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COMPANY

July 21, 1995 95-RF-05848

Jessie M Roberson, Assistant Manager
Environmental Restoration
DOE, RFFO

OPERABLE UNIT 5 (OU5) WOMAN CREEK PRIORITY DRAINAGE CHEMICALS OF CONCERN TECHNICAL MEMORANDUM #11 - TGH-180-95

The purpose of this letter is to address comments received from Carl Spreng, Colorado Department of Public Health and the Environment (CDPHE), on June 19, 1995, via facsimile, on the Final Chemicals of Concern (COC) Technical Memorandum (TM) #11 for OU5

A copy of Mr Spreng's comments is enclosed in Attachment 1 The OU5 team addressed each comment and discussed the disposition with Mr Spreng, on June 28, 1995, at a project meeting Attachment 2 is a summary of the response to comments

A Document Modification Request (DMR) has been prepared to address two of these comments and it is enclosed, see Attachment 3 This DMR contains three replacement pages for incorporation into the COC TM #11

Please forward the enclosed information to the Environmental Protection Agency and CDPHE (draft letter is included as Attachment 4), and request that they update their copies of the COC TM #11 with the pages in the DMR

Please call Steve Hahn at extension 9888, with any questions regarding this transmittal

T G Hedahl, Director
ER/WM&I Operations

CAB kam

Attachments
As Stated (4)

Orig and 1 cc - J M Roberson

cc
S J Hahn

ADMIN RECORD

A-OU05-000678

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2 1/9

Colorado Department of Public Health and the Environment

Comments on

Technical Memorandum No 11 (Final)
Contaminants of Concern for OU 5

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1) Table 2-5 - Summary Statistics for Data from Seep Water Samples How can a comparison of data from **one** OU 5 sample with background be considered statistically valid? Is there any on-going sampling being done to verify the initial findings? As it is, any seep water information must be considered preliminary No PCOCs should be eliminated from this media based on professional judgement or even on the concentration toxicity screen There simply is not enough data on which to base such a decision

Therefore, 1,1-dichloroethene should not have been eliminated as a COC from this media on this basis alone, even though it constituted only a small portion of the carcinogenic risks from this media (see also comment 3)

2) Table 2-9 It is unclear why DOE used the Inhalation Cancer Slope Factor for 1,1-dichloroethene which was listed in HEAST 1994, when a value for this chemical was apparently available in IRIS prior to October, 1994 DOE's Programmatic Risk-Based Preliminary Remediation Goals Final Revision I (October, 1994) lists an inhalation cancer slope factor for this chemical of 1 75E-1 This value differs from the HEAST value of 1 2 E+00 listed in Table 2-9 The inhalation cancer slope factor listed in DOE's Programmatic Risk-Based Preliminary Remediation Goals October document (1 75E-1 mg/kg d) and the unit risk factor for air listed in IRIS (June, 1995) (5E-5/ug/m^3) are equivalent, and should have been used, since EPA recommends that IRIS data always take precedence over HEAST data

3) Table 7-3 Concentration/Toxicity Screen of Carcinogens in Seep Water The con/tox screen was performed incorrectly for this media Even when the incorrect slope factor for 1,1-DCE is used (see comment #2), the chemical-specific risk factors and the percentages of total risk are different than those listed in this table The correct con/tox screen is as follows

Carcinogen	Max conc (mg/L)	CSF (mg/kg d)	Chem-spec Risk factor (Ri)	% of total risk
1,1-DCE	4 00E-3	1 75E-1	7 00E-4	31 3%
PCE	2 80E-2	5 20E-2	1 46E-3	65 2%
TCE	7 00E-3	1 10E-2	7 70E-5	3 5%
		total risk factor =	2 23E-3	100 0 %

32

Therefore, 1,1-DCE did **not** fail the con/tox screen, and should not have been eliminated as a COC on this basis It should remain as a PCOC in this media

4) Section 2 7 DOE states in the second paragraph that it assumed "construction worker exposure to subsurface soil" when defining RBCs for screening purposes This assumption was not part of the RBC agreement, all three agencies agreed to use residential RBCs for all media when screening

5) Table 10-1 The only valid comparisons for OU 5 stream sediments concentrations are to RFETS background stream sediment concentrations At best, the comparisons to Front Range soils and to shales and clays in general can only be considered supplementary to site-specific background comparisons

6) Section A 5 3 What does the groundwater distribution of arsenic look like? Is there a map available showing the sitewide distribution of arsenic in groundwater?

