Enclosure 1
94-RF-04919

QUARTERLY REPORT

FOR JANUARY THROUGH MARCH 1994

ADMIN RECORD

OPERABLE UNIT 2
IM/IRA SURFACE WATER
FIELD TREATABILITY UNIT

PREPARED BY

EG&G ROCKY FLATS

ENVIRONMENTAL RESTORATION
ENVIRONMENTAL OPERATIONS MANAGEMENT

APRIL 1994

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Quarterly Operations Report for October Through December of 1993

at

Operable Unit No 2 IM/IRA Field Treatability Unit

1 0 INTRODUCTION

This report covers operations of the Field Treatability Unit (FTU) for the first quarter of 1994

The FTU is being operated as an Interim Measure/Interim Remedial Action (IM/IRA) under the Plan released by the Department of Energy (DOE) on May 8, 1991 The FTU began operation as Phase I for treatment of surface water from a portion of the South Walnut Creek drainage at OU-2 for removal of volatile organic compounds (VOCs) of concern The Phase I system consisted of collection facilities at Surface Water locations SW-59 and SW-61, equalization tankage, bag pre-filters, granular activated carbon (GAC) treatment units and insulated, heat traced transfer piping, pumps, and controls Phase I was conducted between May 13, 1991 and April 27, 1992, at which time the Radionuclides Removal System (RRS) and collection of SW-132 was implemented under the Phase II program The RRS added provisions for treatment of radionuclides and metals by pH adjustment, chemical precipitation and cross-flow membrane filtration The RRS replaced bag pre-filters as pretreatment to the GAC system Detailed descriptions of the FTU and its operation can be found in the IM/IRAP, the Field Sampling Plan (FSP), and related documentation The Field Treatability Study, Phase II (March 1994) for the South Walnut Creek Basin Surface Water Interim Measure/Interim Remedial Action report contains a detailed operating history of the FTU prior to this reporting period

2 0 TREATMENT FACILITY PERFORMANCE

2 1 QUANTITY OF WATER TREATED

The FTU collects surface water from three sources, Surface Water 59, 61, and 132 Collection occurs twenty four hours per day, 375 days per year Collected water is stored in a ten thousand gallon double walled poly-propylene equalization tank until enough water is present to justify initiating a batch treatment The FTUs goal is to collect all water from the three weirs, up to 60 gallons per minute total, and treat the water to remove all contaminants to below

Applicable or Relevant and Appropriate Requirements (ARAR) limits Table 1 in Appendix A lists the appropriate ARARs for the OU-2 FTU A total of 2,547,700 gallons of water was treated at the FTU during this reporting period

The following illustrates the volume of water collected for treatment during this reporting period

	Location	Month Total	Daily Average	Gallons per Min
January	SW59	12,019 gal	388 gal	0 27
	SW61,132	525,736 gal	16,959 gal	11 77
February	SW59	12,836 gal	458 gal	0 32
	SW61,132	763,308 gal	27,261 gal	18 93
March	SW59	78,614 gal	2,536 gal	1 76
	SW61,132	1,155,186 gal	37,264 gal	25 88

During high precipitation events, it is not uncommon for the flows to exceed the 60 gallon per minute collection rate All water in excess of 60 gallons per minute is allowed to overflow the weirs

2.2 CHEMICAL USAGE

Chemical usage for operations of the FTU were as follows

Month	Sulfuric Acid	Calcium Hydroxide	Ferric Sulfate	H_2O_2	Sodium Hydrox
January	89 gallons	1,023 lbs	250 lbs	100 gallons	65 gallons
February	131 gallons	1,360 lbs	307 lbs	138 gallons	165 gallons
March	118 gallons	1,824 lbs	517 lbs	240 gallons	215 gallons

2 3 WASTE GENERATION

The sludge generated at the OU-2 FTU is handled and packaged as low-level radioactive mixed waste A total of forty drums were packaged this quarter

Approximately two 55-gallon bags of Personnel Protective Equipment (PPE) is generated per month, with eight bags generated during the quarter The PPE is monitored for contaminants, and if determined clean for unrestricted release, sent to the Rocky Flats Plant Landfill for disposal

200 gallons of 10% sodium hypochlorite (bleach) were used (until spent) to clean the microfiltration membranes The sodium hypochlorite will be sampled and then treated through the system

Two GAC vessels (2000 lbs GAC each, 4000 lbs total) were used during this period The additional carbon usage can be attributed to the additional contaminants found in the Soil Vapor Extraction (SVE) extracted groundwater The spent GAC was sampled and will be sent offsite (with all spent GAC from phase II operations) for reactivation

2 4 OPERATING COSTS

Operations and maintenance (O&M) of the FTU is performed by Resource Technology Group, Inc (RTG), a subcontractor under the Master Task Subcontract (MTS) system By utilizing subcontract labor, EG&G is able to operate the FTU at a significantly lower cost, while still providing qualified personnel Average burdened labor costs for EG&G operators is approximately $95/hour, whereas subcontract labor for O&M averages $38/hour MTS subcontractors bring many years operating experience on similar systems, and must complete the same training as EG&G personnel The EG&G project manager oversees all of the FTUs operations, and provides input into the operations of the unit

Monthly operating costs for subcontractor labor and supplies (including chemicals) were as follows

January	$79,237
February	$68,709
March	$78,805

2.5 POWER

Power for the FTU is provided by portable diesel generators The diesel generators are expensive to operate and are responsible for many periods of non-collection

EOM is still pursuing installation of permanent plant power to the FTU The installation of permanent power will eliminate most all of the shutdowns that the FTU experiences Construction will begin during the last two weeks of April 1994, with an estimated completion date of early June 1994

2 6 PREVENTATIVE MAINTENANCE

During this reporting period a rigorous preventative maintenance program monitored all process equipment at the FTU All process equipment at the FTU is being characterized and evaluated for preventative maintenance frequency, spare parts requirements, and impacts on the system from individual equipment failure A preventative maintenance computer program tracks all planned maintenance activities and helps to assure that all equipment is properly maintained

Replacement parts and equipment for vital equipment are onsite or have been ordered This will significantly reduce any down time due to equipment failure

Due to pre-planning of scheduled and off-normal maintenance, the majority of the maintenance is being performed within a limited time frame to prevent any periods of non-collection

2 7 PERIODS OF NON-COLLECTION

Periods of non-collection are periods when for some reason the collection weir pumps cannot collect all collected surface water (up to 60 gallons per minute) and transfer it to the equalization tank for storage and later treatment

Periods of non-collection are listed below

Date	Duration	Cause
1/03/94	3 hr 35 min	Membrane inspection
1/21/94	1 hr	Membrane problems
2/16/94	1 hr 10 min	Generator shutdown
2/17/94	1 hr	Membrane cleaning
2/26/94	1 hr	Generators out of fuel
3/02/94	1 hr 05 min	Membrane chemical cleaning
3/09/94	3 hr 15 min	Soapy influent clogged membranes
3/10/94	5 hr 35 min	Influent line failure (see Appendix B)
3/26/94	35 min	Weir 61 pump tripped off (SW59 collected)
3/31/94	2 hr 35 min	Membrane chemical cleaning

EG&G is attempting to reduce/eliminate any periods of non-collection by improving process equipment and planning shutdowns that can be performed while the influent equalization tank is filling Three additional influent/effluent tanks are being ordered to increase the influent surge capacity The membrane treatment capacity has been increased by 33%, and the GAC capacity will almost double when simple piping modifications are complete

3 0 SAMPLING

3 1 SAMPLING OBJECTIVES

Characterization of the water from the three weirs (SW 59, 61, and 132) indicates the presence of radionuclides, heavy metals, volatile organic compounds (VOCs), and suspended solids to which contamination may be absorbed The Interim Remedial Action Plan (IRAP) identified specific contaminants of concern and established possible chemical-specific ARARs as effluent standards for discharge of the treated water Associated ARARs are presented in Table 1 located in Appendix A

Sampling at the FTU is performed to characterize the influent surface water, wastes, and effluent water, as well as to initiate optimization of FTU operations to minimize chemical consumption and waste generation

Preliminary sample results showing contaminants exceeding ARARs are presented below, as well as contaminants not associated with ARARs that are present in the water stream above detection levels

Samples that have been analyzed to date for this quarter have not been validated Sample results contained in this report are unvalidated, and are presented to provide a general scope of the contaminants treated at the facility Additionally, the last quarterly report stated that validated data would be presented in the next reporting period, however, most of that data has not undergone the validation process and will be presented in a future report

3 2 UNTREATED INFLUENT WATER (SW59, SW61, and SW132)

Sampling location SW59

Chemical	Detects	Detects >ARAR	Units	High	Average[1]	ARAR
VOCs						
1,1-Dichloroethane	6	-	ug/l	3 0	1 2	-
1,1-Dichloroethene	5	0	ug/l	4 0	1 7	7 00
1,1,1-Trichloroethane	7	-	ug/l	1 1	5 3	0 2
Carbon Tetrachloride	8	8	ug/l	180	101	5 00
Chloroform	8	8	ug/l	32	19	1 00
Tetrachloroethene	8	8	ug/l	52	44	1 00
Trichloroethene	8	8	ug/l	58	51	5 00
cis-1,2-Dichloroethene	8	-	ug/l	42	47	-
Metals						
Aluminum		2	ug/l	4030	483	200
Iron		1	ug/l	3160	396	1000
Zinc		9	ug/l	316	188	50 0

Radionuclides

Radionuclide data was not received for this reporting period prior to preparation of this report

[1] Average value calculated by taking all values (for non-detect, 1/2 the detection limit was used) and dividing the value by the number of samples

Sampling location SW61

Chemical	Detects	Detects >ARAR	Units	High	Average[1]	ARAR
VOCs						
1,1-Dichloroethane	1 1	-	ug/l	3 0	1	-
1,1-Dichloroethene	0	0	ug/l	0	0	7 00
1,1,1-Trichloroethane	3	-	ug/l	1	5 3	-
Carbon Tetrachloride	7	2	ug/l	1 1	2 9	5 00
Chloroform	7	3	ug/l	4	0 9	1 00
Tetrachloroethene	1 1	2	ug/l	3	44	1 00
Trichloroethene	8	0	ug/l	4	0 9	5 00
cis-1,2-Dichloroethene	1 3	-	ug/l	5	3 5	-
Methylene Chloride	6	-	ug/l	5	2 6	-
Metals						
Aluminum		2	ug/l	346	101	200
Iron		1	ug/l	1090	165	1000
Zinc		9	ug/l	188	102	50 0

Radionuclides

Radionuclide data was not received for this reporting period prior to preparation of this report

