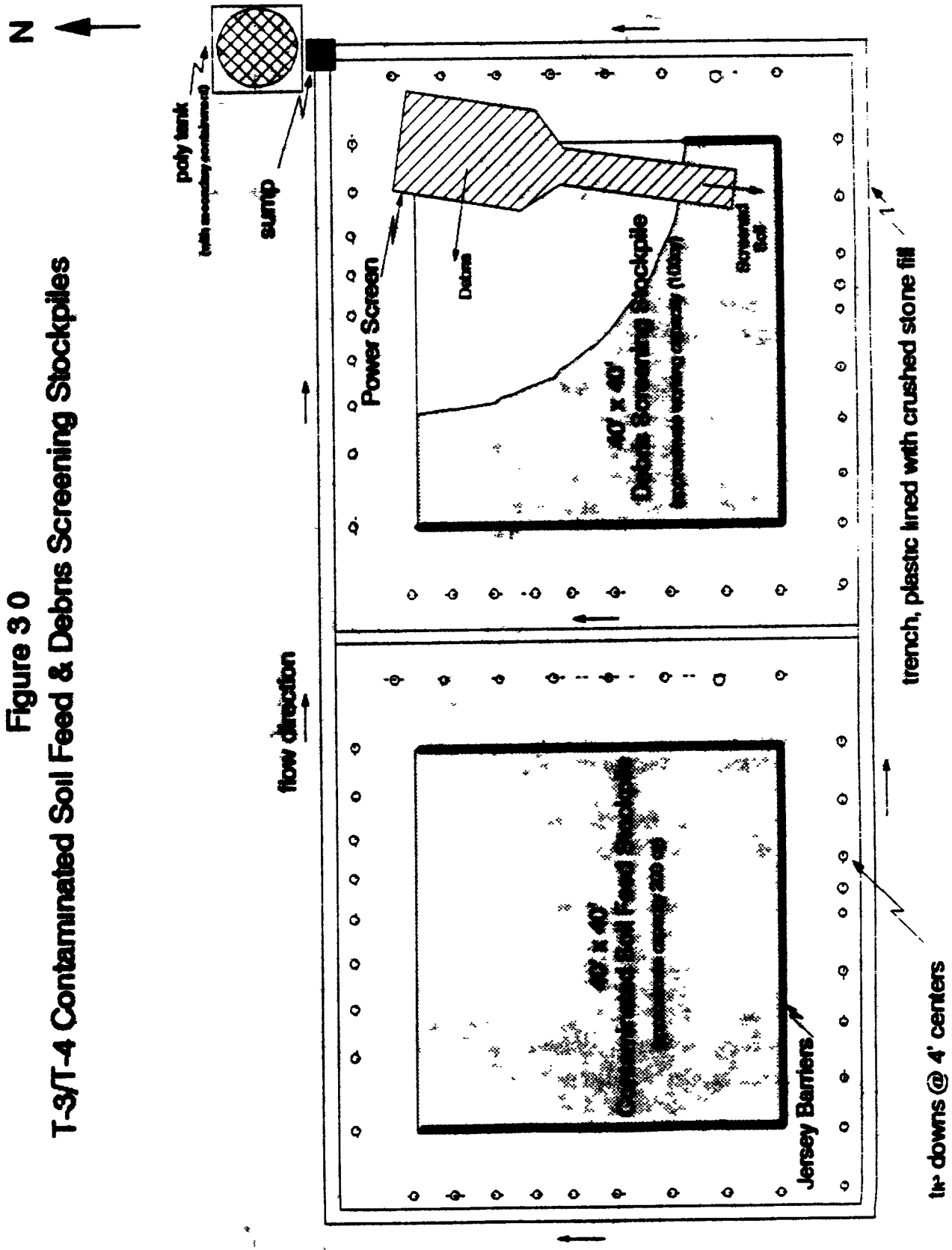
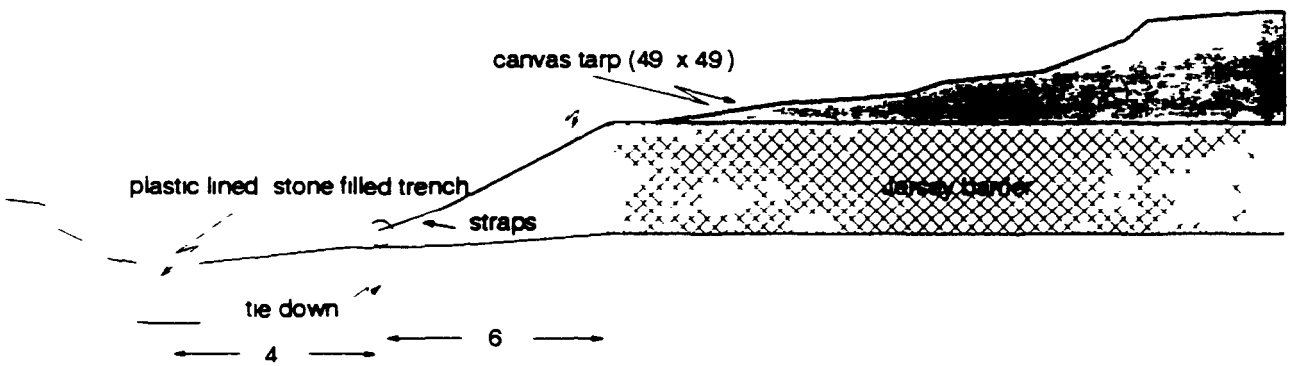


Figure 3.0
T-3/T-4 Contaminated Soil Feed & Debris Screening Stockpiles

Figure 4 0

Cross Section Portion of T-3/T-4 Contaminated Soil Feed Stockpile



MH will be responsible for placing the treated soil in the TSS area after treatment This will include the use of appropriate dust control techniques

Dust control activities following initial placement will be the responsibility of RMRS RMRS is providing a ConCover® All Purpose Spraver (CAPS Machine) for the application of dust control products This system will apply a cover material capable of lasting from several weeks to 6 months depending on application and weather conditions The vendor supplying the CAPS Machine, New Waste Concepts, will provide equipment and application proficiency training to Rocky Flats Steelworker personnel applying the dust suppression agent. The equipment maintenance, start up, and application procedures are given in Appendix B of this plan A technical representative from New Waste Concepts will provide training to Rockv Flats personnel prior to job start.

It is expected that the CAPS Machine will be used to applv water as a dust suppression agent when personnel are on-site, during continuous, routine operations However, when personnel are not conducting work on a continuous basis such as a work stoppage for the weekends, or other stoppages in which personnel are not able to apply water frequently, the TSS will require the application of a longer lasting dust suppression agent The New Waste Concepts product ConCover® Remediation Cover has been selected as the dust suppression agent

The following CAPS 900 information and procedures are contained in Appendix B

- CAPS preventive maintenance schedule
- CAPS daily start up
- ConCover® work sheet
- Water calibration chart (tank volume calibration for CAPS 900 system)
- ConCover® mixing procedure
- ConCover® application procedure
- ConCover® daily application record
- Product certification
- freezing conditions maintenance

The RMRS field supervisor will be responsible for visually inspecting the condition of the cover material placed on the TSS during daily operations If weather conditions cause "bare spots" to develop on the TSS, the field supervisor will direct the CAPS crew to apply additional dust suppression agents to the stockpile

9 0 WASTE MANAGEMENT

Several different wastestreams will be generated during this project The wastestreams that will not be returned to the excavation include the following

- Contaminated debris originating in the trenches
- Aqueous and Organic phase condensate recovered during the TDU process
- Used PPE
- Used filters

9 1 Debris Management

Debris within the trenches may include crushed drums asphalt planking, large pieces of asphalt pavement and miscellaneous construction rubble It is unknown if all the debris is radioactively contaminated or whether the various types of debris are contaminated with VOCs Regardless except for incidental pieces the debris will not be returned to the trenches after excavation

Following excavation, debris may be segregated into one of two categories

- VOC-contaminated debris

- VOC-free debris

Debris contaminated with VOCs. or debris in which a representative sample could not be collected to assure the debris is VOC-free will be processed in the TDU Debris that the field supervisor expects to be free of significant VOC contamination will be evaluated as such

- Determine if organic vapors can be detected above background using industrial hygiene monitoring equipment

- Determine if there is visible evidence of contaminant staining

- Using the field supervisor's professional judgement considering location within the trench closeness to other VOC-free debris the likelihood that the debris in question would be VOC free

After evaluating the criteria stated above if it appears that the debris is VOC free confirmation sampling described in the FSP (RMRS 1996b) would be required The field supervisor may segregate the debris by waste type (e g crushed drums asphalt planking and/or construction materials) to facilitate the collection of representative confirmation samples, as described in the FSP

