

CORRES. CONTROL
OUTGOING LTR NO.

000042150

DOE ORDER# 47001

EG&G ROCKY FLATS

14RF08995

EG&G ROCKY FLATS, INC.
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

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DAVIS, J.G.		
FERRERA, D.W.		
FRAY, R.E.		
GEIS, J.A.		
GLOVER, W.S.		
GOLAN, P.M.		
HANNI, B.J.		
HARMAN, L.K.		
HEALY, T.J.		
HEDAHL, T.		
HILBIG, J.G.		
HUTCHINS, N.M.		
JACKSON, D.T.		
KELL, R.E.		
KUESTER, A.W.		
MARX, G.E.		
McDONALD, M.M.		
McKENNA, F.G.		
MONTROSE, J.K.		
MORGAN, R.V.		
POTTER, G.L.		
PIZZUTO, V.M.		
RISING, T.L.		
SANDLIN, N.B.		
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SETLOCK, G.H.		
STEWART, D.L.		
STIGER, S.G.		
TOBIN, P.M.		
VOORHEIS, G.M.		
WILSON, J.M.		

August 29, 1994

94-RF-08995

D. George
Environmental Restoration Division
DOE, RFFO

TRANSFER OF MEETING MINUTES - LJP-004-94

Action: None required

Attached please find minutes from a meeting concerning Operable Unit (OU) 7 held on August 15, 1994, between the Colorado Department of Public Health and Environment (CDPHE), the Department of Energy (DOE), EG&G, Inc., and subcontractor representatives. Also enclosed are the handwritten notes taken during the meeting which were reviewed and signed by the parties involved.

The Technical Memorandum, Revised Work Plan, is undergoing modification to address the concerns and recommendations from this meeting and the August 15, July 18, and June 22 meetings. The revision is scheduled to be completed September 6, 1994. The document will be transferred to the agencies after the document control process is complete.

If you have any questions or comments with respect to the enclosed minutes, please contact me at 966-8553.

L. J. Peterson-Wright
Operable Unit 7 Project Manager
OU 5, 6, & 7 Closures

LJP:cb

Orig. and 1 cc - D. George

Attachment:
As Stated

LJPETERSON-WRIGHT ✓
 P. J. MARTIN ✓
 T. LINDSAY ✓
 E. C. MAST ✓

CORRES. CONTROL X X
 ADMN RECORD/080 ✓
 TRAFFIC
 PATS/T130G

CLASSIFICATION:

UCNI
 UNCLASSIFIED ✓
 CONFIDENTIAL
 SECRET

AUTHORIZED CLASSIFIER
SIGNATURE

DATE

IN REPLY TO RFP CC NO:

ACTION ITEM STATUS

PARTIAL/OPEN
 CLOSED

LTR APPROVALS:

ORIG & TYPIST INITIALS

LJP - CB

ADMIN RECORD

AD-0107-000441

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OPERABLE UNIT 7 INTERFACE MEETING MINUTES
AUGUST 25, 1994

Meeting Objective: To expedite CDPHE and EPA approval of the Phase II field sampling plan, and to present assumptions and management strategies for the landfill closure IM/IRA design, leachate collection system proposed action memorandum, and the focused risk assessment.

This includes presentation of assumptions and clarification of management strategies for the following:

- Landfill closure design;
- Leachate collection system preliminary design;
- Proposed action memorandum;
- Phase II field sampling plan; and
- Risk assessment. (*Post-closure*) - will not be required in IM/IRA decision document.

1. Introductions (DOE, CDPHE, EPA, PRC, EG&G, and Stoller)

2. Landfill Closure Design

The objectives of the landfill cover are to provide long term minimization of liquid migration, function with minimum maintenance, promote drainage to minimize erosion, and accommodate settlement and subsidence. Assumptions and management strategies for the cover design and slurry wall design are presented below.