[1] Average value calculated by taking all values (for non-detect, 1/2 the detection limit was used) and dividing the value by the number of samples

Sampling location SW132

Chemical	Detects	Detects >ARAR	Units	High	Average[1]	ARAR
VOCs						
1,1-Dichloroethane	6	-	ug/l	0 9	0 5	-
1,1-Dichloroethene	0	0	ug/l	0	0	7 00
1,1,1-Trichloroethane	3	-	ug/l	1	0 3	-
Carbon Tetrachloride	0	0	ug/l	0	0	5 00
Chloroform	0	0	ug/l	0	0	1 00
Tetrachloroethene	3	0	ug/l	0 6	0 2	1 00
Trichloroethene	3	0	ug/l	0 2	0 1	5 00
cis-1,2-Dichloroethene	7	-	ug/l	3	1 9	-
Metals						
Aluminum		4	ug/l	660	213	200
Iron		2	ug/l	1420	340	1000
Zinc		9	ug/l	167	106	50 0

Radionuclides
Radionuclide data was not received for this reporting period prior to preparation of this report

[1] Average value calculated by taking all values (for non-detect, 1/2 the detection limit was used) and dividing the value by the number of samples

3.3 RS-5 (TREATED EFFLUENT FROM CHEMICAL PRECIPITATION/MICROFILTRATION PRIOR TO GAC)

Analysis of the received sample data for this quarter indicates that no ARARs were exceeded for metals at this sample point Radionuclide data have not been received for this reporting period

3 4 RS-6 (LEAD GAC EFFLUENT)

The GAC was monitored for breakthrough (effluent of lead GAC exceeding ARAR level for any compound) of the lead unit When breakthrough is achieved, the old polish unit becomes the lead unit, and a new (virgin) unit becomes the polish Typically, chloroform is the compound that breaks through and exceeds its ARAR first Monitoring for breakthrough will continue to assure that the GAC units are fully utilized prior to replacement

3 5 RS-7 (TREATED EFFLUENT)

No ARAR values were exceeded for VOCs or metals at the discharge point RS-7 for the FTU during the first quarter of 1994, with the exception of cadmium, which had a value of 10 2 UG/L (ARAR = 5)on January 21, 1994 Radionuclide data for this reporting period have not been received

3 6 RS-8 (SLUDGE)

Preliminary data indicates that VOC samples for the sludge taken during this sample period contain some chloroform Metals analysis indicate the presence of barium in some of the sludge samples Radionuclide data for this reporting period have not been received Due to process knowledge, all sludge generated at the FTU is packaged as low-level mixed waste EPA waste code F001 (spent chlorinated solvents) has been determined to be the appropriate waste code for characterizing the waste

4 0 OPERATIONS SUMMARY

Operations of the FTU was taken over by a new subcontractor on May 1, 1993 Reidel Environmental Services, Inc , provided two months of on-the-job training (March and April) to the new subcontractor, Resource Technology Group, Inc (RTG) Reidel Environmental Services had operated the FTU throughout the startup of both Phase I and Phase II operations RTG initially designed and supplied the Phase II chemical precipitation/microfiltration units, and has operated several similar systems at other DOE facilities

Water collected from the OU-2 Vapor Extraction Unit was treated at the OU-2 FTU The water was sampled to assure that it was compatible with the FTUs treatment capabilities Sampling indicated that the FTU effectively removed contaminants below ARAR levels

A sludge reduction program was initiated during the last two weeks of December This program has reduced the amount of sludge generated at the FTU by approximately 50% The sludge reduction was accomplished by using 25% sodium hydroxide (liquid) to control the pH in the second reaction tank (TK-2) and reducing the amount of calcium hydroxide (lime) injected into the tank Three months of operation indicate no adverse affects have been noticed, and preliminary indications show a sludge reduction greater than 50% by volume Additional data must be collected to determine the actual amount of sludge reduction that is being accomplished This sludge reduction program will result in an annual reduction of approximately ninety 55-gallon drums of low-level mixed waste that is produced at the FTU Efforts will continue to be made to reduce any waste generated at the FTU

Implementation of Conduct of Operations continues at the FTU

Nine additional microfiltration membranes (0 1 micron) were procured by EG&G and installed into the Rads Removal System (RRS) on November 20, 1994 The additional membranes have increased the treatment capacity through the RRS by 33%, and have reduced shutdowns due to plugged membranes resulting in low flows Chemical usage has also be reduced during chemical cleaning cycles since the same quantity of chemicals will be used to clean membranes that have treated 33% more water

A puddle with an oily sheen was observed directly below SW61 on March 16, 1994 The puddle was sampled, and it was discovered that vinyl chloride was present at levels well above ARARs Subsequent sampling events verified the presence of the vinyl chloride Collection (transfer to Weir 61) for treatment at the FTU occurs every four hours, except when weir 61 is bypassing from high influent

5 0 ENVIRONMENTAL COMPLIANCE

On 3/10/94, approx 200 gallons of untreated influent water spilled into the soil directly under the influent line and an estimated 6000 gallons was returned to Weir 61 when the line developed a leak Appendix B contains the RCRA Contingency Plan Implementation Report

6.0 REPORTS/CORRESPONDENCE

During this reporting period, the following significant reports/documents that pertained to the OU-2 FTU were generated

Final Summary and Analysis of Results, Field Treatability Study, Phase II, Operable Unit No,2, March 1994 (Document 21100-TR-OU02 03-2)

RCRA Contingency Plan Implementation Report No 94-004 (See Appendix B)

7 0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Normal operations are expected to continue next quarter No shutdowns (other than routine generator servicing and permanent power installation) are expected at the treatment facility

Groundwater extracted from the SVE project will be treated at the FTU

Methods for reducing the volume of sludge will continue to be explored EG&G and the operations and maintenance subcontractor, RTG Inc, will continue to explore reducing the volume of sludge generated per volume of water treated

Installation of permanent plant power to the FTU will begin in April, 1994

Modifications will be made to the sampling and analysis plan for the FTU A net reduction in samples, along with onsite analysis of other samples will result in a significant cost savings

Purge water collected from contaminated wells may be treated at the FTU All purge water will be sampled to determine the best facility to treat the water Possibilities for treatment include the OU-1 IM/IRA (Bldg 891), OU-2 IM/IRA FTU, 374 Evaporator, and the Sewage Treatment Plant Each facility is limited by certain contaminants, so sampling would determine the final destination

Liquids from ACCUVAC vials may be treated at the FTU The liquids contain levels of chromium that qualify it as a Resource Conservation and Recovery Act (RCRA) hazardous waste At this time the total volume is estimated to be less than fifty gallons

Influent storage capacity will be increased with the installation of three 13,000 gallon storage tanks

Spent GAC will be sent off-site for reactivation

8 0 SUMMARY/CONCLUSIONS

The OU-2 FTU continues to collect and treat contaminated surface water from the South Walnut Creek Basin 24-hours per day, 375-days per year Process improvements have reduced both operating costs and generated hazardous waste Waste reduction, chemical use reduction, and treatment facility optimization will also continue to be explored/implemented in order to make the FTU a more efficient operable unit

If approval is granted to discontinue collection of SW-61 and/or SW132, the FTU would become available to treat water from other Rocky Flats Plant sources Modifications are being made to allow the facility to accept higher levels of contaminants The addition of effluent holding tanks will allow the FTU to treat other waters and hold it until analytical results verify that it is acceptable for discharge to the South Walnut Creek Basin

Appendix A

OU-2 FTU ARARs

TABLE 1
Surface Water Contaminants
Identified in the South Walnut Creek Basin IM/IRAP[1,2]

Analyte	Unit	Average Concentration	ARAR
Radionuclides			
Am-241	pCi/l	0 53	0 05
Gross alpha	pCi/l	730 00	11 00
Gross beta	pCi/l	545 00	19 00
PU-239/240	pCi/l	3 28	0 05
U-total	pCi/l	11 69	10 00
VOCs[3]			
1,1-Dichloroethene	µg/l	142	7 00
Carbon Tetrachloride	µg/l	219	5 00
Chloroform	µg/l	82	1 00
Tetrachloroethene	µg/l	279	1 00
Trichloroethene	µg/l	153	5 00
Vinyl Chloride	µg/l	-	2 00
Metals-Dissolved			
Iron	µg/l	-	300 00
Manganese	µg/l	0 5790	50 00
Metals-Total			
Aluminum	µg/l	25 1214	200 00
Arsenic	µg/l	-	50 00
Barium	µg/l	1 8530	1,000
Beryllium	µg/l	0 0519	100 00
Cadmium	µg/l	0 0132	5 00
Chromium	µg/l	0 1918	10 00
Copper	µg/l	0 2664	25 00
Iron	µg/l	183 964	1,000
Lead	µg/l	0 1954	5 00
Manganese	µg/l	3 3068	1,000
Mercury	µg/l	0 0022	0 20
Nickel	µg/l	0 2239	40 00
Selenium	µg/l	0 0070	10 00
Zinc	µg/l	1 3475	50 00

1 From the IM/IRAP (DOE, 1991)

2 Only anilities with ARARs are presented

3 Analyzed by EPA Method 524 2

\- Not calculated in the IM/IRAP

APPENDIX B

RCRA Contingency Plan Implementation Report Number 94-004

CORRES CONTROL
INCOMING LTR NO

01345 RF 94

DUE DATE

ACTION DIST	LTR	ENC
BERMAN H S		
CARNIVAL, G J		
COPP, R D		
CORDOVA, R.C.		
DAVIS J G		
FERRERA D W		
FRANZ W A		
HANNI, B J		
HEALY T J		
HEDAHL T G	X	X
HILBIG J G		
HUTCHINS N M		
KELL R E		
KIRBY W A.		
KUESTER A W		
MAHAFFEY J W		
MANN H P		
MARX G E		
McKENNA, F G		
MORGAN R V		
PIZZUTO V M		
POTTER G L.		
SANDLIN N B		
SATTERWHITE D G		
SCHUBERT A L	X	X
SETLOCK G H		
STIGER S G	X	X
SULLIVAN M T		
SWANSON E R		
WILKINSON R B		
WILSON J M		
Broussard M	X	X
Burmeister M	X	X
Demos N	X	X
Johnson M	X	X
Myrick S	X	X
Vess M	X	X
CORRES CONTROL	x	x
ADMN RECORD/080	X	2
PATS/ T130G		

Reviewed for Addressee
Corres Control RFP

4/5/94 Cmk
DATE BY

Ref Ltr #

DOE ORDER # 5400.1

RF-46522 (Rev 01/94)