7) EPA's *Risk Assessment Guidance for Superfund* (RAGS) recommends using total contaminant values rather than filtered or dissolved contaminant values when assessing risk because of the potential to underestimate chemical concentrations in water from an unfiltered tap (RAGS Part A, pp 6-27) Have dissolved values been reported for water samples collected at OU 5 and have OU 5 values been compared with background concentrations derived from dissolved values?

43

RESPONSE TO CDPHE'S COMMENTS ON

TECHNICAL MEMORANDUM NO 11 (FINAL)

CHEMICALS OF CONCERN FOR OU5

Response to Comment 1. Mr Spreng's observation is valid comparison of background with one site sample is not statistically valid However, 1,1-dichloroethene was not eliminated based on this comparison Due to an error in the concentration/toxicity screen it was eliminated at that stage The error has been corrected and 1,1-dichloroethene will be evaluated in the RFI/RI Report See also response to comment 3

Response to Comment 2. Mr Spreng's comment is correct However, the slope factor used in the COC TM (1 2 per mg/kg-day) is the correct one and was estimated from the unit risk factor based on pharmacokinetic adjustments, as opposed to a route to route extrapolation based on breathing rate and body weight In addition, the PPRG for 1,1-dichloroethene has been corrected

On June 28, 1995 a printout from the IRIS data base was provided to Mr Spreng with this information highlighted

Response to Comment 3 Mr Spreng's comment is correct The Concentration/Toxicity screen of carcinogens in seep water was calculated incorrectly and a replacement table has been generated However, this did not result in 1,1-dichloroethene being eliminated as a COC since it was identified, as such, based on non carcinogenic effects Since it also has carcinogenic effects, these effects will be evaluated in the RFI/RI Report

Table 7-3 of the COC TM #11 was revised to correct the error and is submitted with the enclosed Document Modification Request, see Attachment 3

Response to Comment 4 Mr Spreng's comment that the text in Section 2 7 states that a risk-based concentration (RBC) comparison for subsurface soils was based on RBC's for a construction worker was not what was agreed to by the agencies The text, in this case, is incorrect and will be modified to state the RBC comparison will be for residential exposure The correct RBC, i e that for residential exposure, was used in Table 4-5

Page 2-31 of the COC TM #11 was revised to address this comment and is submitted with the enclosed Document Modification Request, see Attachment 3

Response to Comment 5. Mr Spreng's comment regarding the comparisons of OU5 concentrations to RFETS background concentrations is correct The additional data is provided as supplemental data only, and the text does discuss some of this supplemental data

Response to Comment 6 Mr Spreng requested a map showing the sitewide distribution of arsenic in groundwater This map has been generated and is enclosed with this transmittal

Response to Comment 7 Mr Spreng questioned if dissolved concentrations of groundwater constituents have been compared to background dissolved concentrations Yes and these comparisons are shown in Table A-4

54

DOCUMENT MODIFICATION REQUEST (DMR)

Refer to 1-A01-PPG-001 for Processing Instructions
Print or Type All Information (Except Signatures)

1 Date	25
7/11/95	DMR No 95-DMR-ERM-00171 7/11/95 SJL

2. Existing Document Number/Revision	3. New Document Number or Document Number if it is to be changed with this Revision
RF/ER-94-00055/ Rev 0	N/A

4 Originator's Name/Phone/Pager/Location	5. Document Title
OU Project Lead/C A Bicher, Ext. 9100, DP 4037, Bldg 080	Chemicals of Concern, Human Health Risk Assessment

6. Document Type ☐ Procedure ☒ Other OU Technical Memo

7 Document Modification Type (Check only one) SL 7 11 95
☐ New ☐ Revision ☒ Intent Change ☒ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8. Item	9 Page	10 Step	11 Proposed Modifications
1	2-31	ALL	Replace existing page 2-31 with revised page
2	N/A	Table 7-3	Replace existing table 7-3 with revised table

12 Justification (Reason for Modification EJO # TP # etc)

Revisions made based on CDPHE (C Spreng) Comments. Page 2 31 was revised to delete the reference to construction-worker exposure to subsurface soil. Table 7 3 was revised to correct the error in the risk-ratio calculation