Assumptions:

- Site characterization was completed during the Phase I RFI/RI.
- Waste characterization was completed during the Phase I RFI/RI.
- Settlement, subsidence, slope stability, and erosion will be addressed as part of the cover design.
- Multiple-layer cover design will be used.
- Cover leakage will be determined using HELP modeling.
- Long term performance of cover will be addressed as part of the design.
- Landfill cover will extend to the dam or to the outer edge of the contaminant plume *on the north and south sides. CDPHE agreed.*
- Slurry wall will be constructed under the footprint of the cover. *Slurry wall should be placed outside of contaminant plume (see bullet above).*
- Slurry wall will be keyed into unweathered bedrock. *Modeling will be performed to determine whether slurry wall will be tied into weathered bedrock or unweathered bedrock. CDPHE agreed.*
- Excess soil from the slurry wall excavation will be placed in the landfill. *CDPHE agreed.*

- Existing treatment facilities will be used to treat contaminated groundwater. *EG&G will check compatibility.*
- *Collection and treatment of groundwater downgradient of closure cell will be based on ARARs or a risk-based determination if ARARs are below 10^{-6} .*

Management Strategies:

- Engineering studies are being conducted to determine whether the slurry wall will encompass the entire landfill or will only be located on the upstream end and act to divert water around the landfill.
- If the slurry wall encompasses the landfill, migration of leachate and groundwater from the landfill will be prevented. Chemical testing will be performed as part of the final design to assess the potential for breakdown of the slurry wall by contaminants in the leachate.
- The bentonite mixture ratio and cement content of the slurry wall will be determined on the basis of the settlement potential. A bentonite soil slurry will be used if the settlement potential is low. A bentonite cement slurry will be used if there is concern about settlement or movement. The field hydraulic conductivity of the slurry material will be 1×10^{-6} cm/sec. The QC hydraulic conductivity of the slurry material will be 5×10^{-7} cm/sec.
- Test cores of the alluvial and weathered bedrock material will be required for geotechnical testing (grain size, etc.) to determine the bentonite/soil ratio for mixing the slurry. Geotechnical testing for mixing will be conducted as part of the final design.
- Information on the depth to bedrock and thickness of the weathered zone along the probable alignment of the slurry wall will be collected during the Phase II field investigation, discussed below.
- There is no stability concern with respect to the existing dam after the pond is drained and the area is filled and capped. Although the dam currently serves as a barrier to groundwater and contaminant migration, a series of collection wells or trenches will be located below the dam.
- Information on the depth to bedrock and the thickness of the weathered zone on the slopes below the dam in the area of the groundwater collection system will be collected during the Phase II field investigation, discussed below.
- *CDPHE - no advantage to placing the slurry wall ahead of the landfill closure IM/IRA schedule.*

3. Leachate Collection System Preliminary Design

The objective of the leachate collection system is to limit downgradient migration of leachate from the source area thus minimizing exposure of receptors to contaminated leachate.

Justification:

- *Applicable state water quality standards for comparison.*
- *FO39, a listed waste, is being discharged.*

Assumptions:

- The flow rate ranges from 5 to 10 gpm.
- Additional pond water will have to be pumped out next spring before construction begins.
- *Coordination with the surface water group is necessary to determine the quantity of water to be removed.*
- *During construction/de-watering activities, water may be pumped directly to the pond.*
- *East Landfill Pond water must meet segment 4 water quality standards prior to pumping.*
- Soil excavated during construction of the leachate collection system can be placed within the landfill.
- Leachate storage tanks will be located on the plateau on the northeast side of the East Landfill Pond.
- A tanker truck will be used to transport leachate from the storage tanks to the treatment facility.
- Leachate will be treated at the OU 1/OU 2 sitewide treatment plant located at the existing OU 1 treatment facility. The sitewide facility will be operational when construction of the collection system is complete.
- The preliminary design for the leachate collection system is shown on the handout.