Department of Energy

ROCKY FLATS OFFICE
P O BOX 928
GOLDEN COLORADO 80402-0928

APR 1 1994 94-DOE-03459

Frederick R Dowsett, Ph D , Chief
Colorado Department of Health
Monitoring and Enforcement
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Dr Dowsett

Enclosed is the Resource Conservation and Recovery Act Contingency Plan Implementation Report No 94-004, which documents the status and information concerning the release to the environment of surface water containing hazardous waste constituents This release originated from the transfer piping associated with Operable Unit (OU) No 2 treatment unit The surface water is diverted from Walnut Creek as part of the Interim Measure/Interim Remedial Action (IM/IRA) for OU-2 This diverted water is normally treated in a Chemical Precipitation/ Microfiltration/Granular Activated Carbon System to remove contaminants from the water The treated water is then returned to the creek

In addition to the enclosed report, an errata sheet has been enclosed to correct and expand on the report This errata sheet was determined to be necessary, as opposed to waiting for an additional report revision

It is the recommendation of the U S Department of Energy (DOE) Rocky Flats Office that the March 10, 1994, release be included in the next quarterly update of the Historical Release Report (HRR) due to the fact that the State water quality standard for tetrachloroethylene was exceeded We believe that the HRR and the Rocky Flats Plant (RFP) Interagency Agreement (IA), of which the HRR is a requirement, are the appropriate vehicles for dealing with releases of this nature that do not pose an immediate and acute hazard to human health and the environment In addition, the IA has been incorporated into the RFP Part B Resource Conservation and Recovery Act Permit Thus, we believe that using the IA to address new releases, when appropriate, is consistent with the Permit

We apologize for the delay regarding the transmittal of the enclosed report Corrections were required to provide a hazard assessment consistent with the Colorado Department of Health's (CDH's) February 11, 1994, letter to the DOE and the CDH "Interim Final Policy and Guidance on Risk Assessments for Corrective Action at RCRA Facilities" dated November 16, 1993 Please note that an earlier draft copy of this report was faxed to your office for review on March 23, 1994

Any concerns or comments you may have regarding the enclosed report should be addressed to Vern Witherill of my staff at 966-7003 We will work diligently to make any modifications to the report that you deem to be appropriate

Sincerely,

for Jessie Roberson
Acting Assistant Manager for
Environmental Restoration

Enclosures

cc w/Enclosure
D Maxwell, EPA
M Silverman, ER, RFO
B Brainard, OC, RFO
D Grosek, EMB, RFO
T Lukow, WPD, RFO
W Seyfert, RPB, RFO
V Witherill, ER, RFO
B Williamson, ER, RFO
M Broussard, EG&G
M Burmeister, EG&G
S Stiger, EG&G
N Demos, EG&G
T Hedahl, EG&G
M Johnson, EG&G
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A Schubert, EG&G
M Vess, EG&G

Exempt from Classification
per CLW-061-94

EG&G ROCKY FLATS

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ROCKY FLATS PLANT, P O BOX 464 GOLDEN, COLORADO 80402-0464 • (303) 966-7000

March 31, 1994

94-RF--03862

J Roberson
Environmental Restoration
DOE, RFO

UPDATED RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CONTINGENCY PLAN IMPLEMENTATION REPORT (CPIR) NO 94-004 (5400 1) - TGH-154-94

Enclosed is the updated RCRA CPIR No 94-004 which outlines the events associated with the release to the environment of surface water containing hazardous waste constituents This release originated from the transfer piping associated with Operable Unit (OU) No 2 treatment unit The updated report was revised to address your comments received on March 31 to our submittal of CPIR on March 23, 1994 These revisions include corrections toTables 1 and 2, inclusion of an additional table of analytical data, and revisions to section 7

If you have any questions regarding this matter please call M C Broussard at extension 8517, or M C Burmeister

T G Hedahl, Associate General Manager
Environmental and Waste Management

EMP mlj

Orig and 1 cc - J Roberson

Enclosures
As Stated (1)

ERRATA SHEET FOR RCRA CONTINGENCY PLAN REPORT NO. 94-004

(1) Item 7, Page 4 of 7, Paragraph 2, lines 8 through 10 - Inspection of Table 1 indicates that volatile organic compound concentrations in water are not significantly different in the May, 1993 data versus the March 10, 1994 data

(2) Item 7, Page 4 of 7, Paragraph 2, lines 14 through 16 - Delete this sentence

(3) Item 7, Page 5 of 7, Paragraph 1, line 3 - replace 0 00008 mg/L with 0 0008 mg/L

(4) Item 7, page 5 of 7, Paragraph 2 -

  (a) The soil risk assessment for the December 4, 1993 release used the analytes and their concentrations from the May, 1993 sampling data presented in Table 1 This is reportedly the most recent validated data available
  (b) The soil risk assessment for the December 4, 1993 release is assumed to be valid for the March 10, 1994 release since the same validated data set for the water analysis applies to both releases
  (c) Comparison of the analyte concentrations of May, 1993 versus March 10, 1994 presented in Table 1 indicates that the soil risk assessment using the May, 1993 data is representative of the March 10, 1994 data

(5) Table 1, Column 2 -

  (a) The carbon tetrachloride J-value for the March 10, 1994 data is reported to be 0 002 mg/L
  (b) All of the second numbers to the right of the "/" in this column should be enclosed by parentheses and identified by footnote as being the March 10, 1994 unvalidated data The data to the left of the "/" represent the validated data from May, 1993

RCRA CONTINGENCY PLAN
Implementation Report No 94-004

RCRA CONTINGENCY PLAN
IMPLEMENTATION REPORT
ROCKY FLATS PLANT
EPA ID NUMBER CO7890010526

This report is made in compliance with the requirements of 6 CCR 1007-3, Part 265 56 (j) for a written report within 15 days of the implementation of the RCRA Contingency Plan The requirements for this report are given below and will be addressed in the order listed, excerpted from 6 CCR 1007-3, Part 265 56

"(j) Within 15 days after the incident, he must submit a written report on the incident to the department The report must include

(1) Name, address, and telephone number of the owner or operator
(2) Name, address, and telephone number of the facility
(3) Date, time, and type of incident (fire, explosion)
(4) Name and quantity of material(s) involved
(5) The extent of injuries, if any
(6) An assessment of actual or potential hazards to human health and the environment, where this is applicable, and
(7) Estimated quantity and disposition of recovered material resulted from the incident"

---

(1) NAME, ADDRESS AND TELEPHONE NUMBER OF THE OWNER OF THE FACILITY

United States Department of Energy
Rocky Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

Facility Contact
M N Silverman, Manager

(2) NAME, ADDRESS AND TELEPHONE NUMBER OF THE FACILITY

U S Department of Energy
Rock Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

3-22-94

(3) DATE, TIME, AND TYPE OF INCIDENT

A SUMMARY

The RCRA Contingency Plan was implemented on March 10, 1994, due to a release to the environment of approximately 200 gallons of surface water containing hazardous waste constituents It was later determined that possibly up to 6,000 gallons were released from the primary piping, flowed through secondary piping, and were released to the SW-61 collection point Normally 97% of the water diverted to the influent line feed system originates from the SW-61 collection point

The water is diverted from the three collection points including a seep, surface water drainage, and Walnut Creek This partial diversion of this water is part of the Interim Measure/Interim Remedial Action (IM/IRA) for OU 2 This diverted water is treated in a Chemical Precipitation/ Microfiltration/Granular Activated Carbon System The treated water is then returned to the creek.

The RCRA Contingency Plan was implemented as required by the Rocky Flats Plant (RFP) RCRA Permit because the release to the environment (soil and surface water) was greater than one pound of hazardous waste (surface water containing F-listed hazardous waste constituents)

B SYSTEM DESCRIPTION

The system involved with this incident was originally installed in May 1991 The partial diversion system collects water at three points (SW-59, SW-61, and SW-132, reference Figure 1) for the transfer of seep, surface water, and creek water to the treatment system The water diverted from SW-132 is transferred to SW-61 collection point prior to pumping this water to the treatment facility The influent line from SW-59 ties into the main influent downstream of the SW-61 collection point The system is designed to divert 60 gallons per minute to the OU 2 treatment unit Any excess water will overflow the weirs and enter Walnut Creek

The influent line is approximately 1000 feet from the inlet at the creek to the primary tank system The influent line is a 2-inch primary pipe contained within a 3-inch secondary pipe The line is insulated with styrofoam and is heat traced for winter operation The line feeds into the treatment system that consists of numerous tanks, filters, and treatment columns (See Figure 2 for a diagram of the treatment system) The potentially contaminated water is treated for removal of volatile organic, soluble metals, and radioactive constituents The OU 2 treatment facility is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) IM/IRA facility No Individual Hazardous Substance Site (IHSS) was involved in this incident

C DESCRIPTION OF INCIDENT.

A release of surface water containing hazardous waste constituents from the influent pipe system leading from Walnut Creek to the treatment system occurred due to a separation in the primary and secondary piping The release was discovered at 5 50 a m on Wednesday, March 10, 1994 The pipeline had been visually inspected eight hours prior to the discovery of the release

The influent flow totalizer meter showed a marked decrease in the amount of water entering the system, therefore, the contractor proceeded to visually inspect the influent line The primary and secondary piping were found to be separated approximately 800 feet from the treatment unit (approximately 200 feet above SW-61 collection point, reference Figure 1) The amount of material released to the soil was estimated to be approximately 200 gallons based on a visual determination of the size of the wetted area In addition, possibly up to 6,000 gallons of diverted water released from the primary piping flowed through the secondary containment portion of the pipeline and was released into the SW-61 collection point Approximately 97% of the water diverted is collected from SW-61

The contractor immediately shut down the inlet pumps to the pipeline and notified the project manager The manager notified the Shift Superintendent and the Operations Manager at 6 05 a m who then notified the Emergency Operations Center (EOC)

On March 10, samples were taken of the influent water and the soil in the area affected by the release to confirm the concentration of hazardous waste constituents in the water and affected soil

D CORRECTIVE ACTION

The pumps were de-energized immediately after the leak was discovered Subcontractor personnel immediately began repairs on the pipe The pipeline was repaired and the system was back in operation at 11 25 a m on March 10, 1994 The pump was re-energized and the system was returned to normal operation A verbal notification that operations were resumed was made to CDH by the EOC at 9 30 a m on March 11, 1994