Following evaluation of confirmation samples collected to confirm attainment of treatment performance standards or collected to exclude debris from treatment, additional samples mav be collected to meet off-site WACs and facilitate off-site waste shipments The number and tvpes of samples required will be determined by the field supervisor in conjunction with the Sample/Waste Manager, and with support from RMRS Waste Management personnel

Following evaluation of debris samples, the debris will be packaged according to its most likelv ultimate disposal location The likely facilities and expected waste shipping containers include

- Envirocare of Utah. Inc , using end-dump roll off containers,
- Nevada Test Site, using 4' x 4' x 7' wooden waste crates,
- Rocky Flats Landfill, using dump trucks (for debris that is free of radiological contamination, and certified by Radiological Engineering, as such)

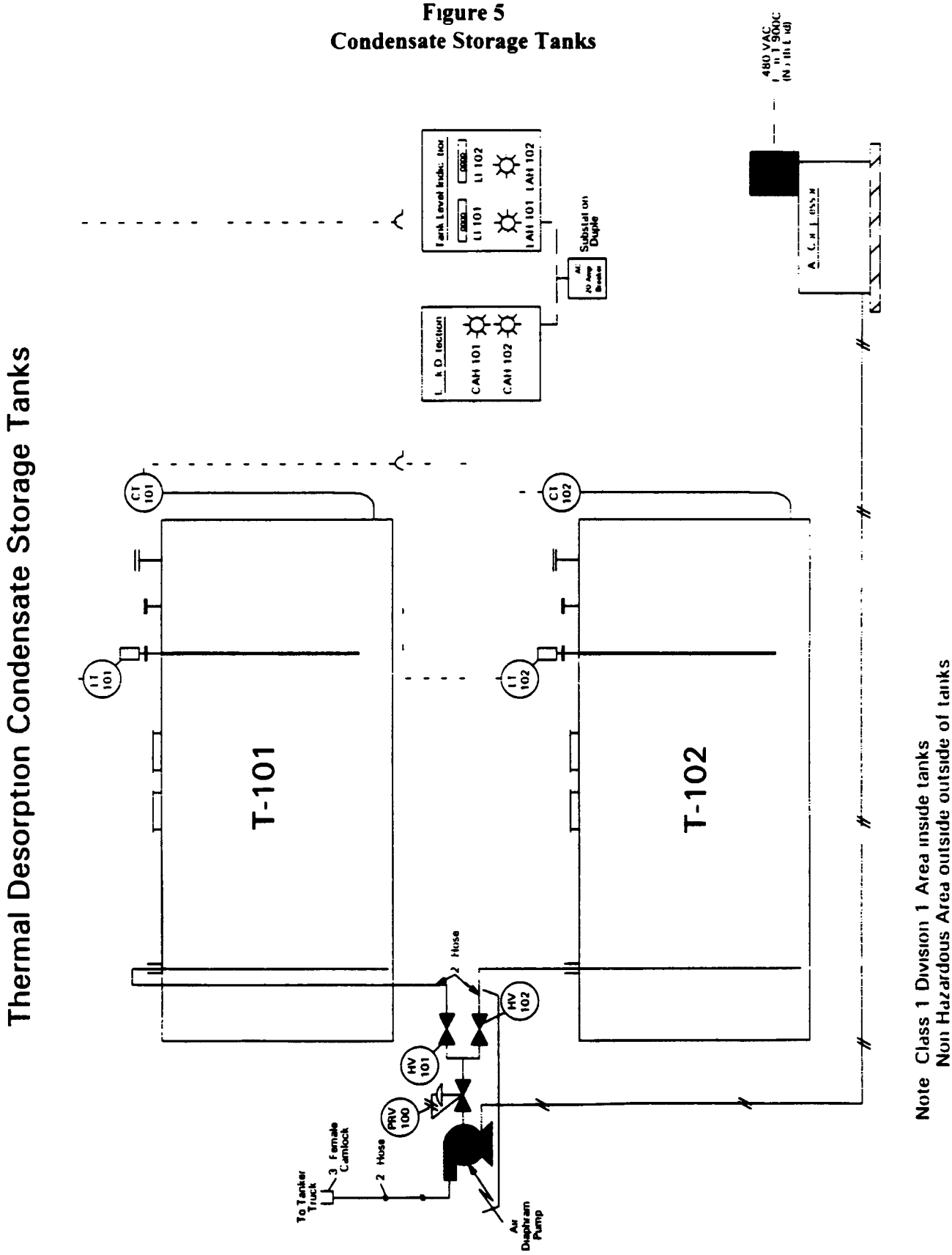
Packaging of debris into roll-offs or waste crates will be performed by Waste Technicians supplied under a contract from Scientific Ecology Group (SEG) The Field Supervisor will be responsible for insuring that roll-offs remain closed or covered when waste is not being loaded so that precipitation will not enter the containers Placing debris into dump trucks for on-site disposal may be performed by the heavy equipment operators at the direction of the Field Supervisor

9 2 Aqueous- and Organic-Phase Condensate Management

Aqueous- and organic-phase liquids generated from the TDU condenser will be managed as follows After phase separation via an oil/water separator, the aqueous-phase condensate will be pumped into a 7,500-gallon container (provided bv MH) and subsequently transferred to one of two 10,000-gallon double-walled steel tanks located to the north of T900D Any organic-phase liquids generated by the oil/water separator will be placed in lined, 55-gallon drums The drummed organic-phase condensate will be prepared for off-site disposition. MH, the TDU subcontractor will perform all phase separation, condensate transfer and containerization activities

The aqueous-phase condensate that is stored in the two 10,000-gallon above ground tanks will be picked up by a tanker truck for transport to the Building 891 Consolidated Sitewide Water Treatment Unit (CSWTU) RTG personnel will transfer the aqueous-phase condensate from the storage tanks to the tanker truck. Transfer to the tank truck will be conducted with a double diaphragm air pump (see Figure 5)

Figure 5
Condensate Storage Tanks



Any spills or serious incidents relating to the aqueous- or organic-phase liquid waste streams will include immediate notification of the following personnel

Shaun Garner T-3/T-4 Project Manager

Office 966-6588
Pager 4620
[redacted]

and

Marla Broussard, Environmental Restoration Operations Manager

Office 966-6007
Pager 4010
[redacted]

9 2 1 Management of Containerized Liquid Waste

Condensate generated by thermal desorption operations will be managed in containers at various points in the process Liquid from the condensers will be initially processed by an oil/water separator The aqueous-phase stream leaving the oil/water separator will be temporarily stored in a 7 500-gallon container Any organic-phase condensate recovered by the oil/water separator will be stored in 55-gallon drums

Condensate liquids stored in containers (i e , condensers, oil/water separator, drums, and 7,500-gallon container) will be managed according to the substantive container management requirements found in the PAM and listed below

- All containers will be in good condition, will be compatible with the waste being stored and will remain closed except when adding or removing waste Note, that for the purposes of this project, the containers used for condensate processing or temporary storage will have open tops or vents to facilitate the inflow and outflow of condensate liquids

- All containers processing or storing condensate liquids will be used in conjunction with an appropriate secondary containment system Where practical (e g , 55-gallon drums) the containers shall be elevated from the base of the secondary containment or the base must be sloped so that accumulated liquids are not in contact with the waste and can be removed

- The containment system must have sufficient capacity to contain 10% of the volume of containers or the volume of the largest container whichever is greater Spilled or leaked waste must be removed in a timely manner as necessary to prevent overflow of the collection system

Containers will be inspected weekly by RMRS Waste Generator Services Group personnel An inspection log will be kept to document this activity

9 2 2 Management of Liquid Waste in Tanks

Aqueous-phase condensate that is temporarily stored in the two 10,000-gallon double-walled storage tanks will be managed at the project site until it is pumped to a tanker truck for treatment at the CSWTU The systems in place to insure proper containment and detection of releases include

- Double-contained tank system

- Corrosion control measures consisting of a Tnemic Series 66 two-coat epoxy-lined tank, an outside tank primed with Tnemic 90 93 and finished with Tnemic Series 66

- Continuous liquid level indication in units of feet using capacitance probes (see Figure 5)

- Liquid high-level alarm indication set at approximately eight feet of liquid

- Interstitial space leak detection system using a conductivity probe

- Ancillary piping between tanks and containers shall be above ground, and free of non-welded flanges joints valves and other connections except where secondary containment is provided