Management Strategies:

- Information on the depth to bedrock and thickness of alluvial and weathered bedrock material at the leachate seep will be collected during Phase II field investigation, discussed below.
- Information on the depth to bedrock, thickness of alluvial and weathered bedrock material, and physical properties of the alluvial material at the proposed storage tank location will be collected during the Phase II field investigation, as discussed below.
- Costs for leachate treatment at the new sitewide facility have not been developed and will depend on the treatment train used. However, using the estimate of \$0.41/gallon for the treatment at the existing OU 1 facility (Preliminary Plan for Future Utilization of Existing Water Treatment Facilities at Rocky Flats Plant, EG&G, June 1994), which consists of UV oxidation and ion exchange units, would be conservative.
- The leachate collection system will be part of the final remedy, not just an interim action, and will be operated throughout the 30-year closure period *or until determined not needed.*

4. Proposed Action Memorandum (PAM)

The outline for the leachate collection PAM is attached to the agenda. Comments on the outline received by August 31, 1994, will be incorporated in the draft document.

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This PAM should follow "Rocky Flats" guidance. Section 3 presents a summary of risks; Section 4 presents a description of the action. Waste management considerations should be added. PAM must satisfy paragraph II of the DOE guidance.

Pam guidance will be provided to Stoller based on OU 1.

Assumptions:

- The leachate collection PAM will be submitted for agency review and public comment on October 14, 1994, and will include a 95 percent design and specifications.

Management Strategies:

- An engineering evaluation/cost analysis (EE/CA) will not be performed as part of the leachate collection PAM. *CDPHE agreed.*
- Treatment costs will not be included in the PAM. These costs are part of the operations and maintenance of the sitewide OU 1/OU 2 treatment facility. *CDPHE agreed.*

5. Phase II Field Sampling Plan

Assumptions and management strategies regarding data gaps in the existing OU 7 data that should be addressed in the field sampling plan are presented below. Proposed changes to the scope of the fieldwork in response to comments are summarized. The work plan technical memorandum is presently being revised in accordance with comments from CDHPE, EPA, and PRC. The comment responsiveness summary will be revised to address the comments made at the meeting on August 15, 1994, and attached as Appendix O.

Assumptions:

- Four wells will be completed to delineate the extent of groundwater contamination downgradient of the dam in No Name Gulch. Subsurface soil samples will be collected for chemical analyses in one to characterize the valley-fill alluvium. Drawdown recovery tests will be performed in each alluvial and weathered bedrock well and in the bedrock well if sandstone is encountered. Groundwater samples will be collected monthly for four months.
- *Eight boreholes will be drilled to provide information for remedial design. Subsurface soil samples will be collected for geotechnical analysis in one borehole.*

CDPHE suggested including a map showing the available data with respect to weathered/unweathered bedrock to support the boring locations.

- Twenty-five surface soil samples will be collected for chemical analyses downgradient of the dam; nine to verify hotspots (eight from the 0- to 2-inch horizon and one from the 0- to 10-inch horizon) and sixteen to determine the areal extent of contamination where PRGs were exceeded (twelve from the 0- to 2-inch horizon and four from the 0- to 10-inch horizon).
- *Based on previous guidance from CDHPE, the nine verification samples have been omitted.*
- Gas emission rates will be measured from the existing gas venting wells.

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- No additional sediment samples will be collected.
- No additional surface soil samples will be collected of interim soil cover material in the landfill.
- No additional surface soil samples will be collected around the East Landfill Pond.

Management Strategies:

- Two wells originally proposed to delineate the contaminant plumes in UHSU groundwater on the north and south sides of the Landfill Pond have been deleted from the field sampling plan because these areas will probably be covered by the landfill cap. The cost of installing a well (approximately \$10,000 per well) is not justified because the wells would only be used to collect four groundwater samples. The contaminant plumes will be contained and the groundwater will be collected below the dam.
- Four wells originally proposed to delineate the extent of groundwater contamination in No Name Gulch will be completed as planned.
- Three boreholes will be drilled around the landfill to determine the depth to bedrock and thickness of the weathered zone along the probable alignment of the slurry wall for use in landfill closure design. No samples will be collected and no tests will be performed at these locations.
- Two boreholes will be drilled to determine the depth to bedrock and the thickness of the weathered zone on the slopes below the dam for use in design of the downgradient groundwater collection system. No samples will be collected and no tests will be performed at these locations.
- Two boreholes will be drilled at the leachate seep (SW097) to determine the depth to bedrock and thickness of alluvial and weathered bedrock material for use in the leachate collection system design. *CDPHE agreed; DOE would like a drawdown test and a second borehole north of the pond.*
- One borehole will be drilled at the proposed tank location to determine the depth to bedrock, thickness of alluvial and weathered bedrock material for use design of the leachate and groundwater storage system. Samples of the alluvial material will be collected for geotechnical testing to determine the load bearing capability of the material.

CDPHE agreed.
- If bedrock sandstone is encountered in any boring, a drawdown test will be performed to determine the hydraulic conductivity.

6. Risk Assessment

Risk assessment discussion will include assumptions and management strategies concerning the scope and process of the risk assessment, the conceptual site model, and the source area and area of concern.

Approach is correct - timing is off.

No risk assessment is required for closure of the landfill. The risk assessment section in the IM/IRA

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decision document should be qualitative. After placement of the slurry wall a residual risk will have to be calculated. The baseline risk assessment is to be conducted post closure.

Action Items:

- *Dave Norbury (CDPHE) will contact OU 4 counterpart at CDPHE to determine the scope of the risk assessment for the IM/IRA decision document.*
- *Dave Norbury (CDPHE) will provide guidance on the point of compliance.*

Assumptions:

Scope - *Not applicable at this time*

- Based on the presumptive remedy approach and agreements between DOE, CDPHE, and EPA, a risk assessment will not be conducted for the area that will be capped [e.g., Active Landfill Area (IHSS 114) and the area surrounding and including the East Landfill Pond]. Development of remedial alternatives for this area will be based on an ARARs analysis for groundwater.
- The area to be evaluated in the risk assessment for OU 7 is downgradient of the dam. This area includes soil sampling locations (28 from 0 to 2 inches and 11 from 0 to 10 inches), 2 boreholes, and 6 groundwater wells. Sampling locations are shown on the attached maps.
- ARARS are likely to drive clean up of groundwater in downgradient areas. However, the risk assessment will contribute unique information to the decision-making process by providing a risk-based evaluation that integrates spatial, temporal, and volume aspects. Therefore, for the area downgradient of the dam, a risk assessment and a groundwater comparison to ARARs will be conducted.
- Toxicity factors and exposure parameters will be consistent with the Final Programmatic Risk-Based Preliminary Remediation Goals (PPRG) document (DOE 1994). The primary sources for toxicity factors will be the Integrated Risk Information System (IRIS) and the Health Effects Assessment Summary Tables (HEAST).

Process - *Not applicable at this time*

- 1) Develop potential contaminants of concern (PCOCs) for radionuclides and metals for the OU 7 area outside of the presumptive remedy area using the Gilbert Statistics Toolbox.
- 2) Conduct the CDPHE screen on PCOCs (for radionuclides and metals exceeding background plus 2 standard deviations and for organics exceeding the detection limit). This document will contain a description of the PCOC identification process and will be delivered to EPA and CDPHE.
- 3) Prepare COC technical memorandum (TM) in letter format, identifying COCs using the process outlined for Rocky Flats.
- 4) Develop Toxicity TM, Exposure Scenario TM, and Modeling TM (in letter format) based on results of the COC TM. Each of these documents is expected to be brief due to the small size of the area to be evaluated and the relatively small number of COCs expected.
- 5) Conduct exposure assessment, toxicity assessment, and risk characterization and incorporate the

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completed baseline risk assessment (BRA) into the Landfill Closure IM/IRA Decision Document.