It is believed that the root cause of this incident is directly related to the quality of the primary and secondary piping used to transport the influent feed to OU 2 treatment unit The results of an evaluation indicate that the piping is showing signs of aging, and while there is a preventative maintenance program in effect, equipment failures are continuing to plague the facility A decision has been made prior to this incident to replace the influent piping A schedule for replacing the influent line will be provided to the Colorado Department of Health (CDH) by April 15, 1994 The new line will be certified by a independent, qualified, registered, professional engineer as required by 6 CCR 1007-3, Part 265 196(f) A copy of the certification will be provided to CDH within seven days after the new line is placed into service

(4) EQUIPMENT STATUS

The system was repaired and returned to normal operation on March 10, 1994, at 11 25 a m The daily inspections of the pipeline are continuing

(5) QUANTITY AND NAME OF MATERIAL INVOLVED:

It is estimated that approximately 200 gallons were released to the soil based on the area wetted by the release In addition, it is estimated that possibly up to 6,200 gallons of water were released from the primary piping, flowed through the secondary containment, and were released into SW-61 collection point (the source of 97% of the diverted water)

The water that was released is collected from SW-59, SW-61 and SW-132 [most of which is surface runoff from within the Protected Area (PA)] Due to the fact that this groundwater and surface water feeding Walnut Creek can contain hazardous waste constituents, a determination has been made by EG&G Rocky Flats, Inc that the "contained in" rule is applicable, and the water entering the OU 2 treatment system contains "F001" listed hazardous waste This waste determination was based on analytical results from routine sampling The water is sampled weekly to determine the concentration of the hazardous waste constituents in the water F001 listed hazardous waste constituents have been detected in trace amounts in the influent water Analytical results from sampling eventsin May 1993 are summarized in Table 1 Based on this historical data, the F001 listed contaminants that have been detected include carbon tetrachloride, trichloroethene and tetrachloroethene Cis 1,2-dichloroethene, chloroform, 1,1-dichloroethane and Toluene have been detected in the influent water but not at levels that would make the water a characteristic hazardous waste

On March 10, special samples were taken at two locations of the soil wetted by the release In addition, a sample was taken of the water remaining in the secondary containment portion of the pipeline Based on the preliminary results of the volatile organic analysis, tetrachloroethene was detected at a level below the Practical Quantitation Level (PQL) in one soil sample and no volatile organics were detected in the second soil sample The volatile organics detected in the water sample include 1,2 dichloroethene (9 ppb), trichloroethene (5 ppb), and tetrachloroethene (5 ppb) In addition, 1,1,1-trichloroethane and carbon tetrachloride were detected in the water sample but the detection levels were below the PQLs

(6) **EXTENT OF INJURIES.**

There were no injuries as a result of this incident

(7) **AN ASSESSMENT OF ACTUAL OR POTENTIAL HAZARD TO HUMAN HEALTH AND ENVIRONMENT**

Based on the historical analytical data (which indicates very low concentration levels of hazardous waste constituents) and the result of a previous risk assessment, a decision was made on March 10, 1994 not to immediately remove the soil impacted by the release The initial decision was verified by a second risk assessment using the CDH methodology which resulted in even a lower risk (10^{-8})

Comparisons of the release water (approximately 6200 gallons) with Safe Drinking Water Act Maximum Contaminant Levels (MCL's), Resource Conservation and Recovery Act TCLP, and Colorado Water Quality Standards for Segment 5 of Big Dry Creek are shown in Tables 1 and 2 Analytical data for volatile organic compounds, the chemicals of interest for this release, are presented in Table 1. Influent water maximum and average concentrations from samples collected from May 1993 are provided along with influent water concentrations taken on March 10, 1994, the date of the release The March 10, 1994 data have not yet been validated However, it is apparent that concentrations are significantly less than the concentrations of samples collected in May 1993 With regard to MCL's, the March 10, 1994 data are not in excess of the standards However, for both tricholoroethene (TCE) and tetrachloroethylene (PCE), concentrations were equal to the MCL's. With regard to the State standards, only PCE exceeded the standard (0 005 mg/L vs 0 0008 mg/L) Comparison of average concentrations from May, 1993 with MCL's and state standards indicate that TCE, PCE, carbon tretrachloride and 1,1-Dichloroethene exceed the standards Thus, it is evident that the contaminated water released on March 10, 1994 exceeded the State standard for PCE

Assuming that the colorado Water Quality Standards for Segment 5 of Big Dry Creek are protective of aquatic life, the only concern is the concentration of PCE in excess of 0 00008 mg/L

A risk assessment was performed for soil contacted by 10 gallon OU 2 release on December 4, 1993 This risk assessment is provided as an attachment to this report and is consistent with the Colorado Department of Health's November 16, 1993 "Interim Final Policy and Guidance on Risk Assessments for Corrective Actions at RCRA Facilities" The risk posed to a residential receptor by the assumed soil contamination is between 1EE-7 and 1EE-8, or an excess cancer risk of between 1 in 10 million to 1 in 100 million This, the risk is below 1EE-6 and is not considered to be a significant human health risk

It should be noted that the OU 2 treatment system is sized to treat 60 gallons per minute Periodically the amount of water inflowing to the collection points (SW-59, SW-61, and SW-132) exceeds this capacity' therefore, the excess water overflows the weirs and enters Walnut Creek The initial assessment of the impact of the 6,000 gallon release back to SW-61 collection point was that this release was indistinguishable from the excess water which periodically overflows the weirs

(8) ESTIMATE QUANTITY AND DISPOSITION OF RECOVERED MATERIAL THAT RESULTED FROM THE INCIDENT

Based on the initial assessment of the actual or potential threat to human health and environment, none of the material which wetted the soil or flowed into the creek were recovered

TABLE 1
VOLATILE ORGANIC COMPOUNDS **

Analyte	Value Detected Analytical Results (mg/L)	SDWA MCLs (mg/L)	RCRA TCLP Regulatory Limit (mg/L)
Trichlorethylene (F001) (D040)	003/ 005	0 005	0 50
Carbon tetrachloride (F001) (D019)	003/J	0 005	0 50
Tetrachloroethylene (F001) (D039)	002/ 005	0 005	0.70
Cis-1,2-dichloroethylene	009/ 009*	0 070	-
Toluene	0004/ND	-	-
1,1-Dichloroethene (D029)	0008/ND	0 007	0 07
Chloroform (D022)	0007/ND	-	6 00

SDWA - Safe drinking Water Act
MCLs - Maximum Contaminant Levels
"-" No Standards Listed
* Cis and Trans 1,2-dichloroethylene totals combined
** Based on sampling events from May 1993 (Most recent validated data)
J Compound found, but below PQL Quantitation is estimated
ND Not detected

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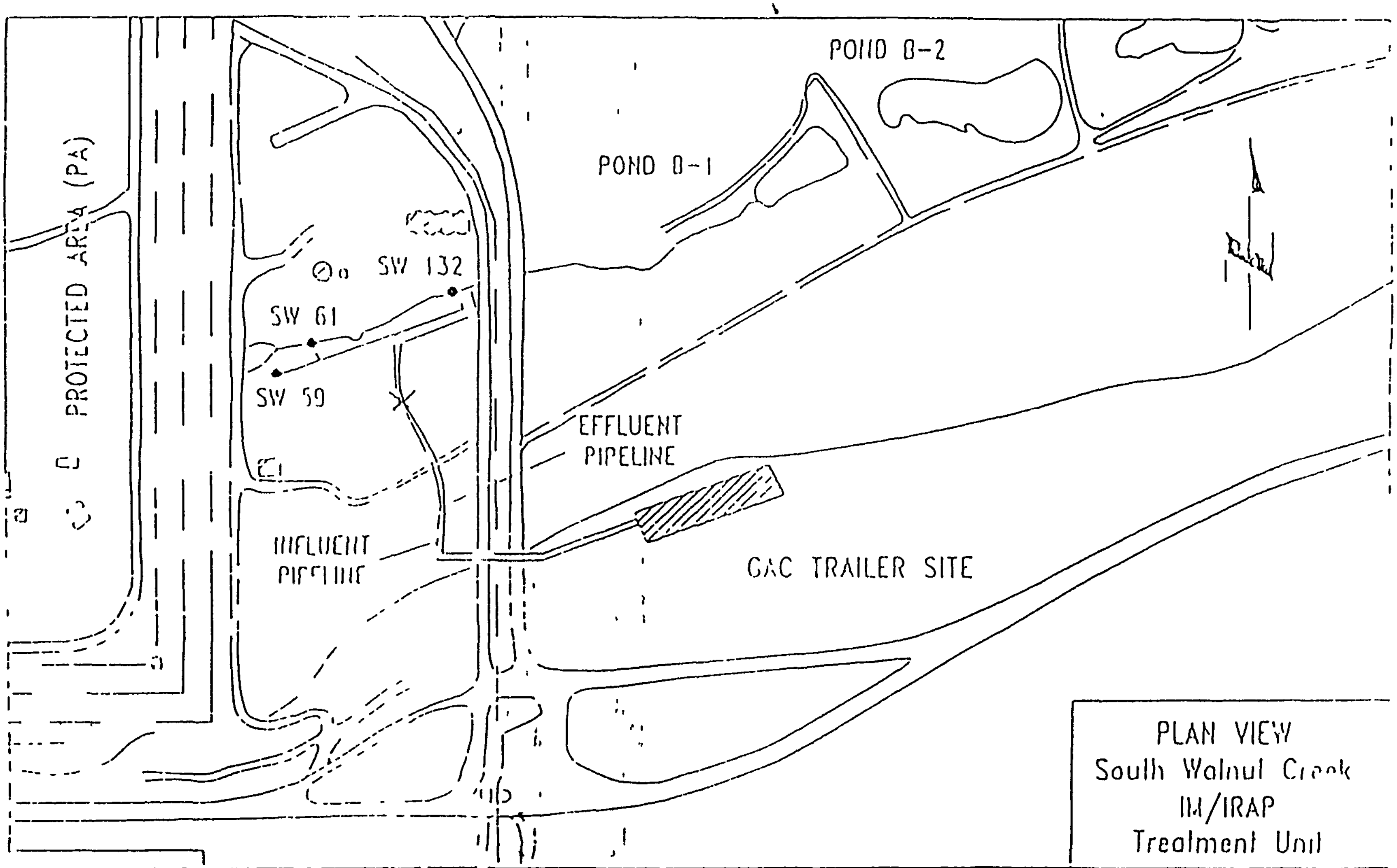
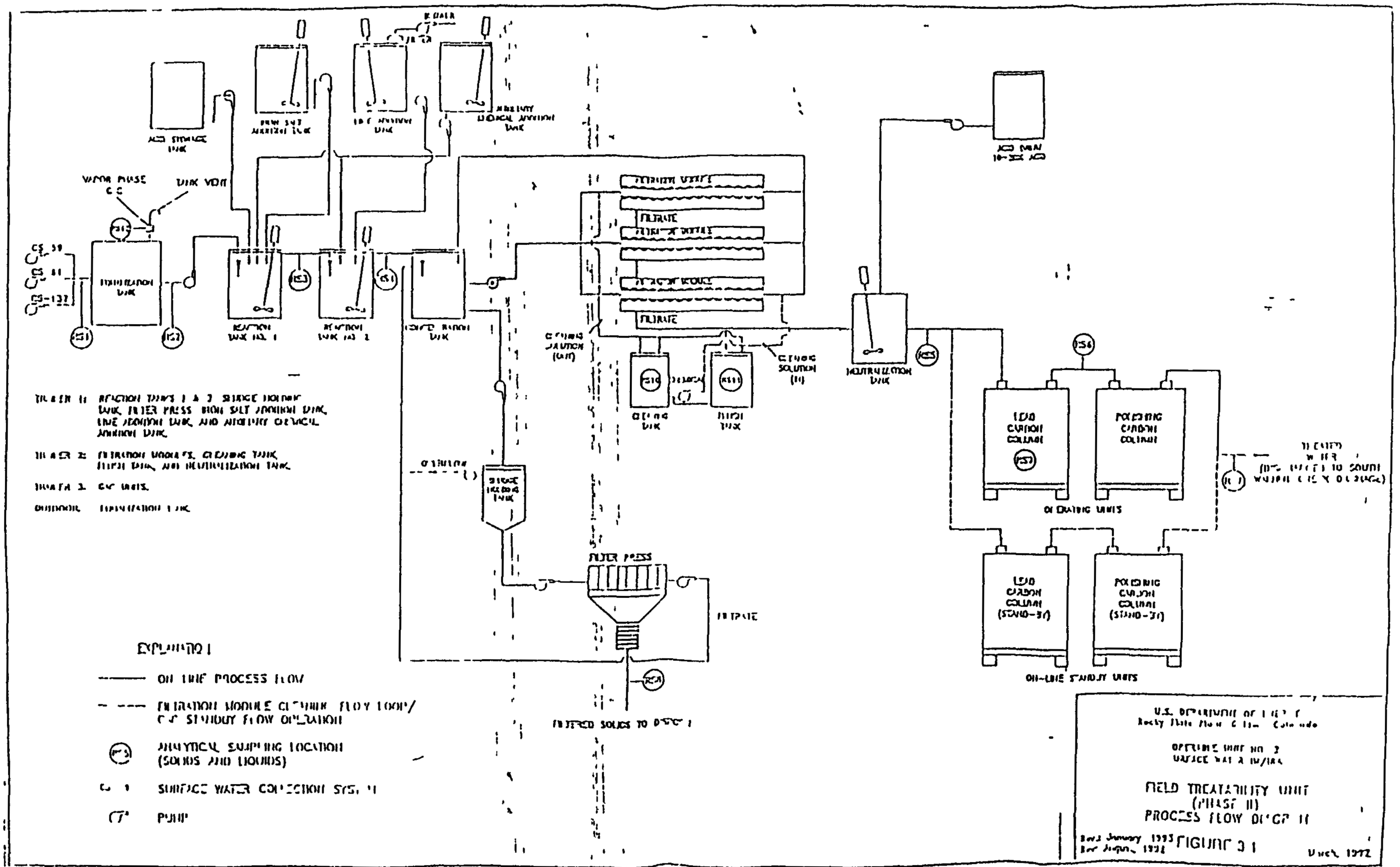
TABLE 2
VOLATILE ORGANIC COMPOUNDS