The capacitance level probes will be initially calibrated using clean tap water prior to installation on the tanks Final calibration of the probes using actual condensate will be conducted during the first drain of each tank (i e transfer of condensate to the tanker truck) At least three level data points will be obtained for the final calibration This final calibration procedure will require that the liquid level in each of the tanks be manually monitored (i e , ' sticking ') during this first filling Once the capacitance probes are calibrated tank liquid level monitoring and alarming will be provided automatically by the level indication panel shown in Figure 5 Operators will record the readings on a daily basis and shall not transfer liquid to a tank that is filled to the maximum operating level as indicated by the tank high level alarm

During operations the tank systems, including ancillary piping, will be monitored by the RMRS Field Supervisor Daily inspections (including weekends) will be conducted by Environmental Restoration Operations Group personnel, and an inspection log will be maintained to document this activity

9.3 PPE Management

Used PPE are expected to be segregated and placed into an on-site cargo container It will be managed according to plant procedures by RMRS Waste Generator Services Group personnel

9 4 Used Filter and Miscellaneous Waste Management

Several types of used filter wastestreams will be generated during this remedial project These include

- granulated activated carbon
- HEAF filters
- HEPA filters

These filters will be managed by RMRS Waste Generator Services Group personnel A Non-routine Waste Origination Log (NRWOL) will be prepared as necessary Resourceful management options for the HEAF and HEPA filters may include combining with the debris wastestream (if the same waste radiological/hazardous classifications apply)

10.0 DECONTAMINATION

Decontamination activities will be performed as described in the T-3/T-4 site specific HASP (RMRS, 1996c) Personnel will be decontaminated within the CRZ at the access/egress points for the excavation and the TDU Heavy equipment and all support equipment will have gross decontamination performed in the CRZ or EZ at a mobile decontamination site before being moved to the fixed decontamination pad Equipment will be inspected and monitored before access to the project site A final radiological survey will be performed before equipment is released from RFETS In addition, decontamination will be performed in accordance with EMD operating procedures FO 03, Field Decontamination Operations, FO 04, Decontamination of Equipment at Decontamination Facilities, FO 06 Handling of Personal Protective Equipment

Debris decontamination may be performed at the mobile or fixed decontamination facilities if practical

11 0 SITE RECLAMATION

Site reclamation consists of three tasks backfilling of treated material into the trenches demobilization of all equipment and re-vegetation

Backfilling of the trenches will commence upon confirmation of trench verification and process verification samples meet or exceed the project cleanup standards and the radiological soil put back levels The treated soil stockpile from each trench will be backfilled into the trench that the material originated from. using a front end loader equipped with 4 cubic vard bucket Dust suppression with clean water will be applied during material transport and backfilling When backfilling approaches less than 4 feet to ground surface the front end loader will provide additional compaction bv driving onto the trench backfill

Demobilization of all project support equipment and materials will commence upon completion of treatment operations Regrading and replacement of soil stripped from the soil stockpile areas will be performed

Re-vegetation of all disturbed areas in the project support zone will be performed in accordance with the guidance provided bv site Ecologists as described in Appendix C

12 0 REFERENCES

Department of Energv (DOE). Order 5400 3

RMRS 1996a Proposed Action Memorandum for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111 1 Rockv Flats Environmental Technologv Site Golden Colorado. RF/ER-95-0111 UN Rev 2 March 28

RMRS 1996b Field Sampling Plan for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111 1 Rockv Flats Environmental Technologv Site Golden, Colorado RF/ER-95-0020 April 9

RMRS 1996c, Final Health and Safetv Plan for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111 1 Rocky Flats Environmental Technologv Site Golden, Colorado RF/ER-95-0117 UN Rev 0 Februarv

T3/T4 Project
Sign-in Sheet
Date
Shift

RMRS Rocky Mountain Remediation Services L L C
protect ng the en ronme t

Name	Group	Time In	Out

Date _____

Trenches T 3/T 4
Soil Treatment Record

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial) _____
Verify batches contents are less than 8 in diameter(initial) __ __

North
Time Desorption Started _____
Time Desorption Ended _____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit _____ time

Corresponding Sample Number Post _____ Pre (if applicable) _____
Soil Treatment Pile #____
Recorder's Initials

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial) _____
Verify batches contents are less than 8 in diameter(initial) ____

North
Time Desorption Started _____
Time Desorption Ended _____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit _____ time

Corresponding Sample Number Post _____ Pre (if applicable) _____
Soil Treatment Pile #____
Recorder's Initials

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial) _____
Verify batches contents are less than 8 in diameter(initial) __ __

North
Time Desorption Started _____
Time Desorption Ended _____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit _____ time

Corresponding Sample Number Post _____ Pre (if applicable) _____
Soil Treatment Pile #____
Recorder's Initials

Please explain any nonstandard changes to equipment (based on these measurements) in McLaren Hart Logbook and note below recorders initials for appropriate oven

This form has been reviewed and to the best of knowledge is correct

_____ _____ _____
Supervisor's Signature SSN or Emp # Date

Date _____

Trenches T 3/T-4
Soil Treatment Record

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial)_____
Verify batches contents are less than 8 in diameter(initial) __ ___

North
Time Desorption Started_____
Time Desorption Ended_____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit, _____ time

Corresponding Sample Number Post_____ Pre (if applicable)_____
Soil Treatment Pile #____
Recorder's Initials:

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial)_____
Verify batches contents are less than 8 in diameter(initial)_____

North
Time Desorption Started_____
Time Desorption Ended_____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit _____ time

Corresponding Sample Number Post_____ Pre (if applicable)_____
Soil Treatment Pile #____
Recorder's Initials

Oven # _____
Batch # _____

Vacuum Readings Manifold (P _) _____
(Vacuum readings will be measured at the manifold of each chamber at the initial startup of each batch)
Verify batches have no free liquids(initial)_____
Verify batches contents are less than 8 in diameter(initial) __ ___

North
Time Desorption Started_____
Time Desorption Ended_____

Temperature of Soil after desorption (T _) ____ degrees Fahrenheit _____ time

Corresponding Sample Number Post_____ Pre (if applicable)_____
Soil Treatment Pile #____
Recorder's Initials

Please explain any nonstandard changes to equipment (based on these measurements) in McLaren Hart Logbook and note below "recorders initials" for appropriate oven.

Shift Monitoring Form
DAY SHIFT

(T _ through T _) Temperatures will be monitored every fifteen minutes at the following locations
[Temperature recorded in degrees Fahrenheit]
[Vacuum pressure recorded in _____]

Batch Numbers	Military Time (Measurement Interval in minutes)	vacuum chamber manifold (T _)[1]	inlet/outlet to cond 1 (T _)[1 2]	inlet/outlet to cond 2 (T _)[1 2]	inlet/outlet to cond 3 (T _)[1 2]	stack temp (T _)[1]	Misc 1	Misc 2	Misc 3	Recorder's Initials
	0600 (0)									
	(15)									
	(30)									
	(45)									
	0700 (0)									
	(15)									
	(30)									
	(45)									
	0800 (0)									
	(15)									
	(30)									
	(45)									
	0900 (0)									
	(15)									
	(30)									
	(45)									
	1000 (0)									
	(15)									
	(30)									
	(45)									
	1100 (0)									
	(15)									
	(30)									
	(45)									
	1200 (0)									
	(15)									
	(30)									
	(45)									
	1300 (0)									
	(15)									
	(30)									
	(45)									
	1400 (0)									
	(15)									
	(30)									
	(45)									
	1500 (0)									
	(15)									
	(30)									
	(45)									
	1600 (0)									
	(15)									
	(30)									
	(45)									
	1700 (0)									
	(15)									
	(30)									
	(45)									
	1800 (0)									
	(15)									
	(30)									
	(45)									

1 Subpart P Thermal Treatment (265 377)

2 Subpart AA Air Emission Standards for Process Vents [264 1033 (f)(vi)(B)]

Note any corrections made to the unit based on these measurements in McLaren-Hart Logbook

Peer Review _____ _____
Name Date

Revision 0 5/14/96

Shift Monitoring Form

NIGHT SHIFT

(T _ through T _)-Temperatures will be monitored every fifteen minutes at the following locations

[Temperature recorded in degrees Fahrenheit]

[Vacuum pressure recorded in _____]