Conceptual Site Model (CSM) (see attached figure) - *Not applicable at this time*

- Sources of contamination include:
 - surface soil
 - subsurface soil
 - groundwater (UHSU and/or LHSU)
- For residential exposures, the inhalation pathway will be evaluated using surface soils from 0 to 2 inches and the ingestion pathway will be evaluated using surface soils from 0 to 10 inches.
- Exposure to surface water will not be evaluated because the landfill cap will cover the East Landfill Pond entirely and the proposed groundwater collection system below the dam or downgradient of the pond will collect any outflow. Therefore, exposure pathways for surface water will be incomplete.
- Receptors will include:
 - hypothetical future onsite residents
 - hypothetical future onsite construction/excavation workers
- Exposure pathways for the residential scenario will include:
 - inhalation of VOCs in indoor air from subsurface soil and groundwater (only if VOCs are included in the list of PCOCs)
 - inhalation of particulates in air resuspended from surface soil
 - ingestion of homegrown produce
 - incidental ingestion of surface soil
 - dermal contact with surface soil (only if organics are included in the list of PCOCs)
 - external irradiation (groundshine) from surface soil
 - ingestion of groundwater
- Exposure pathways for the construction/excavation scenario will include:
 - inhalation of particulates in air from surface soil and subsurface soil
 - incidental ingestion of surface soil and subsurface soil
 - dermal contact with surface soil and subsurface soil (only if organics are included in the list of PCOCs)
 - external irradiation (groundshine) from surface soil and subsurface soil
 - dermal contact with shallow groundwater in the UHSU (only if organics are included in the list of PCOCs)

Source Area and Area of Concern - *Not applicable at this time*

- A preliminary list of PCOCs was prepared for the OU 7 area downgradient of dam (see attached table). This list is based on preliminary evaluation of data; no formal PCOC analysis has been completed. The attached maps show that the Source Area (CDPHE) and Area of Concern (EPA) are coincidental. Because the area is small (4.7 acres), the Source Area and Area of Concern will be considered to include the area delineated by Phase I and Phase II sampling.

Management Strategies:

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- The PCOC evaluation will be presented to EPA and CDPHE with the CDPHE screen.
- Pursuant to the IAG, four risk assessment TMs in letter format will be delivered to EPA and CDPHE:
 - COC TM
 - Toxicity TM
 - Exposure Scenarios TM
 - Modeling TM
- Source Area and Area of Concern are considered to include the area of sampling.

7. Review and Approval of Meeting Minutes

Dave Norbury CDPHE
Arturo Duran EPA - not in attendance
Dave George DOE
Laurie Peterson-Wright EG&G

List of Attendees

Name	Organization	Phone
Brian Caruso	Stoller	546-4338
Pat Corser	TerraMatrix	(303)879-6260
Kelley Crute	Stoller	546-4440
Mary Eisenbeis	Stoller	546-4474
Dave George	DOE	966-5669
Martin Hestmark	EPA	294-1134
Mary Lee Hogg	ICF-Kaiser for EG&G	966-8716
Mark Lewis	Stoller	546-4346
Tom Lindsay	EG&G	966-6985
Yvette Lowney	Gradient	442-4313
Dave Norbury	CDPHE	692-3010
Jen Pepe	DOE	966-2184
Laurie Peterson-Wright	EG&G	966-8553
Myra Vaag	Stoller	546-4417
Jim Wulff	PRC	295-1101

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**OU 7 Leachate Collection
PAM OUTLINE
August 29, 1994**

1. PURPOSE

2. SITE CONDITIONS AND BACKGROUND

- 2.1 Rocky Flats Environmental Technology Site
- 2.2 OU 7 Site Description
- 2.3 Leachate Seep Characteristics
- 2.4 Other Actions To Date

3. PROPOSED ACTION

- 3.1 Description of Proposed Action
- 3.2 Waste Management Considerations
- 3.3 Consistency with Long Term Actions
- 3.4 ARARs

4. SUMMARY OF RISKS

5. PROJECT SCHEDULE

6. REFERENCES