Analyte	Colorado Water Quality Standards (Big Dry Creek Segment 5) (mg/L)
Trichloroethene (F001 (D040).	0 066
1,2-Dichlorethene (cis- and trans-)	0 170
Carbon Tetrachloride (F001) (D019)	0 018
Tetrachoroethylene (F001) (D039)	0 0008
Methylene Chloride (F001)	0 0047
1,1-Dichloroethene (D029)	0 000057
Chloroform (D022)	0 006


POND B-2
POND B-1
SW 132
SW 61
SW 59
PROTECTED AREA (PA)
EFFLUENT PIPELINE
INFLUENT PIPELINE
GAC TRAILER SITE
PLAN VIEW
South Walnut Creek
IM/IRAP
Treatment Unit


ACID STORAGE TANK
REACTION TANK NO. 1
REACTION TANK NO. 2
FILTRATE
NEUTRALIZATION TANK
SLUDGE HOLDING TANK
FILTER PRESS
OPERATING UNITS
ON-LINE STANDBY UNITS
LEAD CARBON COLUMN
POLISHING CARBON COLUMN
EXPLANATION
ON LINE PROCESS FLOW
ANALYTICAL SAMPLING LOCATION (SOLIDS AND LIQUIDS)
PUMP
FIELD TREATABILITY UNIT (PHASE II) PROCESS FLOW DIAGRAM
FIGURE 3.1

Bounding Risk Assessment for OU2

A revised risk assessment was performed on the small spill of water present in the OU 2 Treatability System. Instead of using chemical concentrations in water, the revised assessment is based on extrapolated chemical concentrations in soil, as requested by CDH.

Attached are the computer spreadsheets for a screening-level assessment of human health risks. The spreadsheet format, exposure parameters, parameter default values, and the intake equations follow the CDH Interim Final Guidance for risk assessments used to determine the need for a Corrective Measures Study (CMS) at a RCRA facility (CDH, 1993).

As shown in the lower right-hand corner of Table 2, the estimated upper-bound total added cancer risk from ingestion of soil, dermal contact with soil, and inhalation of soil particles by the future on-site resident at OU 2 is between 1E-7 and 1E-8, or an added cancer incidence between 1 in 10 million and 1 in 100 million. The risk screening threshold proposed by CDH for making a determination of need for a CMS is a cumulative risk of 1E-6. Thus, using the CDH screening-level risk assessment methodology, the small spill at OU 2 appears to present a potential cancer risk level at least one order of magnitude less than the CDH screening threshold.

As shown in the lower right-hand corner of Table 3, the estimated upper-bound total HQ (Hazard Quotient) for noncancer health effects is between 1E-02 and 1E-03, or between 0.1% and 1% of the cumulative risk screening threshold proposed by CDH (HQ=1). Thus, using the CDH methodology, the small spill at OU 2 appears to present a potential noncancer health risk level at least two orders of magnitude less than the CDH screening threshold.

Because measured soil concentrations of seven COCs (Chemicals of Concern) identified in the water spilled at the OU 2 Field Treatability Unit were unavailable, it was necessary to extrapolate maximum surface soil concentrations on the very conservative basis of 40% soil moisture at saturation, i.e., the measured water concentrations were multiplied by 0.4 to estimate maximum soil concentrations. A maximum soil moisture of 40% is generally typical of a moderately compacted soil; actual maximum soil moisture recorded at OU 2 is about 30%, with an average nearer to 20%, according to OU 2 records.

This specific application of CDH's proposed RCRA screening-level risk assessment methodology to a very small spill at OU 2 (viz., 10 gallons) appears to indicate no need for a CMS, at least on the basis of soil-related risks (CDH proposes that water will be screened on the basis of an ARAR rather than a risk level). Still, it appears that the risk levels projected using the CDH methodology can overstate the reasonable upper-bound risks by many orders of magnitude. As a means of supporting this conclusion, the exposure assessment scenario implicit in the CDH default exposure factors and intake equations is outlined in Attachment 2 as it applies to the 10-gallon spill at OU-2.

TABLE 1

RESIDENTIAL EXPOSURE QUANTIFICATION–Intake Calculation OU-2 Spill at Field Treatability Unit

Max Concentration (Cmax) at SWMU or CAMU	Contaminant of Concern (COC)							
	cis-1,2 DCE		1,1 DCA		TCE		PCE	
Modelled.								
Surface Soil (mg/kg) (1)	3 60E-03	3 60E-03	3 20E-04	3 20E-04	1 20E-03	1 20E-03	8 00E-04	8 00E-04
Airborne Soil Particulates (mg/m3) (2)	7 80E-07	7 80E-07	6 40E-08	6 40E-08	2 60E-07	2 60E-07	1 70E-07	1 70E-07
Indoor Airborne Soil VOCs (mg/m3)	NA	NA	NA	NA	NA	NA	NA	NA
Route of Exposure and Intake (Imax)	Noncarcinogen (NC)	Carcinogen (C)	Noncarcinogen (NC)	Carcinogen (C)	Noncarcinogen (NC)	Carcinogen (C)	Noncarcinogen (NC)	Carcinogen (C)
SOIL INGESTION·								
Child Intake (mg/kg-d) (3)(4)	4 60E-07	3 95E-08	4 09E-08	3 51E-09	1 53E-07	1 32E-08	1 02E-07	8 77E-09
Adult Intake (mg/kg-d) (5)(6)	4 93E-08	1 69E-08	4 38E-09	1 50E-09	1 64E-08	5 64E-09	1 10E-08	3 76E-09
TOTAL INTAKE	5 10E-07	5 64E-08	4 53E-08	5 01E-09	1 70E-07	1 88E-08	1 13E-07	1 25E-08
SOIL DERMAL CONTACT.								
Child Intake (mg/kg-d) (7)(8)	5 29E-06	4 54E-07	4 71E-07	4 03E-08	1 76E-06	1 51E-07	1 18E-06	1 01E-07
Adult Intake (mg/kg-d) (9)(10)	1 75E-06	6 00E-07	1 56E-07	5 34E-08	5 84E-07	2 00E-07	3 89E-07	1 33E-07
TOTAL INTAKE	7 04E-06	1 05E-06	6 26E-07	9 37E-08	2 35E-06	3 51E-07	1 57E-06	2 34E-07
SOIL PARTICLE INHALATION.								
Child Intake (mg/kg-d) (11)(12)	1 89E-15	1 62E-16	1 55E-16	1 33E-17	6 29E-16	5 39E-17	4 11E-16	3 52E-17
Adult Intake (mg/kg-d) (13)(14)	4 60E-16	1 58E-16	3 77E-17	1 29E-17	1 53E-16	5 25E-17	1 00E-16	3 44E-17
TOTAL INTAKE	2 35E-15	3 19E-16	1 93E-16	2 62E-17	7 82E-16	1 06E-16	5 11E-16	6 96E-17