Batch Numbers	Military Time (Measurement interval in minutes)	vacuum chamber manifold (T _)[1]	inlet/outlet to cond. 1 (T _)[1,2]	inlet/outlet to cond 2 (T _)[1,2]	inlet/outlet to cond 3 (T _)[1,2]	stack temp (T _)[1]	Misc 1	Misc 2	Misc 3	Recorder's Initials
	1800 (0)									
	(15)									
	(30)									
	(45)									
	1900 (0)									
	(15)									
	(30)									
	(45)									
	2000 (0)									
	(15)									
	(30)									
	(45)									
	2100 (0)									
	(15)									
	(30)									
	(45)									
	2200 (0)									
	(15)									
	(30)									
	(45)									
	2300 (0)									
	(15)									
	(30)									
	(45)									
	2400 (0)									
	(15)									
	(30)									
	(45)									
	0100 (0)									
	(15)									
	(30)									
	(45)									
	0200 (0)									
	(15)									
	(30)									
	(45)									
	0300 (0)									
	(15)									
	(30)									
	(45)									
	0400 (0)									
	(15)									
	(30)									
	(45)									
	0500 (0)									
	(15)									
	(30)									
	(45)									
	0600 (0)									
	(15)									
	(30)									
	(45)									

1 Subpart P Thermal Treatment (265.377)

2 Subpart AA- Air Emission Standards for Process Vents [264 1033 (f)(vi)(B)]

"Note any corrections made to the unit based on these measurements in McLaren-Hart Logbook"

Peer Review _____ _____

Name Date

NEW WASTE CONCEPTS

401 FREMONT PIKE
SUITE 10
PERRYSBURG OH 43551
U S A
419/872 8160
800/359 2783
419/837 2692 FAX

New Waste Concepts
ConCover®

Operator Training /Certification Manual

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New Waste Concepts
CAPS Preventitive Maintenance Schedule

Model _____ Serial # _____ Pump Model _____ Serial # _____

Machine Location _____ Mechanic _____

Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___

Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___ Machine Hours/Out ___ In ___

Date _____ _√_ OK _A_ Adjustment Made _X_ Pi Requires Additional Work

Function	50 Hours	100 Hours	150 Hours	200 Hours	250 Hours	Additional	
Slurry Pump						Hours	Years
	Initial Code	Initial Code	Initial Code	Initial Code	Initial Code		
Remove Face Plate							
Inspect Idler Pin							
Inspect Idler Gear							
Inspect & clear the grease port/Idler Pin							
Inspect tolerance between Idler Gear & Idler Pin							
Inspect tolerance between Rotor & Pump Case							
Clear any material from Cavities in the Pump Case							
Engine							
Change Engine Oil SAE 10W30							
Clean Air Element Finn # 007739							
Clean or Replace Fuel Filter Finn JDAR 50041							
Check Batt Electrolyte Level							
Check Fan Belt Tightness							

New Waste Concepts
CAPS Preventitive Maintenance Schedule

_√_ OK _A_ Adjustment Made _X_ Pi Reqires Additional Work

Engine-cont.							
Check Radiator Hoses & Clamp Bands							
Replace Oil Filter Finn JDT 19044						400 Hours	
Replace Fuel Filter Element						500 Hours	
Removal of Sediment from Fuel Tank						500 Hours	
Clean Water Jacket (Radiator Interior)						500 Hours	
Replace Fan Belt						2 Months	
Recharge Battery							Every Year
Replace the Air Change Element						800 Hours	
Check Valve Clearance							
Check Nozzle Injection							
						1000 Hours	
Change Radiator Collant							Every 2 Years
Replace Battery							Every 2 Years
Replace Radiator Hoses and Clamp Bands							Every 2 Years
							Every 2 Years

Hydraulic System	Perform a system check at each Service interval						
	Initial Code	Initial Code	Initial Code	Initial Code	Initial Code		
Check Fluid Level							
Change oil & return filter every 500 hours or if milky color or smells burnt 10 Micron Element Filter							

11/1/94

New Waste Concepts
CAPS Preventitive Maintenance Schedule

_√_ OK _A_ Adjustment Made _X_ Pi Requires Additional Work

Return Filter CAPS 900 & 1200 Finn Part # 21618							
Return Filter CAPS 1700 Finn Part # 8529							
Return Filter CAPS 2800 & 3300 Finn Part # 11869 Oil Gulf 46 AW Mobil DTE25 or Shell Tellus 46							
Replace Breather Filter CAPS 1700 2800 and 3300 every 500 hours Finn Part # 11784							
Remove and clean the suction filter every 500 hours of operation							
Check Lines and fittings							

Gearbox

Drain out initial oil first 50 hours of operation							
Flush gearbox w/an approved non flammable non toxic solvent							
Refill with Mobil SHC 630 ISO Grade VG 220 or Equal synthetic lubricating oil							
Change oil every 2500 hours or yearly whichever occur first							

New Waste Concepts
CAPS Preventitive Maintenance Schedule

_√_ OK _A_ Adjustment Made _X_ Pi Requires Additional Work

Power Take Off

Check Clutch Adjustment							
New Clutch may require several adjustments							
See Manual for specifications							

Wheel Bearings

Check and repack yearly							

CAPS Machine Daily Start-up

The CAPS machine (ConCover® All Purpose Sprayer) is the mixing and application equipment which is used to spray ConCover® Before start-up begins, It is imperative that site personnel invest the time to read and familiarize themselves with the operators manual provided with the equipment

Pre-Start Check

The sequence listed below is intended to be used as a tool for the daily routine and should not be used in place of the operators manual to familiarize site personnel with the machine

1 Check engine oil and fuel - refer to fuel and lubricant section of the operators manual

2 Grease areas on machine marked ' Service daily

3 Once a week, grease areas marked Service Weekly"

4 **Before starting, open the recirculation valve, close the discharge valve, disengage the clutch, and place the agitator control in the neutral position**

5 Turn ignition switch to the "on ' position The magnetic safety switch button on thepanel should pop out

6 Engage starter to turn over engine At the same time, depress and hold the magnetic switch button After the engine has run for 10 seconds the magnetic switch should stay engaged when you remove your thumb from the button

* Note *Low oil pressure or high water temperature will disengage this switch and shut off the engine The volt meter indicates whether the alternator is charging or not*

ConCover® Work Sheet

This form has a few simple steps that will assist in determining the working face area, the amount of ConCover® to mix, and the amount of water to add to the tank

You need to remember three simple facts

1 One unit of ConCover® has two bags "A" & 'B"
2 One unit will cover 1000 square feet (100 sq meters) of working face
3 One unit is mixed with 100 gallons (380 liters) of water

Follow the these steps on a daily basis to guarantee that the proper amount of ConCover® is being mixed and applied to the working face

1 Determine the size of the working face in square feet / meters

length_____x width_____=_____sq ft. / meters

2 Determine the number of units of ConCover®

Sq. ft. (meters) _____÷ 1000 sq ft. (100 sq. meters)
=_____units

3 To determine the proper amount of water.

units _____x 100 gals (380 liters) =_____gallons / liters

Example 1.

1 3000 sq ft (300 sq meters)

2 3 units

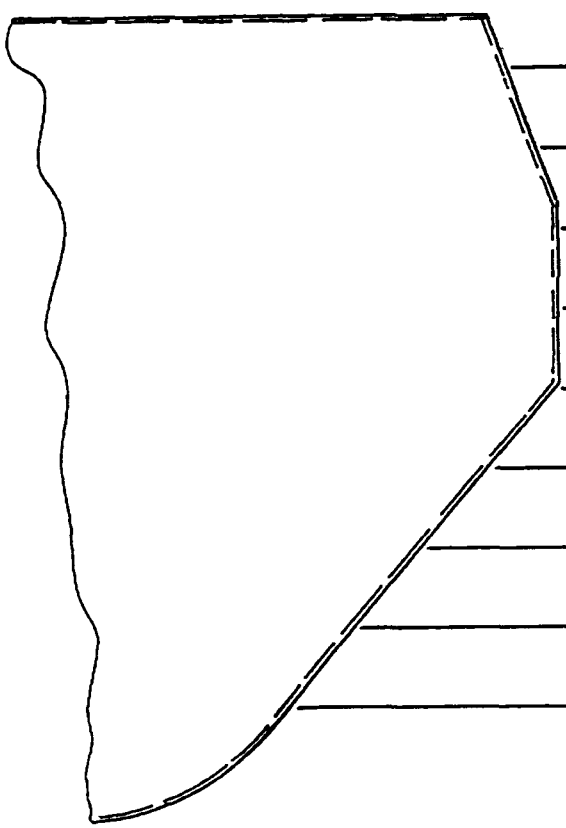
3 3 x 100 gallons (380 liters) = 300 gallons (1,140 liters)

4 Follow the steps on the ***ConCover® Mixing Procedure***

NEW WASTE CONCEPTS

7401 FREMONT PIKE
SUITE 10
PERRYSBURG OH 43551
U S A
419/872 8160
800/359 2783
419/837 2692 FAX

CAPS 900 Tank Calibration



Gal. / Liter	Inch / Cent.	ConCover
900 / 3,407	2 / 5.1	----
800 / 3,028	6 / 15.2	----
700 / 2,650	9 / 22 9	----
600 / 2,271	12.25 / 31.1	6
500 / 1,893	16 / 40 6	5
400 / 1,514	20/ 50 8	4
300 / 1,136	24/ 61	3
200 / 757	28 / 71.1	2
100 / 379	34 / 86.4	----

Note When measuring the volume of material in the tank, measure downward from the top of the tank

ConCover® Mixing Procedure

The entire mixing procedure can be performed by one person over approximately 30 to 40 minutes

1 Determine the square footage of area to be covered. One unit of ConCover® (one"A"bag and one "B" bag) will cover 1,000 square feet (100 sq meters) One unit of ConCover® mixed with 100 gallons (380 liters) of water Note In wet weather, an equal number of ConCover Plus® bags are added ten minutes prior to application

2. Fill mixing tank with water to proper level. For example if coverage area is 8,000 square feet (800 sq meters) Then 800 gallons (3,030 liters) of water are mixed with 8 units of ConCover®

3 After the engine has warmed up move throttle to maximum position. Engage agitation for forward flow and place at approximately half speed.