If modification is for a new procedure or a revision list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15 If modification is for any type of change or a cancellation, organizations are listed in Block 13 then Concurror prints, and signs in Block 14 and dates in Block 15

13 Organization	14 Print, Sign (if applicable)	15 Date (if applicable
OU 5 Team Lead	E.C Mast 7/11/95 E.C Mast	
OU 5 Proj Lead	Carol Bicher 7-11-95	
ER/QA	7 11 95 (SL) S LUKER	

16 Originator's Supervisor (print/sign/date)
E. C Mast E.C Mast 7/11/95

17 Assigned SME/Phone/Pager/Location	18 Cost Center	19 Charge Number	20 Requested Completion Date	21 Effective Date
WIN CHROMEC	0203 AR	N/A	7 11 95	

22. Accelerated Review? Yes ☐ No ☐ | 23 ORC Review N/A

24 Responsible Manager (print/sign/date)
C A. Bicher 7-11-95

REVIEWED FOR CLASSIFICATION / UCNI
BY _____
DATE _____

Table 2-11 RFETS OU5 PCOCs With No EPA-Established Toxicity Criteria Listed by Medium

PCOC	Surface Soil	Subsurface Soil	Groundwater	Seep Water	Seep Sediment
Benzo(g h i)perylene	X	X			
Dibenzofuran	X	X			
Lead	X	X	X		
2 Methylnaphthylene	X	X			
Phenanthrene	X	X	X		X
Silicon			X		
1 1 1-Trichloroethane				X	

2 7 EVALUATION OF RISK-BASED CONCENTRATIONS FOR INFREQUENTLY DETECTED ANALYTES AND IDENTIFICATION OF SPECIAL-CASE COCS

Analytes detected infrequently (in less than five percent of all samples in the medium) are not characteristic of OU-wide contamination and the potential for exposure is low These constituents were further screened to include any infrequently detected analyte that could contribute significantly to risk if routine exposure to a hot spot were to occur In this analysis, maximum measured concentrations were compared to screening levels equivalent to 1,000 times risk-based concentrations (RBCs) DOE, 1995

For screening purposes, RBCs were defined as analyte concentrations associated with an excess cancer risk of 1E-06 (one in one million) or a hazard index of one for noncarcinogenic effects, assuming residential exposure to surface soil and groundwater Any infrequently detected analyte measured at a concentration greater than 1,000 times the respective RBC was identified as representing a potentially significant health risk if exposure were to occur and was included in the list of special-case COCs for evaluation in the risk assessment.

RBCs have been calculated specifically for RFETS and are presented in DOE (1995) These values, referred to as PPRGs in the DOE (1995) document, are used in this identification of special-case COCs RBCs for chemicals in soil were calculated for residential receptors assuming multiple pathway exposure [ingestion, inhalation of particulates and volatile organic compounds (VOCs), and external radiation exposure] RBCs for chemicals in groundwater were calculated for residential use, assuming ingestion of water and inhalation

Table 7-3
RFETS OU5
Concentration/Toxicity Screen of
Carcinogens in Seep Water

PCOC	Maximum Concentration (mg/L)	Slope Factor (mg/kg-day) [1] (a)	Type of Slope Factor (b)	Chemical-specific Risk Factor (Ri)	Ratio of Ri/Rj	Percentage of Total Risk Factor	Consider a COC?
Carcinogens							
1,1-Dichloroethene	4.00E-03	1.20E+00	i	4.80E-03	7.58E-01	75.79%	Yes
Tetrachloroethene	2.80E-02	5.20E-02	o	1.46E-03	2.30E-01	22.99%	Yes
Trichloroethene	7.00E-03	1.10E-02	o	7.70E-05	1.22E-02	1.22%	Yes
		Total Risk Factor (Rj)	=	6.33E-03	Total % =	100%	

Notes
(a) The most restrictive of the oral or inhalation slope factor is used
(b) o = oral, i = inhalation

87

DRAFT **DRAFT** **DRAFT**

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Gentlemen

In response to comments on the Operable Unit 5 (OU5) Woman Creek Priority Drainage, Final Chemicals of Concern (COC) Technical Memorandum (TM) #11, the enclosed Document Modification Request (DMR) is transmitted for incorporation into the TM