Max Concentration (Cmax) at SWMU or CAMU	Contaminant of Concern (COC)					
	Carbon Tet		Chloroform		Toluene	
Modelled·						
Surface Soil (mg/kg) (1)	1 20E-03	1 20E-03	2 80E-04	2 80E-04	1 60E-04	1 60E-04
Airborne Soil Particulates (mg/m3) (2)	2 60E-07	2 60E-07	6 00E-08	6 00E-08	3 50E-08	3 50E-08
Indoor Airborne Soil VOCs (mg/m3)	NA	NA	NA	NA	NA	NA
Route of Exposure and Intake (Imax)	Noncar-cinogen (NC)	Carcino-gen (C)	Noncar-cinogen (NC)	Carcino-gen (C)	Noncar-cinogen (NC)	Carcino-gen (C)
SOIL INGESTION						
Child Intake (mg/kg-d) (3)(4)	1 53E-07	1 32E-08	3 58E-08	3 07E-09	2 05E-08	1 75E-09
Adult Intake (mg/kg-d) (5)(6)	1 64E-08	5 64E-09	3 84E-09	1 32E-09	2 19E-09	7 51E-10
TOTAL INTAKE	1 70E-07	1 88E-08	3 96E-08	4 38E-09	2 26E-08	2 50E-09
SOIL DERMAL CONTACT.						
Child Intake (mg/kg-d) (7)(8)	1 76E-06	1 51E-07	4 12E-07	3 53E-08	2 35E-07	2 02E-08
Adult Intake (mg/kg-d) (9)(10)	5 84E-07	2 00E-07	1 36E-07	4 67E-08	7 78E-08	2 67E-08
TOTAL INTAKE	2 35E-06	3 51E-07	5 48E-07	8 20E-08	3 13E-07	4 68E-08
SOIL PARTICLE INHALATION						
Child Intake (mg/kg-d) (11)(12)	6 29E-16	5 39E-17	1 45E-16	1 24E-17	8 47E-17	7 26E-18
Adult Intake (mg/kg-d) (13)(14)	1 53E-16	5 25E-17	3 54E-17	1 21E-17	2 06E-17	7 07E-18
TOTAL INTAKE	7 82E-16	1 06E-16	1 81E-16	2 46E-17	1 05E-16	1 43E-17

Note (1) Cmax (mg/kg) = Cmax (mg/L)*0 4 (40% soil moisture at saturation in moderately compacted soil)

Note (2) Cmax (mg/m3) = Cmax (mg/kg)/4630 m3/mg (PEF, particulate emission factor from EPA RAGS, Part B)

Note (3) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 3E-4 (CDH RCRA standard default intake factor)
(4) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 1E-5 (CDH)

Note (5) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*1 4E-5 (CDH)
(6) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*4 7E-6 (CDH)

Note (7) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 5E-3 (CDH)
(8) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 3E-4 (CDH)

Note (9) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*4 9E-4 (CDH)
(10) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*1 7E-4 (CDH)

Note (11) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 9E-15 (CDH)
(12) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 6E-16 (CDH)

Note (13) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*4 6E-16 (CDH)
(14) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*1 6E-16 (CDH)

TABLE 2

RESIDENTIAL RISK CHARACTERIZATION--

Risk Calculation for Carcinogens OU-2 Spill at Field Treatability Unit

Route of Exposure and Risk (Rmax)	Contaminant--Carcinogen: cis-1,2 DCE	1,1 DCA	TCE	PCE	Carbon Tet	Chloro-form	Toluene
SOIL INGESTION							
Total Intake (mg/kg-day)*	5 64E-08	5 01E-09	1 88E-08	1 25E-08	1 88E-08	4 38E-09	2 50E-09
Slope Factor (mg/kg-day)-1=	NA	NA	1 10E-02	5 20E-02	1 30E-01	6 10E-03	NA
Added Cancer Risk	NA	NA	2 07E-10	6 51E-10	2 44E-09	2 67E-11	NA
SOIL DERMAL CONTACT							
Total Intake (mg/kg-day)*	1 05E-06	9 37E-08	3 51E-07	2 34E-07	3 51E-07	8 20E-08	4 68E-08
Slope Factor (mg/kg-day)-1=	NA	NA	1 10E-02	5 20E-02	1 30E-01	6 10E-03	NA
Added Cancer Risk	NA	NA	3 86E-09	1 22E-08	4 57E-08	5 00E-10	NA
SOIL PARTICLE INHALATION							
Total Intake (mg/kg-day)*	3 19E-16	2 62E-17	1 06E-16	6 96E-17	1 06E-16	2 46E-17	1 43E-17
Slope Factor (mg/kg-day)-1=	NA	NA	6 00E-03	2 00E-03	5 30E-02	8 10E-02	NA
Added Cancer Risk	NA	NA	6 39E-19	1 39E-19	5 64E-18	1 99E-18	NA
Total Residential Contaminant-Specific Added Cancer Risk	NA	NA	4.07E-09	1.28E-08	4.81E-08	5.27E-10	NA
TOTAL RESIDENTIAL ADDED CANCER RISK							6.55E-08

TABLE 3

RESIDENTIAL RISK CHARACTERIZATION--

Risk Calculation for Noncarcinogens· OU-2 Spill at Field Treatability Unit

	Contaminant--Noncarcinogen						
Route of Exposure and Risk (Rmax)	cis-1,2 DCE	1,1 DCA	TCE	PCE	Carbon Tet	Chloro-form	Toluene
SOIL INGESTION							
Total Intake (mg/kg-day)/	5 10E-07	4 53E-08	1 70E-07	1 13E-07	1 70E-07	3 96E-08	2 26E-08
Reference Dose (mg/kg-day)=	1 00E-02	1 00E-01	NA	1 00E-02	7 00E-04	1 00E-02	2 00E-01
Hazard Quotient	5 1E-05	4 53E-07	NA	1 13E-05	2 43E-04	3 96E-06	1 13E-07
SOIL DERMAL CONTACT							
Total Intake (mg/kg-day)/	7 04E-06	6 26E-07	2 35E-06	1 57E-06	2 35E-06	5 48E-07	3 13E-07
Reference Dose (mg/kg-day)=	1 00E-02	1 00E-01	NA	1 00E-02	7 00E-04	1 00E-02	2 00E-01
Hazard Quotient	7 04E-04	6 26E-06	NA	1 57E-04	3 35E-03	5 48E-05	1 57E-06
SOIL PARTICLE INHALATION							
Total Intake (mg/kg-day)/	2 35E-15	1 93E-16	7 82E-16	5 11E-16	7 82E-16	1 81E-16	1 05E-16
Reference Dose (mg/kg-day)=	NA	1 00E-01	NA	NA	NA	NA	NA
Hazard Quotient	NA	1 93E-15	NA	NA	NA	NA	NA
Total Residential Contaminant-Specific Hazard Quotient	7.55E-04	6.71E-06	NA	1.68E-04	3.60E-03	5.87E-05	1.68E-06
TOTAL RESIDENTIAL HAZARD QUOTIENT							4.59E-03

EXPOSURE ASSESSMENT SCENARIO
OU-2 TREATABILITY WATER SPILL

As the CDH methodology does not permit any soil chemical fate and transport assumptions or extrapolations, it is necessary to hypothesize steady-state conditions over 30 years Within the upper surface soil horizon where the spill was assumed to saturate the pore space, there must be

- No volatilization of the seven volatile chemicals contained in the spill water,
- No dilution from infiltration of rainwater and snowmelt,
- No leaching of these chemicals to lower soil strata,
- No chemical or biological degradation in the soil matrix, and
- No other form of attenuation can occur

Since the seven volatile COCs are apt to volatilize rapidly and otherwise attenuate rapidly to near-zero concentrations in the confined source area of the spill, the potential exists for exaggeration of upper-bound risks by many orders of magnitude

A 10-gallon spill can be assumed to infiltrate to saturation in the upper 6 inches of soil with a surface area of, perhaps, 6 or 7 sq ft, or <0 2% of the area of a quarter-acre residential lot on which a future 30-year resident can ingest soil, make dermal contact with soil, and inhale soil particles

As to incidental soil ingestion, it is necessary under proposed CDH guidance to assume that a child will ingest soil at a near-maximum rate *year-round* over a 6-year period, then continue ingesting soil as an adult year-round over a 24-year period, without regard to weather, all the while confined to the tiny area of the soil! CDH makes no provision for the site-specific FI factor or the Fraction Ingested from the contaminated source area, which is a standard factor in EPA's intake equation for soil ingestion The impact of these rules is, in this instance at OU-2, likely to result in several orders of magnitude of reasonable worst-case risk exaggeration

Similarly, as to dermal contact with soil, it is necessary to assume that a 30-year resident will contact surface soil year-round at a near-maximum rate of soil adherence to skin, with the head, hands, arms, legs and feet of the child exposed *year-round*, and thereafter with the head, hands, arms and lower legs of the adult exposed year-round EPA has specified that the dermal exposure frequency should account for local weather conditions (RAGS, 1989) The implausibility of CDH assumptions is compounded by the overriding assumption that all dermal contact will occur over 30 years within the 6 to 7-sq-ft area of the spill at OU-2 Accordingly, it is not surprising that projected dermal contact risk exceeds the soil ingestion risk by an order of magnitude, while it is typical that soil ingestion will contribute more risk than dermal contact

Other assumptions affecting the inhalation risks are similarly implausible, but the relative risk contributed by the inhalation route of exposure adds virtually no risk to total cancer and noncancer risks

A further concern is that CDH screening rules are applied to COCs in soil much more conservatively than to the same COCs in water By screening the route of exposure to chemicals in drinking water using the most stringent water quality standards, the risk screening levels applied to soil can be orders of magnitude lower and more restrictive than the equivalent risk levels of water quality standards For example, one COC in the water spilled at OU-2 was carbon tetrachloride, with a Primary MCL (Maximum Contaminant Level) of 5 ug/L While the maximum reported level of carbon tetrachloride in water at the OU-2 Field Treatability Unit was 3 ug/L, the standardized cancer risk level *at MCL* is set at 1E-5, based only on ingestion of water combined with inhalation of water volatiles released in household use of water (EPA Region 10, 1991)

Thus, the CDH screening rules are applied to carbon tetrachloride in water much more liberally (1E-5, not including the cancer effects of six other COCs and not including the dermal contact route of exposure), as compared to that same COC in soil (1E-6, including the cancer effects of all seven COCs and all routes of exposure) At OU-2, the *sum* of COC cancer risks from seven COCs in soil and three routes of exposure to soil COCs must not exceed the 1E-6 threshold These two cancer risk screening levels—1E-6 for summed risks in soil and 1E-5 just for one COC in water are many orders of magnitude apart and illustrate that water is to be screened much more liberally than soil