4 With agitation at half speed, add the proper number of ConCover "A" bags This material should be added slowly to insure proper mixing. As with all dusting materials, a dust mask should be worn

5 After the last ConCover® "A" bag has been added, close the hatch and move agitation to full speed. Continue mixing at full speed for 5 minutes.

6 After mixing the "A" bags for 5 minutes, slow agitation to half speed, open hatch, and add the equal number of ConCover® "B" bags.

7 After the last ConCover® "B" bag has been added, close the hatch and movea gitation to full speed. Continue to mix for twenty minutes

8 Mixing is generally completed at the end of 30 minutes. The mixture will become thick, viscous slurry that will cling to vertical surfaces upon proper mixing. Note. If application is not to take place at this point the agitation may be turned off If the ConCover® is left sitting in the tank for an hour or more, 5 minutes of mixing should proceed applicanon.

9 If a light to moderate rain is falling or is in the 12 hour forecast add an equal number of ConCover Plus® bags 10 minutes prior to application This additive must be added slowly with the agitation on forward and at full speed. ConCover Plus will assist the product in achieving a faster setting time in high moisture conditions

10 The CAPS machine may be towed out to the working area at any time during or after the mixing process For application instructions see the ***ConCover® Application Procedures*** form

ConCover® Application Procedure

To apply the ConCover you will start by reviewing the area to be covered and construct a plan to adequately cover the area. To assure that the entire area is covered plan to spray from at least two opposing angles This will ensure that shadowing which is caused by spraying from only one angle, will not occur

1 Determine how you are going to cover for that day

2 Disengage the pump close the recirculation valve and open the cannon valve

3 Attach the long distance fan nozzle to the cannon engage the pump and begin spraying the areas farthest away from the machine Note *By spraying the farthest areas first, a ny material which falls out of the stream will settle on the area to be covered and help conserve the amount of material needed to cover the area*

4 Once you have sprayed the farthest area, disengage the pump and replace the long distance fan nozzle with the short distance wide angle nozzle to cover the areas close to the machine

5 Relocate the machine at an opposing angle and repeat the procedure from the farthest to the closest areas to be covered. Note *For areas that prove to be difficult to cover with the cannon it may be necessary to use the hose*

Using the Hose

CAUTION. The recirculation valve must be open when using the hose If the valve is not open, extreme heat will occur resulting in damage and / or bodily injury

To use the hose

1 Open the recirculation valve and the hose valve which is located near the pump

2 Pull out the hose to the desired spraying location

3 Signal to the person at the machine to engage the pump At this point the material will be going through the recirculation back into the tank

4 Open the valve on the end of the hose and at the same time the operator at the machine will use the engine throttle to control the amount of material coming out of the hose

5 When you have completed using the hose disengage the pump and reel the hose back on to the spool

ConCover® and ConCover 180 Daily Application Record

Date _____ Person Mixing and Applying _____

Size of Waste Face Length _____ Width _____ Total sq ft. / meter = _____

ConCover® or ConCover 180™ Used "A" bags _____ "B" bags _____

Gallons / Liters of Water: _____

Method of Application Cannon / Hose / Both Cannon and Hose

Weather / Site Conditions at Time of Application _____

_____

_____

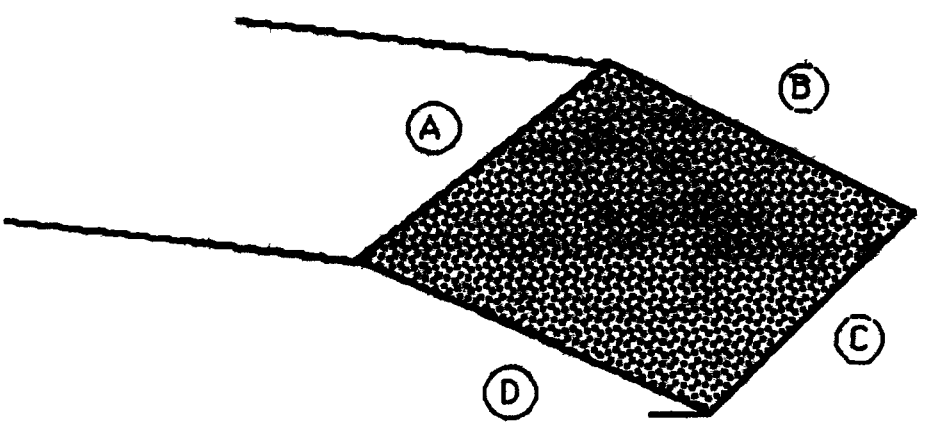
Other Comments _____

_____

_____

Note To ensure a proper and complete cover in compliance with most regulatory agencies, it is required that ConCover® be applied from opposing angles

Please indicate by marking below the directions used for this application.



ConCover Certification Evaluation

This evaluation is graded on a scale of 1 to 5, with one being a low score and five being a high score In order to become certified to use ConCover, the persons being evaluated must obtain at least a four on each item in the evaluation

Application Equipment

Safety

_____ Is familiar with the operators manual

_____ Identifies and understands all caution stickers on machine

_____ Worked on and around the machine in a safe manner

_____ Wore a dust mask and goggles when loading ConCover® into the machine

_____ Site workers understand that the tank of the CAPS machine is classified by the OSHA Confined Space Standard CFR 1910 146 as a confined space and know not to enter without following an established confined space entry procedure provided by their safety personnel

Engine start-up

_____ Checked oil

_____ Serviced grease fittings as required

_____ Had recirculation valve opened

_____ Had discharge valve closed

_____ Had clutch disengaged

_____ Had agitator control in the neutral position

_____ Started engine

Demonstrated proper lever and valve settings

_____ Engaged agitation system forward/reverse

_____ Cannon On/Off

_____ Recirculation On/Off

_____ Hose On/Off

_____ Controlling hose pressure using recirculation / throttle

Demonstrated proper use of the foam generator / ConCover 180

_____ Demonstrated proper lever settings on foam generator for adding material.
_____ Vent lever open, fill port lever open

_____ Correctly added 10 parts water and 1 part Foam X 10 1 Ratio

_____ Attached air line to machine pressurized tank to 100 psi (7 bars) CAPS 900

_____ Engaged compressor switch pressurized tank to 100 psi. (7 bars) CAPS 1700 & 3300

_____ Had product re-circulating before engaging foam generator levers.

_____ When beginning foaming, opened pre-expansion chamber lever first and then post expansion chamber lever

_____ When ending foaming closed post expansion chamber lever and then pre-expansion chamber lever

_____ Identified product entering the tank. Sound and color variation

_____ Disconnected air line from foam generator CAPS 900

_____ Identified filter screen on foam generator

Measuring and Mixing ConCover®

_____ Confirmed that the size of the working face corresponds with the amount of material being applied.

_____ Filled tank with the correct amount of water using tank measurement as well as gallon / liter chart and tape measure

_____ Determined the proper amount of ConCover® to be added to the water as 1 "A" bag and 1 "B" bag per every 100 gallons (379 liters) of water or quantities verified by the trainer

_____ Demonstrated the proper speed setting for the agitation system during mixing

_____ Added ConCover A and B bags at an acceptable rate

_____ Mixed the ConCover® for at least 30 minutes prior to application

Measuring and Mixing ConCover 180™

_____ Measured working face

_____ Filled tank with the correct amount of water using tank measurement as well as gallon / liter chart and tape measure