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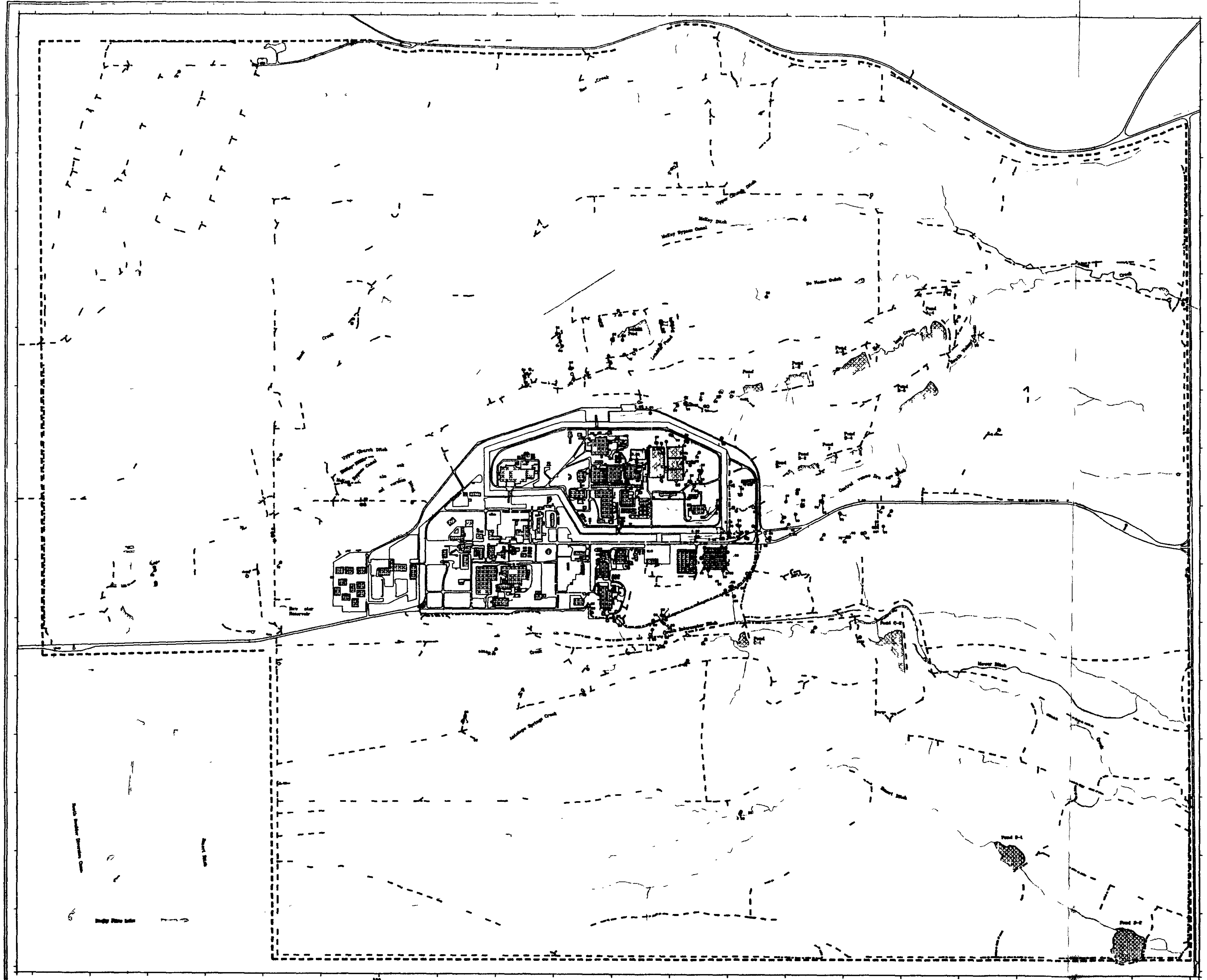
Should you have any questions or concerns regarding the enclosed materials, please contact _____ at 966-____

Enclosures
As Stated (3)

10/10 9/9



Arsenic Concentration Levels (ug/l) at Groundwater Sampling Locations

Spring 1992

Concentration Levels (ug/l)

- 0 1 00
- 1 01 5 00
- 5 01 10 00
- > 10.00

Standard Map Features

- Building or other stru ures
- Lakes and pond
- Streams, ditches, or ther drainag features
- Fences
- Rocky Flats boundary
- Paved ads
- Dirt oads

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:
EG&G ROCKY FLATS
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, Colorado 80402-0464

MAP ID: 95-0002 June 20, 1995