Presumably, the default values and equations specified by CDH serve the purpose of screening the potential risks at the level of a reasonable worst case, i e , the bounding risk estimate for the MEI (Maximally Exposed Individual) EPA Exposure Assessment Guidelines (1992) stipulate the only utility of the bounding risk estimate is to eliminate certain environmental pathways and routes of exposure from a full risk assessment, i e , to identify the risk-driving pathways and routes that will require detailed assessment EPA states that a bounding estimate "certainly cannot be used for an estimate of actual exposure (since by definition it is clearly outside the actual distribution) " The actual risk distribution would include the *average* intakes and risks, as well as those for RME or Reasonable Maximum Exposure

Although the bounding risk estimate is useful for screening out environmental pathways and routes of exposure that contribute insignificantly to overall risks, it should rely on credible assumptions As a test for reaching a decision on the need for corrective action at a RCRA facility, the bounding estimate appears highly inappropriate Further, the practice of mixing water quality standards presenting highly variable risk levels with uniform risk-based soil screening criteria appears highly inconsistent

ATTACHMENT TO
RESOURCE CONSERVATION AND RECOVERY ACT
CONTINGENCY PLAN IMPLEMENTATION REPORT
NO 94-004

SOIL RISK ASSESSMENT

REVISED BOUNDING RISK ASSESSMENT FOR OPERABLE UNIT NO 2 TREATABILITY SYSTEM SPILL

A revised risk assessment was performed on the small spill of water present in the Operable Unit No 2 (OU 2) Treatability System Instead of using chemical concentrations in water, the revised assessment is based on extrapolated chemical concentrations in soil, as requested by the Colorado Department of Health

Attached are the computer spreadsheets for a screening-level assessment of human health risks The spreadsheet format, exposure parameters, parameter default values and the intake equations follow the CDH Interim Final Guidance for risk assessments used to determine the need for a Corrective Measures Study (CMS) at a RCRA facility (CDH, 1993)

As shown in the lower right-hand corner of Table 2, the estimated upper-bound total added cancer risk from ingestion of soil, dermal contact with soil, and inhalation of soil particles by the future on-site resident at OU 2 is between 1E-7 and 1E-8, or an added cancer incidence between 1 in 10 million and 1 in 100 million The risk screening threshold proposed by CDH for making a determination of need for a CMS is a cumulative risk of 1E-6 Thus, using the CDH screening-level risk assessment methodology, the small spill at OU 2 appears to present a potential cancer risk level at least one order of magnitude less than the CDH screening threshold

As shown in the lower right-hand corner of Table 3, the estimated upper-bound total HQ (Hazard Quotient) for noncancer health effects is between 1E-02 and 1E-03, or between 0 1% and 1% of the cumulative risk screening threshold proposed by CDH (HQ=1) Thus, using the CDH methodology, the small spill at OU 2 appears to present a potential noncancer health risk level at least two orders of magnitude less than the CDH screening threshold

Because measured soil concentrations of seven COCs (Chemicals of Concern) identified in the water spilled at the OU 2 Field Treatability Unit were unavailable, it was necessary to extrapolate maximum surface soil concentrations on the very conservative basis of 40% soil moisture at saturation, i e , the measured water concentrations were multiplied by 0 4 to estimate maximum soil concentrations A maximum soil moisture of 40% is generally typical of a moderately compacted soil, actual maximum soil moisture recorded at OU 2 is about 30%, with an average nearer to 20%, according to OU 2 records

This specific application of CDH's proposed RCRA screening-level risk assessment methodology to a very small spill at OU 2 (viz , 10 gallons) appears to indicate no need for a CMS, at least on the basis of soil-related risks (CDH proposes that water will be screened on the basis of an ARAR rather than a risk level) Still, it appears that the risk levels projected using the CDH methodology can overstate the reasonable upper-bound risks by many orders of magnitude As a means of supporting this conclusion, the exposure assessment scenario implicit in the CDH default exposure factors and intake questions is outlined in Attachment 2 as it applies to the 10-gallon spill at OU 2

TABLE 1								
RESIDENTIAL EXPOSURE QUANTIFICATION--Intake Calculation. OU-2 Spill at Field Treatability Unit								
[illegible]								
	cis-1,2 DCE		1,1 DCA		TCE		PCE	
Modelled.								
Surface Soil (mg/kg) (1)	3 60E-03	3 60E-03	3 20E-04	3.20E-04	1 20E-03	1 20E-03	8 00E-04	8 00E-04
Airborne Soil Particulates (mg/m3) (2)	7 80E-07	7 80E-07	6 40E-08	6 40E-08	2 60E-07	2 60E-07	1 70E-07	1 70E-07
Indoor Airborne Soil VOCs (mg/m3)	NA	NA	NA	NA	NA	NA	NA	NA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SOIL INGESTION·								
Child Intake (mg/kg-d) (3)(4)	4 60E-07	3 95E-08	4 09E-08	3 51E-09	1 53E-07	1 32E-08	1 02E-07	8 77E-09
Adult Intake (mg/kg-d) (5)(6)	4 93E-08	1 69E-08	4 38E-09	1 50E-09	1 64E-08	5 64E-09	1 10E-08	3 76E-09
TOTAL INTAKE	5 10E-07	5 64E-08	4 53E-08	5 01E-09	1 70E-07	1 88E-08	1 13E-07	1 25E-08
SOIL DERMAL CONTACT:								
Child Intake (mg/kg-d) (7)(8)	5 29E-08	4 54E-07	4 71E-07	4 03E-08	1 76E-06	1 51E-07	1 18E-06	1 01E-07
Adult Intake (mg/kg-d) (9)(10)	1 75E-06	6 00E-07	1 56E-07	5 34E-08	5 84E-07	2 00E-07	3 89E-07	1 33E-07
TOTAL INTAKE	7 04E-06	1 05E-06	6 26E-07	9 37E-08	2 35E-06	3 51E-07	1 57E-06	2 34E-07
SOIL PARTICLE INHALATION								
Child Intake (mg/kg-d) (11)(12)	1 89E-15	1 62E-16	1 55E-16	1 33E-17	6 29E-16	5 39E-17	4 11E-16	3 52E-17
Adult Intake (mg/kg-d) (13)(14)	4 60E-16	1 58E-16	3 77E-17	1 29E-17	1 53E-16	5 25E-17	1 00E-16	3 44E-17
TOTAL INTAKE	2 35E-15	3,19E-16	1 93E-16	2 62E-17	7 82E-16	1 06E-16	5 11E-16	6 96E-17

[illegible]						
	Carbon Tet		Chlorofom		Toluene	
Modelled:						
Surface Soil (mg/kg) (1)	1 20E-03	1 20E-03	2 80E-04	2 80E-04	1 60E-04	1 60E-04
Airborne Soil Particulates (mg/m3) (2)	2 60E-07	2 60E-07	6 00E-08	6 00E-08	3 50E-08	3 50E-08
Indoor Airborne Soil VOCs (mg/m3)	NA	NA	NA	NA	NA	NA
[illegible]						
SOIL INGESTION						
Child Intake (mg/kg-d) (3)(4)	1 53E-07	1 32E-08	3 58E-08	3 07E-09	2 05E-08	1 75E-09
Adult Intake (mg/kg-d) (5)(6)	1 64E-08	5 64E-09	3 84E-09	1 32E-09	2 19E-09	7 51E-10
TOTAL INTAKE	1 70E-07	1 88E-08	3 96E-08	4 38E-09	2 26E-08	2 50E-09
SOIL DERMAL CONTACT.						
Child Intake (mg/kg-d) (7)(8)	1 76E-08	1 51E-07	4 12E-07	3 53E-08	2 35E-07	2 02E-08
Adult Intake (mg/kg-d) (9)(10)	5 84E-07	2 00E-07	1 36E-07	4 67E-08	7 78E-08	2 67E-08
TOTAL INTAKE	2 35E-08	3 51E-07	5 48E-07	8 20E-08	3 13E-07	4 68E-08
SOIL PARTICLE INHALATION:						
Child Intake (mg/kg-d) (11)(12)	6 29E-18	5 39E-17	1 45E-16	1 24E-17	8 47E-17	7 26E-18
Adult Intake (mg/kg-d) (13)(14)	1 53E-16	5 25E-17	3 54E-17	1 21E-17	2 06E-17	7 07E-18
TOTAL INTAKE	7 82E-16	1 06E-16	1 81E-16	2 46E-17	1 05E-16	1 43E-17

Note. (1) Cmax (mg/kg) = Cmax (mg/L)*0.4 (40% soil moisture at saturation in moderately compacted soil)

Note. (2) Cmax (mg/m3) = Cmax (mg/kg)/4630 m3/mg (PEF, particulate emission factor from EPA RAGS, Part B)

Note: (3) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 3E-4 (CDH RCRA standard default intake factor)
(4) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 1E-5 (CDH)

Note. (5) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*1 4E-5 (CDH)
(6) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*4 7E-6 (CDH)

Note. (7) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 5E-3 (CDH)
(8) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 3E-4 (CDH)

Note (9) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*4 9E-4 (CDH)
(10) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*1 7E-4 (CDH)

Note. (11) Imax (Child NC, mg/kg-d) = Cmax (mg/kg)*1 9E-15 (CDH)
(12) Imax (Child C, mg/kg-d) = Cmax (mg/kg)*1 6E-16 (CDH)

Note. (13) Imax (Adult NC, mg/kg-d) = Cmax (mg/kg)*4 6E-16 (CDH)
(14) Imax (Adult C, mg/kg-d) = Cmax (mg/kg)*1 6E-16 (CDH)

TABLE 2							
RESIDENTIAL RISK CHARACTERIZATION--							
Risk Calculation for Carcinogens OU-2 Spill at Field Treatability Unit							
	Contaminant--Carcinogen						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SOIL INGESTION							
Total Intake (mg/kg-day)*	5 64E-08	5 01E-09	1.88E-08	1 25E-08	1 88E-08	4 38E-09	2 50E-09
Slope Factor (mg/kg-day)-1=	NA	NA	1.10E-02	5 20E-02	1 30E-01	6 10E-03	NA
Added Cancer Risk	NA	NA	2 07E-10	6 51E-10	2 44E-09	2 67E-11	NA
SOIL DERMAL CONTACT							
Total Intake (mg/kg-day)*	1 05E-06	9 37E-08	3 51E-07	2 34E-07	3 51E-07	8 20E-08	4 68E-08
Slope Factor (mg/kg-day)-1=	NA	NA	1 10E-02	5 20E-02	1 30E-01	6 10E-03	NA
Added Cancer Risk	NA	NA	3 86E-09	1 22E-08	4 57E-08	5 00E-10	NA
SOIL PARTICLE INHALATION							
Total Intake (mg/kg-day)*	3 19E-16	2 62E-17	1 06E-16	6 96E-17	1 06E-16	2.46E-17	1 43E-17
Slope Factor (mg/kg-day)-1=	NA	NA	6 00E-03	2 00E-03	5 30E-02	8 10E-02	NA
Added Cancer Risk	NA	NA	6 39E-19	1 39E-19	5 64E-18	1 99E-18	NA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL RESIDENTIAL ADDED CANCER RISK							[illegible]