_____ Determined the proper amount of ConCover 180™ to be added to the water as 6 A ' bag and 2 B bag per every 100 (379 liters) gallons of water

_____ While adding the A bags the product was recirculating through the pump

_____ When adding the B ' bags the recirculation was turned off

_____ Demonstrated the proper speed setting for the agitation system during mixing

_____ Added ConCover A and B bags at an acceptable rate

_____ Correctly foamed the product. See equipment use section, foam generator

Mixing and measuring ReJeXit™

_____ Using the provided water chart an a measuring device, filled tank with correct amount of water

_____ Determined the correct amount of materials to add to tank.

_____ Added ReJeXit materials to tank at an acceptable rate

_____ Mixed the batch for ten minuets prior to application.

Application / Record Keeping

Application

_____ Operator verbally explained an acceptable method for this application

_____ Operator demonstrated the proper spraying technique of allowing the material to rain down on to waste face as opposed to spraying directly into the waste

_____ Operator sprayed ConCover® from enough angles to achieve a total cover of the the waste face

Record Keeping

_____ Operator properly filled out record keeping form

_____ _____

Sign, Date, Operator Sign, Date Instructor

CAPS Machine
Winter / Freezing Conditions Maintenance

Whenever it necessary to leave the CAPS machine outdoors in freezing conditions, the following must be performed in order to prevent damage to the equipment.

1. **Drain all water from the system by**

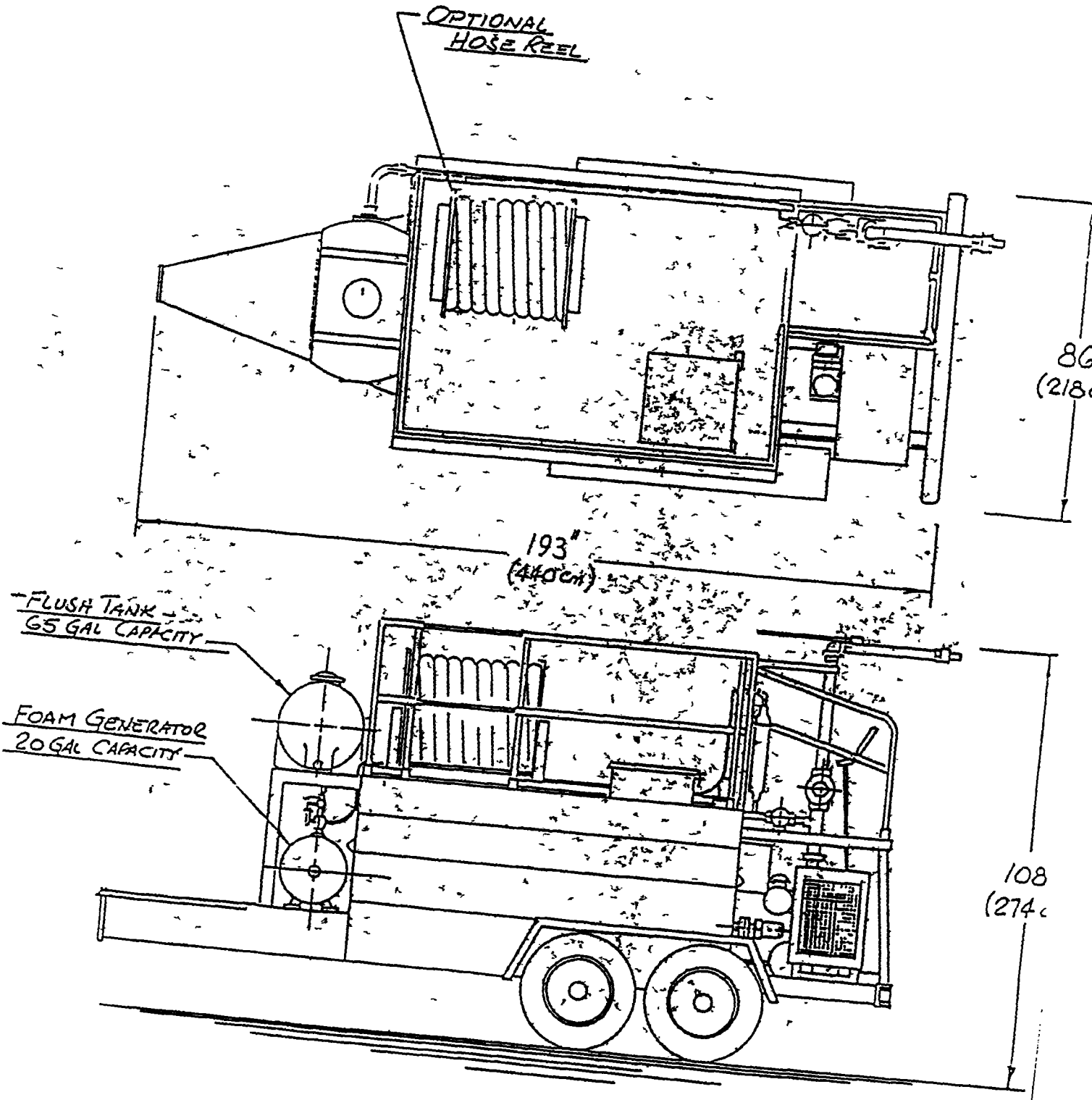
   A Pull the drain plug located in the rear of the machine Use the ram rod to clear any possible obstructions from the drain Reinsert the drain plug.

   B Unscrew the drain plug from the bottom of the pump and allow any water within the pump drain out. Note: it may be necessary to insert a small diameter rod to clear the material away from the opening allowing it to drain.

   C. Begin to pour a one gallon container of RV antifreeze through the cannon allowing it to enter the pump When you see that the antifreeze has begun drain out of the bottom of the pump screw the pump drain plug back into the pump and proceed to pour the rest of the gallon into the cannon

2 To prevent the valves from freezing cock them all at a forty five degree angle.

3 If you have any questions concerning this procedure call 1 800 359-2783 and speak with Chris Lark at ext. 106



CAPS 900 - "180" SPRAYER

NWC

NEW WASTE CONCEPTS, INC.

7401 Fremont Pike • Suite 10
Perrysburg, Ohio 43551
(800) 359-2783
(419) 872-8160
FAX (419) 837-2692

Date 4/18/96
Pages: 7

TO: Hopi Salomon, Bldg. T893B
Rocky Flats Environmental Technology Site
FAX 303-966-4046

MATERIAL SAFETY DATA SHEET

Trade Name ConCover® Remediation "A" Bag

Section I **General Information**

Item Name: Earthen material blend/natural cellulosic polymer
Final product is a fibrous slurry
Classification # 2508 10 0000

Manufacturer: New Waste Concepts
7401 Fremont Pike
Perrysburg, Ohio 43551
(419) 872-8160

Date MSDS Prepared: February 6, 1996
Last Review Date: February 6, 1996
MSDS Preparers Name/Address: Prepared by manufacturer

Unit of Issue/Container Type: Tote sacks or reinforced paper bags, various weights

Product Description. Binding material blended with natural earthen materials; biodegradable organic compounds with other inert material and fibrous, cellulose based materials. Respirable dusts are present.

Section II **Ingredient/Identity Information**

Proprietary (Y/N) Y

Ingredient	Composition (%)	CAS #	Exposure Limits (TWA)
silica crystalline quartz	2-6 (<2 respirable)	14808-60-7	2.5 mg/m^3 (OSHA PEL)
non-toxic respirable dust	n/a	n/a	15 mg/m3 (OSHA PEL) 10 mg/m3 (ACGIH TLV) 5 mg/m3 (resp frcn, OSHA)

Section III **Physical/Chemical Characteristics**

Appearance and Odor: Greyish/white fine powder with no distinctive odor

Boiling Point.	n/a
Melting Point.	n/a
Vapor Pressure	n/a
Vapor Density:	n/a
Specific Gravity:	n/a
Decomposition Temperature	n/a
Evaporation Rate	n/a
Solubility (H_2O)	n/a
Percent Volatiles by Volume	0
Viscosity:	n/a
pH	n/a

Radioactive (Y/N): N
Ferromagnetic (Y/N): N

Section IV Fire and Explosion Hazard Data

Flash Point: n/a
Lower Explosive Limit: n/a
Upper Explosive Limit: n/a
Extinguishing Media/Methods: Use dry chemical, CO_2, AFFF (foam), or water
Special Fire Fighting Precautions: None
Unusual Fire/Explosive Hazards: Suspended dust/air mixture may ignite if concentrated and in the presence of ignition source. Do not mix product in an enclosed environment.