MAR-30-94 WED 16:16

TABLE 3							
RESIDENTIAL RISK CHARACTERIZATION--							
Risk Calculation for Noncarcinogens: OU-2 Spill at Field Treatability Unit							
	Contaminant--Noncarcinogen						
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SOIL INGESTION							
Total Intake (mg/kg-day)/	5 10E-07	4 53E-08	1 70E-07	1 13E-07	1 70E-07	3 96E-08	2 26E-08
Reference Dose (mg/kg-day)=	1 00E-02	1 00E-01	NA	1 00E-02	7 00E-04	1 00E-02	2 00E-01
Hazard Quotient	5 1E-05	4 53E-07	NA	1 13E-05	2 43E-04	3 96E-06	1 13E-07
SOIL DERMAL CONTACT							
Total Intake (mg/kg-day)/	7 04E-06	6 26E-07	2.35E-06	1 57E-06	2 35E-06	5 48E-07	3 13E-07
Reference Dose (mg/kg-day)=	1 00E-02	1 00E-01	NA	1 00E-02	7 00E-04	1 00E-02	2 00E-01
Hazard Quotient	7 04E-04	6 26E 06	NA	1 57E-04	3 35E-03	5 48E-05	1 57E-06
SOIL PARTICLE INHALATION							
Total Intake (mg/kg-day)/	2 35E-15	1 93E-16	7 82E-16	5 11E-16	7 82E-16	1 81E-16	1 05E-16
Reference Dose (mg/kg-day)=	NA	1 00E-01	NA	NA	NA	NA	NA
Hazard Quotient	NA	1 93E-15	NA	NA	NA	NA	NA
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TOTAL RESIDENTIAL HAZARD QUOTIENT							[illegible]

CORRES CONTROL
INCOMING LTR NO

11550 RF 94

DUE DATE

ACTION

DIST	LTR	ENC
BERMAN H S		
CARNIVAL G J		
COPP R D		
CORDOVA R C		
DAVIS J G		
FERRERA D W		
FRANZ W A		
HANNI B J		
HEALY T J		
HEDAHL T G	X	X
HILBIG J G		
HUTCHINS N M		
KELL R E		
KIRBY W A		
KUESTER A W		
MAHAFFEY J W		
MANN H P		
MARX G E		
McKENNA F G		
MORGAN R V		
PIZZUTO V M		
POTTER G L		
SANDLIN N B		
SATTERWHITE D G		
SCHUBERT A L	X	X
SETLOCK G H		
STIGER S G	X	X
SULLIVAN M T		
SWANSON E R		
WILKINSON R B		
WILSON J M		
Demos N	X	X
Johnson M	X	X
Myrick S	X	X
Vess T	X	X
Laurin P	X	X
Primrose	X	X
Busby W	X	X
Burmeister M	X	X
Brassard M	X	X
CORRES CONTROL	X	X
ADMN RECORD/080	X	X
PATS/T130G		

Reviewed for Addressee
Corres Control RFP

4/18/94 Cnl
DATE BY

Ref Ltr #

DOE ORDER # 5400.1

Department of Energy

ROCKY FLATS OFFICE
P O BOX 928
GOLDEN COLORADO 80402-0928

APR 13 3 12 PM '94

APR 15 1994

94-DOE-04379

Frederick R Dowsett, Ph D , Chief
Colorado Department of Health
Monitoring and Enforcement
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Dr Dowsett

On April 1, 1994 we submitted to you (94-DOE-03459) the Resource Conservation and Recovery Act Contingency Plan Implementation Report (CPIR) No 94-004 This CPIR documents the status and information concerning the release to the environment of surface water containing hazardous waste constituents We would like to amend Section D, Corrective Action, of the CPIR

Under Section D, Corrective Action, of the CPIR, it states that "A decision has been made prior to this incident to replace the influent piping A schedule for replacing the influent line will be provided to the CDH by April 15, 1994" at the Surface Water Interim Measure/Interim Remedial Action (IM/IRA) This commitment is premature at this time and the CPIR is hereby amended to revise this language We are awaiting a decision from the Environmental Protection Agency (EPA) and Colorado Department of Health (CDH) regarding our request to discontinue collection at two of the three surface water sources at the Surface Water IM/IRA The discontinuation proposal is being evaluated by EPA and CDH with the expectation that a decision will be made during April, 1994 For informational purposes our schedule is being provided and an action is underway to acquire the funds necessary for the project These actions will ensure that if the decision is made to replace the line, it will happen as quickly as possible

If you have any questions, please direct them to Scott Grace at 966-7199

Sincerely,

Jessie Roberson
Acting Assistant Manager for
Environmental Restoration

Department of Energy

ROCKY FLATS OFFICE
P O BOX 928
GOLDEN COLORADO 80402-0928

APR 1 5 1994

94-DOE-04379

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Sincerely,

Jessie Roberson
Acting Assistant Manager for
Environmental Restoration

cc
A Rampertaap, EM-453
D Maxwell, EPA
M Silverman, OOM, RFO
L Smith, OOM, RFO
D Grosek, RMB, RFO
T Lukow, WPD, RFO
W Seyfert, RPB, RFO
B Williamson, ER, RFO
E Dillé, ER, RFO
B McCarthy, ER, RFO
M Broussard, EG&G
M Burmeister, EG&G
S Stiger, EG&G
N Demos, EG&G
T, Heydahl, EG&G
M Johnson, EG&G
S Myrick, EG&G
A Schubert, EG&G
T Vess, EG&G
P Laurin, EG&G
A Primrose, EG&G

ID	Name	Mar '94 Mar	Apr '94 Apr	May '94 May	Jun '94 Jun	Jul '94 Jul	Aug '94 Aug	Sep '94 Sep
1	Engineering Phase I							
2	Procure phase I							
3	Construction phase I							
4	Engineering Phase II							
5	Procure Phase II							
6	Construction Phase II							
7								
8								
9								

Phase I. Replacement of the existing influent line, including secondary containment, and leak detection.

Phase II. Replacement of 480 volt power distribution system, installation of new heat trace system, and instrumentation

Note FTU downtime will be minimized to the greatest extent possible, however the FTU may incur some minimal shutdowns due to power source changes, pump and piping change-overs, etc

Project: OU-2 Infl. Line Repl.
Date 4/13/94

Critical — Noncritical — Progress — Milestone — Summary

☆ U S GOVERNMENT PRINTING OFFICE 1994—573-184/2010

EG&G ROCKY FLATS, INC
PURCHASE REQUISITION (This is not an Order)

IMPORTANT! READ INSTRUCTIONS BEFORE COMPLETING THIS FORM

PAGE ___ OF ___ PAGES

NO. P414422

SHADED AREAS FOR PURCHASING DEPARTMENT USE ONLY

THE REQUISITIONER IS RESPONSIBLE TO
1 Estimate the total cost as $3,000 for the items(s) recorded below
( ) 2 Route the requisition to Industrial Hygiene if an item is a hazardous material (Reference H&S Manual 9 07) Signature ______
( ) 3 If requisition is for a service to be performed on plantsite coordinate with cognizant Building Manager or Area Safety Engineer as required
( ) 4 Record the Responsibility Code as appropriate
( ) 5 Obtain signatures in accordance with Plant Policy 7-6 and Instructions

DATE 5-1-96
SUGGESTED SUBCONTRACTORS
SAFETY MASTER
DEL - PAC
Telephone No
Enter Previous Purchase Order No

PO PREFIX	PURCHASE DOCUMENT NO

SIGNATURE AUTHORIZES EXPENDITURES TO THE MAXIMUM THRESHOLD UNLESS OTHERWISE INDICATED	TO $100,000 ENTER NOT TO EXCEED AMOUNT $3000	PRINT NAME A M TYSON	TO $500 000 ENTER NOT TO EXCEED AMOUNT	PRINT NAME
	WORK PKG MGR [signature]	PRINT NAME M C BROUSSARD	Over $500,000 ENTER NOT TO EXCEED AMOUNT	PRINT NAME

ISSUED TO	FOLLOW-UP CODE	VENDOR NO	P O CODE	DATE	
	ROUTER CODE A	SHIP VIA	STATE OF MFG	F O B POINT	F O.B. CODE

RESP CODE 106 — RMRS 6A [initials] 5 2.96

PAYMENT TERMS

ROCKY FLATS CODE ID	ITEM NO	SIC CODE	ITEMS/SERVICES DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE	CONTRACT DELIVERY DATE
	1		MILLER FULL BODY HARNESS (#8759),	4	EA			
PL 3 HMC SAL			ONE D-RING, ADJUSTABLE FIT, LAB SAFETY					
ROCKY FLATS CODE ID			NO TL-13916					
PL 3 HMC SAL	2		SARANEX ELASTIC HOOD, W/ ELASTIC	75	EA			
ROCKY FLATS CODE ID			FACE BAND FOR SECURE FIT AROUND FULL-FACE					
PL 3 HMC SAL			RESPIRATOR, SIZE XL - LAB SAFETY # YC-7628					
ROCKY FLATS CODE ID	3		MILLER RETRACTABLE LIFELINE WITH	1	EA			
PL 3 HMC SAL			WINCH 50' STAINLESS STEEL CABLE					

WP#12524 PAD#43

Work Scope/Spec Classified?	"Q" Cleared Workers Req'd?	Delivery Date	Priority Rating (If DX, Reference Authorizing Document)
☐ Yes ☒ No N/A	☐ Yes ☒ No	5-10-96 ☒ Desired ☐ Required Justification Required	☒ DO ☐ DX

ORG CODE	ITEMS	ITEMS	COST ELEMENT	COST CENTER	CHARGE NUMBER	DELIVER TO	BLDG	DOOR	REQUISITIONER	COPY OF P O TO
71620			A5C 0112	R0203	951832-01	NAME MARK BURMEISTER DEPT ER-ACCELERATED ACTIONS PHONE	T-891B	W	NAME M Burmeister DEPT RMRS-ER BLDG	NAME DEPT