Section V Reactivity Data

Stable (Y/N): Y
Conditions to Avoid: No off gassing produced when mixing with water.
Materials to Avoid: Do not mix or store with strong bases (e.g. hydroxides)
Keep away from oxidizers.
Hazardous Decomposition Products: Upon decomposition, may emit fumes of SO_X.

Section VI Health Hazard Data

Routes of Entry
- Inhalation (Y/N): Y
- Skin (Y/N): N
- Ingestion (Y/N): N
- Other N

Contact Eye/Skin Hazards: Y, Dust may cause eye irritation.
Acute Overexposure Symptoms: Acute inhalation may produce lung, nose, and throat irritation. Systemic symptoms may include dyspnea and liver effects.
Chronic Overexposure Symptoms: Inhalation of dust over time may cause delayed pulmonary fibrosis disease
Carcinogenicity Data. Silica dust is an experimental carcinogen and tumerogen (Dangerous Properties of Industrial Materials, Sax/Lewis, 7th ed.) Limited evidence of carcinogenic effects of crystalline silica in humans (IARC Monographs on the Evaluation of the Carcinogenic Risks of Chemicals to Humans, vol. 42, 1987).
Emergency Treatment/ First Aid Procedures: Gross Inhalation - Move victim to fresh air environment. Seek immediate medical attention.
Gross Ingestion - No oral toxicity known. May cause intestinal blockage
Skin Contact - Wash affected areas with soap and water
Severe Eye Contact - Flush eyes with water for 15 minutes. Seek medical attention.

Section VII Precautions for Safe Handling and Use

Personal Protective Equipment (Routine Use)

Respiratory Protection. Respirators are not required when using this product under routine outdoor conditions In cases when excessive dusts might be periodically created, use NIOSH/MSHA approved full or half face respirators with dust cartridges when pouring and mixing product.

Gloves. Recommend latex, butyl rubber, or nitrile gloves

Eye Protection Safety goggles or glasses recommended

Other Recommend Tyvek suits or coveralls

Work Practices:	This product is to be used in outdoor environments Exposures to hazardous components are not expected to exceed permissible limits during routine daily use Minimize dusting whenever possible. Do not use this product in confined or enclosed environments. Do not use in the presence of flames or sparks.
Ventilation.	If routine indoor use is required, or in the presence of excess dust generation, local exhaust ventilation is recommended
Spill/Release Procedures	Excess spilled product, if uncontaminated, may be cleaned and disposed of as ordinary waste No special clean up procedures are recommended
Neutralization Procedures	n/a
Waste Disposal Procedures	This material is not a listed hazardous waste, nor does it exhibit any hazardous waste characteristic.
Storage/Handling Procedures	Store product in a dry environment, away from strong bases and oxidizers
Other Health Hazard Precautions	Use proper lifting procedures when attempting to dispense product from 50 lb bags.

Reviewed and Approved/Date 2/9/96

Thomas J Nachtman
President

MATERIAL SAFETY DATA SHEET

Trade Name ConCover® "B" Bag

Section I General Information

Item Name:	Recycled paper and fiber
Manufacturer	New Waste Concepts, Inc. 7401 Bethany Pike, Suite 10 Perrysburg, OH 43551 (419) 872-8160
Date MSDS Prepared.	August 16, 1995
Last Review Date:	August 16, 1995
Msds Preparers Name/Address	prepared by manufacturer
Unit of Issue/Container Type:	Reinforced paper bags, 35 lbs
Product Description:	Recycled cellulose
Multiple Part Product (Y/N): Y	
Description of Related Components:	ConCover® "A" Bag

Section II Ingredient/Identity Information

Proprietary (Y/N): Y

Section III Physical/Chemical Characteristics

Appearance and Odor:	Fiberous with brown or natural green color
Boiling Point:	N/A
Melting Point:	N/A
Vapor Pressure.	N/A
Vapor Density:	N/A
Specific Gravity:	N/A
Decompositon Temperature:	N/A
Evaporation Rate:	N/A
Solubility (H20):	Slightly Soluble
Percent Volatiles by Volume.	N/A
Viscosity:	N/A
pH	N/A
Radioactive (Y/N):	N
Ferromagnetic (Y/N):	N

Section IV Fire and Explosion Hazard Data

Flash Point.	N/A
Lower Explosive Limit·	N/A
Upper Explosive Limit·	N/A
Extinguishing Media/Methods	Use CO_2, dry chemical foam, or water
Special Fire Fighting Methods	None
Unusual Fire/Explosive Hazards	Keep away from strong basic materials such as sodium, potassium hydroxides Keep away from oxidizers

Section V Reactivity Data

Stable (Y/N)	Y
Conditions to Avoid.	Heat, fire, water
Materials to Avoid.	Keep away from oxidizers and strong basics
Hazardous Decomposition Products	CO_2, CO_3

Section VI Health Hazard Data

Routes of Entry	
Inhalation (Y/N)	Y
Skin (Y/N)	N
Ingestion (Y/N)	N
Other·	N
Contact Eye/Skin Hazards	N/A
Acute Overexposure Symptoms	Avoid prolonged inhalation of fiber material
Chronic Overexposure Symptoms	
Emergency Treatment/ First Aid Procedures	
Gross Inhalation	Move victim to fresh air environment. Seek medical attention.
Gross Ingestion	No oral toxicity known
Skin Contact	Wash affected areas with soap and water
Severe Eye Contact	Flush eyes with water for 15 minutes Seek medical attention

Section VII Precautions for safe Handling and Use

Personal Protective Equipment (Rountine Use)	
Respiratory Protection	Face shield recommended but not required.
Gloves	Recommend latex, butyl rubber, or nitrile gloves
Eye Protection.	Safety goggles or glasses recommended.
Other·	None
Work Practices	This product is to be used in outdoor environments Do not use in the presence of ignition sources
Ventilation	Use outdoors
Spill/Release Procedures	Sweep material into drums and dispose of in accordance to local, state, and federal laws Does not need to be reported to CERCLA or RCHA
Neutralization Procedures	N/A

Waste Disposal Procedures.	This material is not hazardous, nor does it exhibit any hazardous waste characteristic.
Storage/Handling Procedures	Store product in a dry environment, away from strong bases and oxidizers
Other Health Hazard Precautions	Use proper lifting procedures when attempting to dispense product from 35 lb bags.

Reviewed and Approved/Date:

Thomas J Nachtman
President

RMRS Rocky Mountain Remediation Services L L C
protecting the environment

MEMORANDUM

DATE March 20 1996 5400 1

TO M R Wood Remediation Services (OU2) Bldg T893B X6689

FROM M B Murdock Ecology Bldg T893B X3560

SUBJECT MIGRATORY BIRD AND THREATENED AND ENDANGERED SPECIES CLEARANCE FOR OU2 TRENCHES PROJECT AND REVEGETATION RECOMMENDATIONS UPON PROJECT COMPLETION MBM 028 96

Ecology personnel have surveyed the Operable Unit 2 trenches area for migratory bird threatened and endangered species and wetlands concerns No concerns with these issues were identified in the work area If earth moving work does not start by April 22 1996 however a migratory bird survey renewal may be required With the nesting season approaching after that date nesting surveys must be completed every two weeks until work begins

Ecology was also requested to develop revegetation recommendations for this project Because it is in an area classified as xeric tallgrass prairie a rare plant community it is advisable to limit surface disturbance to only the area actually necessary DOE Policy 9 19 for Rocky Flats establishes the need for revegetation "as quickly as possible" after completion of a project This Policy also requires erosion controls for all construction activities at the Site DOE Order 6430 1A establishes requirements that

- The area beyond the construction limits shall not be unnecessarily disturbed
- Disturbance of the natural terrain shall be minimized during site grading Where feasible natural flora on or adjacent to the construction site shall be preserved and protected from vehicular and pedestrian traffic with temporary fencing
- In locations where topsoil is not readily available all topsoil within the area of disturbance shall be scalped and stockpiled in a designated location, for later use in landscaping and revegetation efforts
- Natural flora in unlandscaped areas shall be reestablished where disturbed by constriction activities

To comply with Policy 9 19 and DOE Order 6430 1A ecology recommends that topsoil be scalped from the areas where storage piles may contaminate surface soils This topsoil should be stockpiled in an unaffected location as near as possible to the work site to eliminate unnecessary haulage While the Policy does not specify a topsoil stripping depth it is the experience of Ecologists at the Site that stripping to a depth of 12 inches is appropriate The capabilities of specific earth moving equipment may require that a greater depth be stripped and stockpiled due to the practicality of the operation Recommended revegetation techniques for the Site and a recommended seed mixture are attached

Should you have questions or require further information please contact me at extension 3560

MBM mbm

Attachments
As Stated

cc
J D. Krause
ERPD Records File (2)

Attachment to MBM-028-96
page 1 of 6

REVEGETATION STRATEGIES

The general revegetation recommendations for different revegetation needs at the Site have been developed by Site Ecologists based on recent experience at the Site Customized seed mixtures for each site help ensure that appropriate species are planted and that non-endemic species are not introduced The current revegetation strategy is to restore the native prairie grasslands as closely as possible to preexisting conditions rather than to change the character through reclamation and remediation As exhibited by the reclamation acreage in the southeastern portion of the Site planting aggressive non-endemic species at the Site can drastically change the native prairie Even after two decades the planted species have allowed little encroachment of native forbs and grasses into the reclaimed area

Nylon netting has been prohibited for revegetation efforts at the Site While the netting is an efficient means of stabilizing the mulch during the high winds often experienced at the Site the clear evidence of songbird mortality caused by this netting has led Site ecologists to prohibit the use of netting Killing songbirds is specifically prohibited by the Migratory Bird Treaty Act (MBTA) therefore use of netting became a compliance issue

Revegetation efforts have yielded mixed results for different revegetation efforts at the Site Evaluation of the success of some early revegetation efforts has provided some useful information to help modify subsequent efforts Some projects have found themselves short of sufficient topsoil for complete re-topsoiling of the disturbance and have attempted to substitute hydromulch for soil This has not proved to be a particularly viable solution Availability of topsoil has often been a problem once a project reaches the final phase of revegetation Occasionally insufficient topsoil has been reserved during the first phase of new construction and sufficient topsoil is unavailable for successful revegetation More commonly however revegetation is the final step of remediation in a decontamination and decommissioning project at a location that was initially disturbed decades ago At the time of the original construction at the Site no thought was given to stockpiling topsoil for future use so topsoil supplies are unavailable If no topsoil is available Site ecologists recommend procurement of topsoil from off-site to allow placement of a minimum of 6 to 8 inches of topsoil over the subsoil at the disturbance Purchasing topsoil from off-site often adds unanticipated expense to the final revegetation costs and has recently caused some funding problems and delays of project completion and closure

Once a disturbance has been filled and re-contoured that the subsoil should be ripped or scarified to a depth of 8 inches to relieve soil compaction from heavy equipment before topsoil placement Topsoil should then be placed as evenly as possible in a 6- to 8-inch layer for imported soil or as evenly as possible where native soil was reserved from the site If reserved soil is used all that is available should be applied Care should be taken during topsoil application to avoid compaction of this layer

Subsequent to topsoil placement fertilizer should be applied at a rate of 60 pounds of nitrogen and 60 pounds of phosphorus per acre Seed should then applied directly into the topsoil Seeding may then be performed using a no-till drill or broadcast seeding depending on slope areal extent of the disturbance soil conditions (much of the soil at the Site is too rocky for drill

seeding) and other site-specific factors If the seed has been broadcast the reseeded area should be drag-chained or raked to ensure that the seed is buried prior to mulching

Certified weed-free hay or straw mulch can be used on small areas or in locations protected from the wind (Excelsior mulch is also an acceptable material since wood fiber is also weed-free) Mechanical crimping of hay or straw mulch is normally recommended to anchor it to the soil In large areas on steep slopes, and where high winds are commonly experienced at the Site mulch may be dislodged in such areas hydromulching is recommended Hydromulch should be applied as a separate final step Application of seed within the hydromulch is not an accepted practice at the Site Only mulches bound by vegetable-based binders (tackifiers) are allowed for use on the Site due to previous problems with petroleum-based binders leaching into the groundwater Tackifying agents found to be 'environmentally friendly' and chemically acceptable for use at the site are those based on guar gum or Psyllium (alpha plantago) The product known by the brand name 'SoilGuard' was also found to be chemically acceptable Wood fiber or excelsior mulch material provides a good weed-free mulch fiber that can be combined with the tackifiers for good effect Several products of this sort are available on the open market Reprocessed newsprint-type wood fiber mulch has not yielded particularly good results at the Site, however The thick clumping and persistence of the papier-mache-like product may have inhibited good plant growth in one case

Experience has shown that hydromulching to a thickness of 1 to 1 5 inches is an optimum application rate Where steep grades occur or when high winds can be expected before the vegetation is fully established, hydromulching is highly recommended Limited or nonexistent success of a revegetation effort will require repeated attempts until successful revegetation is attained

SUGGESTED SEED MIXTURE FOR OU2 REVEGETATION

Species (Variety)	Application Rate (lbs/ac PLS)[1]
Big Bluestem Kaw (*Andropogon gerardii*)	3 0
Side oats Grama - Vaughn (*Bouteloua curtipendula*)	2 0
Little Bluestem - Camper or Pastura (*Schyzachrium scoparium*[2])	1 5
Blue Grama (*Bouteloua gracilils*)	2 0
Thickspike Wheatgrass - Critana (*Agropyron dasystachyium*)	3 0
Weatern Wheatgrass - Arriba (*Agropyron smithii*)	3 0
TOTAL	14 5

1) Application rate fro drill seeding This rate should be doubled fro broadcast seeding

2) Synonymous with *Andropogon scoparius*

Approved Weed Free Hay/Straw Sources

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 3
To Al Smith	From L Burke
Co.	Co.
Dept.	Phone #
Fax # 6283	Fax #

COLORADO DEPAI
DIVISION OF PLANT INDUSTRY
700 KIPLING STREET, SUITE 4300
LAKEWOOD, COLORADO 80215
(303) 239-4149

1995 Weed Free Forage Crop Producers who have completed certification as of 8-8-95

[redacted]
Acres Certified 10
Forage Type Alfalfa & Grass

[redacted]
Acres Certified 7
Forage Type Alfalfa

[redacted]
Acres Certified. 25
Forage Type Alfalfa/Grass

[redacted]
Acres Certified. 58
Forage Type Grass Hay

[redacted]
Acres Certified. 35
Forage Type Grass/Alfalfa

[redacted]
Acres Certified 30
Forage Type Grass Mix

[redacted]
Acres Certified 45
Forage Type. Grass/Alfalfa

[redacted]
Acres Certified 4 75
Forage Type Alfalfa

[redacted]
Acres Certified 58
Forage Type Alfalfa

[redacted]

Acres Certified 11
Forage Type Garrison
Meadow Grass

[redacted]

Acres Certified 15
Forage Type Alfalfa

[redacted]

Acres Certified 57
Forage Type Grass/Alfalfa
Clover Mix
(Hay not for sale)

[redacted]

Acres Certified 11
Forage Type Grass Hay

[redacted]

Acres Cert 1st inspec 30 5
Acres Cert 2nd inspec 42
Forage Type Alfalfa/Grass

[redacted]

Acres Certified 117 7
Forage Type Barley Straw

[redacted]

Acres Certified 57
Forage Type Wheatgrass
Brome
Bluegrass
Clover
Timothy

[redacted]

Acres Certified 4 5
Forage Type Grass/Alfalfa

[redacted]

Acres Certified 7 5
Forage Type Grass/Alfalfa

[redacted]

Acres Certified 30
Forage Type Brome/Orchard Grass/
Alfalfa

[redacted]

Acres Certified 14
Forage Type Alfalfa

[redacted]

Acres Certified 50
Forage Type Alfalfa

[redacted]
Acres Certified 35
Forage Type Mountain Grass

[redacted]
Acres Certified 16
Forage Type Alfalfa

[redacted]
Acres Certified 1st cut: 25 1
Acres Certified 2nd cut: 25 1
Forage Type Alfalfa

[redacted]
Acres Certified 60
Forage Type Alfalfa

[redacted]
Acres Certified 42
Forage Type Orchard Grass/
Alfalfa

[redacted]
Acres Certified 49
Forage Type Grass/Alfalfa Mix

[redacted]
Acres Certified 37 9
Forage Type Grass

[redacted]
Acres Certified 22
Forage Type Grass/Alfalfa Mix

[redacted]
Acres Certified: 1.5
Forage Type Alfalfa/Grass Mix

[redacted]
Acres Certified 1st Inspec 91
Acres Certified 2nd Inspec 82
Forage Type Grass & Alfalfa

[redacted]
Acres Certified. 26
Forage Type Grass/Alfalfa Mix

[redacted]
Acres Certified. 120 1
Forage Type. Alfalfa

[redacted]
Acres Certified. 10 5
Forage Type Grass/Clover Mix

[redacted]
Acres Certified 25
Forage Type Alfalfa